Comparative Effectiveness of Non-Operative and Operative Treatments for Rotator Cuff Tears

Appendixes

Appendix A. Expert Panel and Peer Reviewers

Technical Expert Panel Members

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University of Oklahoma Health Sciences Center
Oklahoma City, OK

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Clinical Assistant Professor of Medicine
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Medical Knowledge and Publishing Division
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Peer Reviewers

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Appendix B. Literature Search Strings

Table B-1. MEDLINE®—Ovid Version

OvidSP_UI02.01.02.102 1950 to January Week 4 2009	Searched: 27Jan09 and 15Sep09 Results: 2291
1. exp rotator cuff/in 2. ((rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 3. exp tendon injuries/ 4. exp Muscles/in 5. ((tendon or tendons or muscle* or muscular) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 6. ((full or partial) adj4 (thick$ or tear or tears)).ti,ab. 7. or/3-6 8. exp Shoulder/ or exp Shoulder Joint/ 9. (shoulder or glenohumeral).mp. 10. (rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior).mp. 11. or/8-10 12. 7 and 11 13. or/1-2,12 14. randomized controlled trial.pt. 15. controlled clinical trial.pt. 16. exp randomized controlled trials as topic/ 17. exp Random Allocation/ 18. exp Double-Blind Method/ 19. exp Single-Blind Method/ 20. clinical trial.pt. 21. exp clinical trials as topic/ 22. (clin$ adj25 (trial$ or study or studies or design)).ti,ab. 23. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab. 24. exp placebos/ 25. placebo$.ti,ab. 26. random$.ti,ab. 27. exp research design/ 28. comparative study/ 29. exp evaluation studies/	30. exp follow-up studies/ 31. ((follow$ or observational or compar$) adj3 (trial$ or study or studies or design)).ti,ab. 32. exp prospective studies/ 33. exp epidemiologic studies/ 34. exp causality/ 35. epidemiological factors/ 36. (effect$ or outcome$ or allocat$ or control$ or assign$ or compar$ or experiment$ or analys$ or analyz$).mp. 37. ((control$ or prospectiv$ or volunteer$ or participant$) adj5 (trial$ or study or studies or design)).mp. 38. (group or groups).ti,ab. 39. cohort$.ti,ab. 40. case-control$.ti,ab. 41. cross sectional.ti,ab. 42. (case adj (comparison or referent$ or series)).ti,ab. 43. longitudinal.ti,ab. 44. (causation or causal$).ti,ab. 45. (analytic adj (study or studies)).mp. 46. “single subject”.ti,ab. 47. SSRD.ti,ab. 48. “n-of-1”.ti,ab. 49. baseline.ti,ab. 50. “before after”.ti,ab.***** 51. or/14-50 52. animals/ not humans/ 53. 51 not 52 54. 13 and 53 55. limit 54 to (“all adult (19 plus years)” or “adult (19 to 44 years)” or “middle age (45 to 64 years)” or “middle aged (45 plus years)” or “all aged (65 and over)” or “aged (80 and over)”)

*Line removed for Sept 2009 search

Table B-2. EMBASE—Ovid Version

OvidSP_UI02.01.02.102 1988 to 2009 Week 3	Searched: 27Jan09 and 15Sep09 Results: 2247
1. exp rotator cuff rupture/ 2. ((rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 3. exp tendon injury/ or exp tendon rupture/ or exp ligament rupture/ 4. exp Muscle injury/ 5. ((tendon or tendons or muscle* or muscular) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 6. ((full or partial) adj4 (thick$ or tear or tears)).ti,ab. 7. or/3-6 8. exp Shoulder/ or exp Rotator Cuff/ or “teres minor muscle”/ 9. (shoulder or glenohumeral).mp. 10. (rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior).mp. 11. or/8-10 12. 7 and 11 13. or/1-2,12 14. exp randomized controlled trial/ 15. exp Randomization/ 16. exp controlled clinical trial/ 17. (clin$ adj25 (trial$ or study or studies or design)).ti,ab. 18. ((singl$ or doubl$ or trebl$ or tripl$) adj25 (blind$ or mask$)).ti,ab. 19. exp placebo/ 20. placebo$.ti,ab. 21. random$.ti,ab. 22. (ae or co or ct or do or th).fs.	23. exp Methodology/ 24. exp Types of study/ 25. exp “evaluation and Follow-up”/ 26. ((follow$ or observational or compar$) adj3 (trial$ or study or studies or design)).ti,ab. 27. (effect$ or outcome$ or allocat$ or control$ or assign$ or compar$ or experiment$ or analys$ or analyz$).mp. 28. ((control$ or prospectiv$ or volunteer$ or participant$) adj5 (trial$ or study or studies or design)).mp. 29. (group or groups).ti,ab. 30. cohort$.ti,ab. 31. case-control$.ti,ab. 32. cross sectional.ti,ab. 33. (case adj (comparison or referent$ or series)).ti,ab. 34. longitudinal.ti,ab. 35. (causation or causal$).ti,ab. 36. (analytic adj (study or studies)).mp. 37. (epidemiologic$ adj (study or studies)).ti,ab. 38. “single subject”.ti,ab. 39. SSRD.ti,ab. 40. “n-of-1”.ti,ab. 41. baseline.ti,ab. 42. “before after”.ti,ab.* 43. or/14-42 44. Nonhuman/ not human/ 45. 43 not 44 46. 13 and 45 47. limit 46 to (adult <18 to 64 years> or aged <65+ years>) 48. limit 47 to yr=“1990 - 2009”

*Line removed for Sept 2009 search

Table B-3. EBM Reviews—Cochrane Central Register of Controlled Trials, Cochrane Database of Systematic Reviews, Database of Abstracts of Reviews of Effectiveness, Health Technology Assessment Database—Ovid Version

OvidSP_UI02.01.02.102 4th Quarter 2008	Searched: 28Jan00 and 15Sep09** Results: 220
Central**: 165 CDSR: 35	DARE: 11 HTA: 9
1. exp rotator cuff/in 2. ((rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 3. exp tendon injuries/ or exp tendon injury/ or exp tendon rupture/ or exp ligament rupture/ 4. exp Muscles/in or exp Muscle Injury/ 5. ((tendon or tendons or muscle* or muscular) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp.	6. ((full or partial) adj4 (thick$ or tear or tears)).ti,ab. 7. or/3-6 8. exp Shoulder/ or exp Shoulder Joint/ or exp Rotator Cuff/ or “teres minor muscle”/ 9. (shoulder or glenohumeral).mp. 10. (rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior).mp. 11. or/8-10 12. 7 and 11 13. or/1-2,12 14. limit 13 to yr=“1990 - 2008”

Table B-4. AMED (Allied and Complementary Medicine) and Pascal—Ovid Version

OvidSP_UI02.01.02.102 AMED 1910 to January 2009 Searched: 28Jan09 Results: 131	Pascal 1987 to Jan 2009 Searched: 28Jan09 Results: 751
1. exp rotator cuff/in 2. ((rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 3. exp tendon injuries/ 4. exp Muscles/in 5. ((tendon or tendons or muscle* or muscular) adj5 (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*)).mp. 6. ((full or partial) adj4 (thick$ or tear or tears)).ti,ab. 7. or/3-6 8. exp Shoulder/ or exp Shoulder Joint/ 9. (shoulder or glenohumeral).mp. 10. (rotator cuff* or rotator interval* or supraspin?tus or infraspin?tus or “teres minor” or subscapularis or anterosuperior or posterosuperior).mp. 11. or/8-10 12. 7 and 11 13. or/1-2,12	14. limit 13 to yr=“1990 - 2009” 15. child*.ti. 16. 14 not 15 17. remove duplicates from 16 18. from 17 keep 1-1782 19. limit 18 to (atlas or bibliography or case report clinical case or comments or correspondence letters or deposited material or editorial or excerpt or expert view or interview talk or legislation or letter to editor or “map” or numerical data or offprint or preliminary communication or short communication or standard or thoughts about synopsis or trade literature) 20. 18 not 19 21. from 17 keep 1783-2049 22. limit 21 to (annotated bibliography or bibliography or brief communication or clinical note or commentary or editorial or equipment note or “equipment review” or interview or lecture or letter or monograph or news or notes or study guide or technical note) 23. 21 not 22 24. 20 or 23

Table B-5. EBSCO Databases

Searched: 04Feb09 and 15Sep09** Results: 895

Database	Years Searched	Number of Results
CINAHL® (Cumulative Index to Nursing & Allied Health Literature)**	1937 to 2008	93
SPORTDiscus with Full Text	1800 to 2008	428
Academic Search Elite	1985 to 2008	327
Health Source: Nursing and Academic Edition		47

S6	S4 not S5 Limiters - Published Date from: 199001-200912; Publication Type: Periodical, Book, Primary Source Document; Document Type: Abstract, Article, Proceeding; Exclude MEDLINE records; Publication Type: Abstract, Book Chapter, Clinical Trial, Doctoral Dissertation, Journal Article, Masters Thesis, Nursing Interventions, Proceedings, Research, Review, Systematic Review; Age Groups: Adult, 19-44 years, Middle Age, 45-64 years, Aged, 65+ years, Aged, 80 and over, All Adult; Clinical Queries: Therapy - High Sensitivity; Publication Type: Journal Article, Monograph or government document, Serial publication, Thesis or dissertation
S5	TI (child* or pediatr* or paediatr*) or SU (child* or pediatr* or paediatr*)
S4	((S1 or S2)) and S3
S3	tear or tears or tore or torn or lesion* or rupture* or avuls* or repair* or debride* or full-thickness or partial-thickness or thickness
S2	MH “Glenohumeral Joint/IN”
S1	“rotator cuff*” or DE “SHOULDER joint -- Rotator cuff” or supraspinatus or infraspinatus or “teres minor” or subscapularis or MH “Rotator Cuff+” or anterosuperior or posterosuperior

Table B-6. Science Citation Index Expanded (via Web of Science®)—Institute for Scientific Information—Thomson Corporation

Version 7.8 1900 to 2009 Limit: 1990-2009	Searched: 03Feb09 Results: 3072

#24	#23 OR #21 OR #19 OR #17 OR #15
#23	#13 AND #22
#22	TI=(evaluat* OR compar* OR versus OR study)
#21	#13 AND #20
#20	TS=(longitudinal OR cohort* OR baseline OR follow-up OR before-after OR case series OR observational OR participants OR patients)
#19	#13 AND #18
#18	TS=((control* or prospectiv* or volunteer* or participant*) SAME (trial* or study or studies or design))
#17	#13 AND #16
#16	TS=(effect$ or outcome$ or allocat$ or control$ or assign$ or compar$ or experiment$ or analys$ or analyz$)
#15	#13 AND #14
#14	TS= clinical trial* OR TS=research design OR TS=comparative stud* OR TS=evaluation stud* OR TS=controlled trial* OR TS=follow-up stud* OR TS=prospective stud* OR TS=random* OR TS=placebo* OR TS=(single blind*) OR TS=(double blind*)
#13	#11 NOT #12 AND Document Type=(Article OR Meeting Abstract OR Meeting-Abstract OR Proceedings Paper OR Review)
#12	SO=(child OR children OR paediatr* OR pediatr* OR peadiatr* OR adoles* OR teen OR teens OR teenage* OR infan* OR baby OR babies OR neonat*)
#11	#9 NOT #10
#10	TI=(child OR children OR paediatr* OR pediatr* OR peadiatr* OR adoles* OR teen OR teens OR teenage* OR infan* OR baby OR babies)
#9	#8 NOT #1
#8	#7 OR #4
#7	#6 AND #5
#6	TS=(shoulder or glenohumer*)
#5	TS=((tendon or tendons or muscle* or muscular) SAME (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*))
#4	#2 AND #3
#3	TS=(tear OR tears OR tore OR torn or lesion* OR rupture* OR avuls* OR injur* OR repair* OR debride* OR thickness OR full-thickness OR partial-thickness)
#2	TS=(supraspinatus OR infraspinatus OR teres minor OR subscapularis OR rotator cuff* OR anterosuperior OR posterosuperior)
#1	TS=(veterinar* OR zoolog* OR rat OR rats OR rodent* OR mouse OR mice OR insect* OR entomolog* OR mantis* or pigeon* OR sheep OR pig OR pigs OR cow* OR bovine OR animal* OR primat* OR chimp* OR horse OR horses OR cat OR cats OR dog OR dogs OR canine OR feline)

Table B-7. Scopus® Elsevier B.V.

1966 to 2009 Limit: 1990-2009	Searched: 05Feb09 Results: 804

(TITLE-ABS-KEY(rotator cuff* OR rotator interval* OR supraspin?tus OR infraspin?tus OR “teres minor” OR subscapularis OR anterosuperior OR posterosuperior) AND TITLE-ABS-KEY(tear OR tears OR tore OR torn OR lesion* OR rupture* OR avuls* OR injur* OR repair* OR debride*)) AND PUBYEAR AFT 1989 AND (LIMIT-TO(DOCTYPE, “ar”) OR LIMIT-TO(DOCTYPE, “cp”) OR LIMIT-TO(DOCTYPE, “ip”) OR LIMIT-TO(DOCTYPE, “er”)) AND (LIMIT-TO(EXACTKEYWORD, “Controlled study”) OR LIMIT-TO(EXACTKEYWORD, “Clinical article”) OR LIMIT-TO(EXACTKEYWORD, “Major clinical study”) OR LIMIT-TO(EXACTKEYWORD, “Treatment Outcome”) OR LIMIT-TO(EXACTKEYWORD, “Treatment outcome”) OR LIMIT-TO(EXACTKEYWORD, “Follow up”) OR LIMIT-TO(EXACTKEYWORD, “Follow-Up Studies”) OR LIMIT-TO(EXACTKEYWORD, “Prospective Studies”) OR LIMIT-TO(EXACTKEYWORD, “Comparative study”) OR LIMIT-TO(EXACTKEYWORD, “Clinical trial”) OR LIMIT-TO(EXACTKEYWORD, “Prospective study”))

Table B-8. BIOSIS Previews®—Institute for Scientific Information—Thomson Corporation

1926 to 2009 Limits: 1990-2009	Searched: 04Feb09 Results: 821

#14	#13 NOT #10
#13	#12 NOT #9
#12	#6 OR #3 Refined by: Major Concepts=(EDUCATION OR SURGERY OR ORTHOPEDICS OR MUSCULAR SYSTEM OR MOVEMENT AND SUPPORT OR METHODS AND TECHNIQUES OR SPORTS MEDICINE OR NUTRITION OR FOODS OR OCCUPATIONAL HEALTH OR NURSING OR PHYSICAL MEDICINE AND REHABILITATION) AND Subject Areas=(SURGERY OR ORTHOPEDICS OR REHABILITATION OR SPORT SCIENCES OR PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH OR NUTRITION & DIETETICS OR PHARMACOLOGY & PHARMACY)
#11	#6 OR #3 Refined by: Major Concepts=(EDUCATION OR SURGERY OR ORTHOPEDICS OR MUSCULAR SYSTEM OR MOVEMENT AND SUPPORT OR METHODS AND TECHNIQUES OR SPORTS MEDICINE OR NUTRITION OR FOODS OR OCCUPATIONAL HEALTH OR NURSING OR PHYSICAL MEDICINE AND REHABILITATION)
#10	SO=(child OR children OR paediatr* OR pediatr* OR peadiatr* OR adoles* OR teen OR teens OR teenage* OR infan* OR baby OR babies OR neonat*) AND Document Type=(Article OR Article Thesis Dissertation OR Book Chapter OR Meeting Paper OR Technical Report OR Thesis Dissertation) AND Taxa Notes=(Humans)
#9	TI=(child OR children OR paediatr* OR pediatr* OR peadiatr* OR adoles* OR teen OR teens OR teenage* OR infan* OR baby OR babies OR neonat*) AND Document Type=(Article OR Article Thesis Dissertation OR Book Chapter OR Meeting Paper OR Technical Report OR Thesis Dissertation) AND Taxa Notes=(Humans)
#8	#6 OR #3 AND Document Type=(Article OR Article Thesis Dissertation OR Book Chapter OR Meeting Paper OR Technical Report OR Thesis Dissertation) AND Taxa Notes=(Humans)
#7	#6 OR #3
#6	#5 AND #4
#5	TS=(shoulder or glenohumer*)
#4	TS=((tendon or tendons or muscle* or muscular) SAME (tear or tears or tore or torn or lesion* or rupture* or avuls* or injur* or repair* or debride*))
#3	#1 AND #2
#2	TS=(tear OR tears OR tore OR torn or lesion* OR rupture* OR avuls* OR injur* OR repair* OR debride* OR thickness OR full-thickness OR partial-thickness)
#1	TS=(supraspinatus OR infraspinatus OR teres minor OR subscapularis OR rotator cuff* OR anterosuperior OR posterosuperior)

Table B-9. PubMed—National Library of Medicine

1950-2009 Limits: added to PubMed in last 2 years or in process	Searched: 16Sep09 Results: 298
#3 #1 0R #2 #2 ((rotator cuff* OR rotator interval* OR supraspinatus OR infraspinatus OR "teres minor" OR subscapularis OR anterosuperior OR posterosuperior) AND (tear OR tears OR tore or torn OR lesion* OR rupture* OR avuls* OR injur* OR repair* OR debride*)) AND ((randomized controlled trial [PTYP] OR drug therapy [SH] OR therapeutic use [SH:NOEXP]) OR random* OR (single blind*) OR (double blind*) OR (trial*) OR (placebo*) OR (research design*) OR (comparative stud*) OR (evaluation stud*) OR (follow up stud*) OR (prospective*) OR (cohort*) OR (case series)) Limits: added to PubMed in the last 2 years, Humans, English, French, German, All Adult: 19+ years #1 ((rotator cuff* OR rotator interval* OR supraspinatus OR infraspinatus OR "teres minor" OR subscapularis OR anterosuperior OR posterosuperior) AND (tear OR tears OR tore or torn OR lesion* OR rupture* OR avuls* OR injur* OR repair* OR debride*)) AND (in process[sb])	

Table B-10. Grey Literature Sources

Databases	Searched: 23Jun09	
Conference Papers index Computer Retrieval of Information on Scientific Projects (CRISP) database Scopus		
Websites	Searched: 23Jun09	
Health Canada U.S. Food and Drug Administration		
Conference Proceedings Hand Searched	Searched: 24Feb09	Searched: 22Oct09 **
Arthroscopy Association of North America (AANA) AAOS (American Academy of Orthopaedic Surgeons) American Physical Therapy Association (APTA) American Shoulder and Elbow Surgeons American Society of Shoulder and Elbow Therapists European Congress of Physical and Rehabilitation Medicine European Society for Surgery of the Shoulder and the Elbow** Mid-America Orthopaedic Association (MAOA)	2007-2009 2007-2009 2006-2008 2005-2008 2004-2008 2008 2009 2006-2008	
Clinical Trials Registers	Searched: 23Jun09	
ANZCTR (Austrialia NewZeland Clinical Trials Register) ClinicalStudyResults.org ClinicalTrials.Gov (National Institutes of Health) Current Controlled Trials (BioMed Central) ICTRP (International Clinical Trials Registry Platform Search Portal) (WHO) Nederlands Trial Register (Dutch Cochrane Centre)		

Appendix C. Review Forms

C1. Eligibility Criteria

C2. Methodological Quality Assessment:
- Randomized Controlled and Controlled Clinical Trials
- Cohort Studies
- Case-Control Studies
- Before-and-After Studies

C3. Data Extraction

C1. Eligibility Criteria

Reviewer ID: **Date: / /2009** **Ref ID:**

CRITERIA	Yes	No	Unclear
1. PUBLICATION TYPE			
a. Report of primary research	☐	☐	☐
b. Published in 1990 or later	☐	☐	☐
c. English language, except for nonoperative or postoperative rehabilitation	☐	☐	☐
2. STUDY DESIGN			
a. Enrolled ≥ 11 participants	☐	☐	☐
b. One of the following designs (circle design): i. RCT ii. CCT iii. Cohort iv. Case control v. Cross sectional vi. *Prospective* before-and-after (baseline data required)	☐	☐	☐
3. POPULATION			
a. >80% adult patients (≥18 years) [exclude pediatric, in vitro, cadaver]. Exclude professional athletes.	☐	☐	☐
b. Partial- or full-thickness (including massive) RCT, confirmed using imaging (e.g. arthrography, ultrasound, MRI, etc) or intraoperative findings. [Exclude diagnosis based on physical exam/ history only]	☐	☐	☐
c. Primary intention is treatment of RCT. Exclude if patients have RA or other inflammatory arthritis† (not OA), or are undergoing revision of failed RCT.	☐	☐	☐
4. INTERVENTION (One of:)			
a. Operative approaches: open, mini-open or arthroscopic repair, debridement or decompression [Exclude tendon transfers, arthroplasty, pain management] b. Nonoperative intervention for treatment of RCT. c. Postoperative rehabilitation following RC repair.	☐	☐	☐
5. OUTCOME			
a. Numeric data reported on at least one of: quality of life, disability, time to return to work / activities, shoulder pain, range of motion, strength, adverse events.	☐	☐	☐
b. Operative studies: Minimum 12 month follow-up for at least one outcome of interest [No restriction for nonoperative]	☐	☐	☐

Comments:

REVIEWER'S DECISION : Include ☐ Exclude ☐ Unsure ☐

FINAL DECISION: Include ☐ Exclude ☐ Unsure ☐
NOTE: To exclude must have said "NO" for at least one of 1-5.

RELEVANT TO QUESTION(S):

☐ **1**. Does **early** surgical repair **compared to late** surgical repair (i.e., nonoperative intervention followed by surgery) lead to improved patient-important outcomes? [check only if study directly compares early vs. late]
☐ **2.** What is the comparative effectiveness of **operative approaches**?
☐ **3.** What is the comparative effectiveness of **nonoperative interventions**?
☐ **4.** Does **operative repair vs. nonoperative treatment** lead to improved outcomes?
☐ **5.** What are the associated **adverse effects** of operative and nonoperative therapies?
☐ **6.** Which **prognostic factors** predict better outcomes? (specify)

C2. Methodological Quality Assessment

Randomized Controlled Trials and Controlled Clinical Trials

The Cochrane Collaboration's tool for assessing risk of bias			
Domain	**Description**	**Review authors' judgment**	**Consensus (circle)**
Sequence generation		Was the allocation sequence adequately generated? YES / NO / UNCLEAR	YES NO UNCLEAR
Allocation concealment		Was allocation adequately concealed? YES / NO / UNCLEAR	YES NO UNCLEAR
Blinding of participants, personnel and outcome assessors, *Outcome:*	Patient-rated scales (subjective)	Was knowledge of the allocated intervention adequately prevented during the study? YES / NO / UNCLEAR	YES NO UNCLEAR
	Clinical measures (objective)	YES / NO / UNCLEAR	
Incomplete outcome data, *Outcome:*	Patient-rated scales (subjective)	Were incomplete outcome data adequately addressed? YES / NO / UNCLEAR	YES NO UNCLEAR
	Clinical measures (objective)	YES / NO / UNCLEAR	
Selective outcome reporting		Are reports of the study free of suggestion of selective outcome reporting? YES / NO / UNCLEAR	YES NO UNCLEAR
Other sources of bias		Was the study apparently free of other problems that could put it at a high risk of bias? YES / NO / UNCLEAR	YES NO UNCLEAR
Overall risk of bias	Patient-rated scales	HIGH / LOW / UNCLEAR	HIGH LOW UNCLEAR
	Clinical measures (objective)	HIGH / LOW / UNCLEAR	

Cohort Studies

NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE
COHORT STUDIES

Selection

1) Representativeness of the exposed cohort
a) Truly representative of the average patient with a RCT in the community ✸
b) Somewhat representative of the average patient with a RCT in the community ✸
c) Selected group of users (e.g., WCB, overhead workers / athletes, massive, irreparable tears, etc)
d) No description of the derivation of the cohort
2) Selection of the non exposed cohort
a) Drawn from the same community as the exposed cohort ✸
b) Drawn from a different source
c) No description of the derivation of the non exposed cohort
3) Ascertainment of exposure
a) Secure record (eg surgical records) ✸
b) Structured interview ✸
c) Written self report
d) No description

Comparability

1) Comparability of cohorts on the basis of the design or analysis
a) Study controls for age OR tear size ✸
b) Study controls for any additional factor ✸
c) None

Outcome

1) Assessment of outcome
a) Independent blind assessment ✸
b) Record linkage ✸
c) Self report
d) No description
e) Described as unblinded
2) Was follow-up long enough for outcomes to occur
a) Yes – follow-up for at least 12 months ✸
b) No
3) Adequacy of follow up of cohorts
a) Complete follow up - all subjects accounted for ✸
b) Subjects lost to follow up unlikely to introduce bias - small number lost - ≥ 90% follow up, or description provided of those lost ✸
c) Follow up rate < 90% (select an adequate %) and no description of those lost
d) No statement

TOTAL: _____ ✸

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability.

Case-Control Studies

NEWCASTLE - OTTAWA QUALITY ASSESSMENT SCALE
CASE CONTROL STUDIES

Selection

1) Is the case definition adequate?
   a) Yes, with independent validation ✸
   b) Yes, e.g., record linkage or based on self reports
   c) No description

2) Representativeness of the cases
   a) Consecutive or obviously representative series of cases ✸
   b) Potential for selection biases or not stated

3) Selection of Controls
   a) Community controls / Unaffected shoulder ✸
   b) Hospital controls
   c) No description

Comparability

1) Comparability of cases and controls on the basis of the design or analysis
   a) Study controls for age OR tear size ✸
   b) Study controls for any additional factor ✸
   c.) None

Exposure

1) Ascertainment of exposure
   a) Secure record (e.g., surgical records) ✸
   b) Structured interview where blind to case/control status ✸
   c) Interview not blinded to case/control status
   d) Written self report or medical record only
   e) No description

2) Same method of ascertainment for cases and controls
   a) Yes ✸
   b) No

3) Non-Response rate
   a) Same rate for both groups ✸
   b) Non respondents described
   c) Rate different and no designation

TOTAL: _____✸

Note: A study can be awarded a maximum of one star for each numbered item within the Selection and Outcome categories. A maximum of two stars can be given for Comparability.

Before-and-After Studies

Reviewer initials:	Date:	Study ID:
1. Were patients enrolled consecutively?		
☐ Yes -"Consecutive enrolment" is explicitly stated; OR - All, or a random sample, of patients treated within a given date range are included	☐ Unclear - No information on the enrolment process is reported	☐ No - Patients are selected by the investigator
Notes:		
2. Were incomplete outcome data adequately addressed?		
☐ Yes - ≤ 10% of enrolled patients withdrew/ dropped out of the study before the last outcome assessment; OR - ≤ 25% of enrolled patients withdrew/ dropped out *and* reasons for withdrawal are described and unrelated to treatment	☐ Unclear - Proportion of patients that withdrew from study is unclear; OR - 10% < x <25% of enrolled patients withdrew, but reasons are not reported	☐ No - 10% < x <25% of enrolled patients withdrew and reasons are related to treatment; OR - >25% of enrolled patients withdrew
Notes:		
3. Was a standardized approach used to assess outcomes?		
☐ Yes - One or more key outcomes (e.g., range of motion, strength, stability) were assessed blindly, in duplicate, or by an independent observer	☐ Unclear - Approach to outcome assessment was not reported	☐ No - Outcomes were assessed by the investigator or treatment provider (e.g., surgeon, therapist, etc) - All outcomes were patient self-reported
Notes:		

C3. Data Extraction

I. CODER INFORMATION

1. Reviewer initials:	2. Data verifier initials:
3. Time to extract (to nearest minute):	4. Applies to question: ☐1 ☐2 ☐3 ☐4 ☐5 ☐6

II. PUBLICATION

5. First Author:	6. Year of publication:
7. Country of corresponding author: ☐ NR	8. Language of publication: ☐(1) English ☐(2) French ☐(3) German
9. Funding: ☐ (1) Government ☐ (2) Academic ☐ (3) Industry ☐ (4) Foundation ☐ (5) Comp Board ☐ (4) No funding ☐ (5) Other (describe) _____ ☐ NR	10. Publication Type: ☐ (1) Journal article ☐ (2) Abstract ☐ (3) Dissertation

III. STUDY CHARACTERISTICS

11. Study design: ☐(1) RCT ☐(2) CCT ☐(3) Cohort a. retrospective b. prospective ☐(4) Case-control ☐(5) Before-After (prospective)	12. Main Intention: ☐(1) Operative a. Approach b. Technique c. Augmentation d. Additional procedure ☐(2) Nonoperative ☐(3) Post-op Rehab
13. Number of centers: ☐ (1) Single ☐ (2) Multi centre (provide number of centers, if given) _____ ☐ NR	14. Consecutive Enrollment: ☐(1) Yes ☐(2) No ☐ NR
15. Recruitment dates (X to Y): _____ ☐ NR	16. Diagnostic Imaging Criteria: ☐(1) Intra-operative finding† ☐(2) MRI ☐(3) Arthrogram ☐(4) Ultrasound ☐(5) CT ☐(6) X-ray ☐(7) Other (specify)
17. Discrete time points for outcome assessment specified? ☐(1) Yes ☐(2) No	18. Follow-up duration *w/ units* [endpoint, mean (SD), range (IRQ)]:
19. Inclusion criteria:	20. Exclusion criteria:
TRIALS ONLY:	
21. Trial Type: ☐(1) Parallel ☐(2) Cross-Over ☐(3) Factorial	22. Trial Intention: ☐(1) Superiority ☐(2) Equivalence ☐(3) Non-inferiority
23. Unit of Randomization: ☐(1) Participants ☐(2) Shoulders	24. Blinding: ☐(1) Open label ☐(2) Single-blind

† choose only in surgical studies that report no other pre-operative imaging criteria

IV. INTERVENTION

*Circle or describe units	Group A	Group B	Group C	Group D	Total
25. Brief label of study arms					
26. Page # describing intervention					

OPERATIVE / POST-OP REHAB ONLY:					
27. Did patients receive pre-op conservative intervention? ☐(1) Yes ☐(2) No ☐ NR		28. Duration of pre-op tx *w/ units* [min; mean(SD); median(range)]*			
29. Type of pre-op conservative tx: ☐(1) exercise ☐(4) NSAIDs ☐(2)physical therapy NOS ☐(5) Not specified ☐(3) cortisone injections ☐(6) NA		30. Number of surgeons in study: ☐ NR 31. Experience of surgeons / surgical volume ☐ NR			
*Circle or describe units	**Group A**	**Group B**	**Group C**	**Group D**	**Total**
30. Surgical approach: 1 –open 2 –mini-open 3 –all-arthroscopic					
31. Type of surgery: 1 –repair 2 –debridement 3 –both 4-NA					
32. Additional surgical procedures: 1 –acromioplasty/ decompression 2 –labral repair 3 –biceps tenotomy/ tenodesis 4 –manipulation 5 –other (specify)					
33. Suture/anchor type, configuration (specify):					
34. Augmentation patch/graft? (Y or N) If yes, specify type					
37. Duration of immobilization (day, wk, mo) *					
38. Post-op rehab (specify **time points**): 1–exercise – stretching (ROM) a) passive b) active 2 – exercise – strengthening 3 – continuous passive motion 4 –other (specify)					
39. Modalities 1 –heat / cold 2 –therapeutic ultrasound 3 –neuromuscular stimulation 4 –other (specify)					
40. Physical therapist provider (Y or N)					
41. Duration of rehabilitation (day, wk, mo) *					
42. Frequency of rehabilitation activities (/wk)					
43. Intensity					
44. Additional info on surgery					
45. Additional info on post-op rehab					

NA= not applicable; NOS=not otherwise specified; NR= not reported; tx= treatment;

	Group A	Group B	Group C	Group D	Total
NONOPERATIVE ONLY					
46. Intervention (mark all that apply): 1–exercise – a) stretching (ROM) i) passive ii) active b) strengthening c) joint mobilization d) soft-tissue (manual/massage) 2 –corticosteroid injection 3 –NSAIDs 4 –acupuncture 5 –PT NOS (only if not described) 6 –other (specify)					
47. Modalities 1 –heat / cold 2 –therapeutic ultrasound 3 –neuromuscular stimulation 4 –other (specify)					
48. Drug name (if applicable)					
49. Duration of treatment (wks)					
50. Frequency of treatment (/wk)					
51. Intensity of treatment					
52. Degree of supervision 1 –direct (1:1) 2 –indirect 3 –unsupervised					
53. Type of tx provider 1 –PT 2 –exercise therapist 3 –other (specify)					
54. Experience of tx provider					
55. Number of providers participating in study					
56. Additional info on intervention					

V. POPULATION / BASELINE CHARACTERISTICS

*Circle or describe units	Group A	Group B	Group C	Group D	Total
57. No. patients [shoulders] enrolled (*n*)					
58. No. patients [shoulders] analyzed (*n*)					
59. No. dropouts/withdrawals (*n*)					
60. Age (mean±SD / SE; median(range); IQR)*					
61. Males *n* (%)					
62. Duration since onset of symptoms (mo.) (mean±SD / SE; median(range); IQR)*					
63. Type of tear 1 – partial tear *n* (%) 2 – full tear *n* (%)					
64. Tear size 1 –small, <1cm, *n* (%) 2 –medium, 1-3cm, *n* (%) 3 –large, 3-5cm, *n* (%) 4 –massive, >5cm, *n* (%)					
65. Tendon torn 1 –supraspinatus *n* (%) 2 –infraspinatus *n* (%)					

3 –subscapularis *n* (%) 4 –teres minor *n* (%)					
67. Dominant shoulder RCT *n (*%)					
68. Cause of tear 1 –degenerative *n* (%) 2 –traumatic *n* (%)					
69. Degree of fatty muscle infiltration (grades 0-4)					
70. Recreational athlete *n (*%), *specify sport*					
71. Manual labour job *n (*%)					
72. Workers' Compensation claim *n (*%)					
73. Smoker *n (*%)					
74. Shoulder co-morbidities (describe), *i.e., Labral (SLAP, Bankart), Hill-Sachs, biceps pathology, OA, stiffness, bursitis, frozen shoulder/ adhesive capsulitis, calcific tendinitis*					
75. Other co-morbidities (e.g. diabetes)					
76. Ethnic distribution *n (*%)					
77. ROM – abduction (circle: active, passive, NR) [mean±SD/SE; med(range)]*					
78. ROM –flexion (circle: active, passive, NR) [mean±SD/SE; med(range)]*					
79. ROM –internal /medial rotation (circle: active, passive, NR) [mean±SD/SE; med(range)]*					
80. ROM –external /lateral rotation (circle: active, passive, NR) [mean±SD/SE; med(range)]*					
81. ROM –other (specify) [mean±SD/SE; med(range)]*					
81. Strength (gr; kg)* position:					
81. Strength (gr; kg)* position:					
81. Strength (gr; kg)* position:					
82. VAS pain (10-point scale)					
83. Constant-Murley (x/100); subscores ☐					
84. UCLA (x/35); subscores ☐					
85. ASES (x/100); subscores ☐					
86. DASH (x/100)					
87. Western Ontario RC scale (WORC)					
88. Simple shoulder test (SST) (x/12)					
89. Japanese Orthopedic Assoc. scale (JOA)					
90. SF-36					
91. Other					
92. Other					
93. Other					

VI. REPORTED OUTCOMES (outcomes with data reported, either pre-post, or comparing 2 groups)

Primary outcome reported? ☐(1) Yes ☐(2) No Specify:	
a) Health-related quality of life	
94.	95.
96.	97.
b) Function / Disability	
98.	99.
100.	101.
102.	103.
c) Time to return to work / activities	
104.	105.
d) Pain	
106.	107.
e) Range of motion	
108.	109.
110.	111.
112.	113.
f) Strength	
114.	115.
g) Other reported outcomes	
116.	117.
118.	119.

Mark * if results are reported for questionnaire components/subscales

VII. COMPLICATIONS

☐ (1) There were *no* complications / AEs. (page ____)
☐ (2) Complications / AEs reported: (page ____)

☐a) infection	☐b) postoperative stiffness/ adhesive capsulitis	☐c) anchor failure/removal
☐d) delayed wound healing	☐e) retears	☐f) neurological injury
☐g) reflex sympathetic dystrophy	☐h) reoperations NOS	☐i) other (specify):

☐ (3) No information reported

VIII. PROGNOSTIC FACTORS

☐ (1) Prognostic factors reported: (page ____)

☐a) age	☐b) atrophy	☐c) biceps pathology	☐d) duration of symptoms
☐e) etiology of tear	☐f) fatty infiltration	☐g) number of torn tendons	☐h) glenohumeral arthritis / OA
☐i) pre-op pain	☐j) pre-op stiffness /pass. ROM	☐k) pre-op strength/ act. ROM	☐l) pre-op ROM (NOS)
☐m) sex	☐n) smoking	☐o) tear size	☐p) type of tear (FTT, PTT)
☐q) WCB	☐r) other:	☐s) other:	

☐ (2) No prognostic factors reported

Pass. = passive; act = active; NOS = not otherwise specified

X. CONCLUSIONS

Describe conclusions: (*Please, also describe such as: "Compared to B and C, A-----was-superior/inferior in ----", or "There were no differences between A and B in -----, but B was superior/inferior to C")*

Appendix D. Methodological Quality of Included Studies

Table D-1. Methodological quality of randomized controlled trials (RCTs) and controlled clinical trials (CCTs)

Author, year	Study design, ITT	Sequence generation	Blinding		Selective outcome reporting	Overall RoB – Pt-rated outcomes
			Pt-rated outcomes	Clinical outcomes		
		Allocation concealment	Incomplete outcome data		Other sources of bias	Overall RoB – Clinical outcomes
			Pt-rated outcomes	Clinical outcomes		
Bigoni M, 2009	RCT No	Unclear	No	No	Yes	High
		Unclear	Unclear	Unclear	Unclear	High
Boehm TD, 2005	RCT No	Yes	No	NA	Yes	High
		No	Yes	NA	Yes	NA
Brady B, 2008	CCT Yes	No	No	No	Yes	High
		No	Unclear	Unclear	Unclear	High
Burks RT, 2009	RCT No	Yes	No	No	Yes	High
		Yes	Yes	Yes	No	High
Charousset C, 2007	RCT No	Unclear	No	No	Yes	High
		No	Yes	Yes	Unclear	High
De Carli A, 2006	RCT No	Unclear	No	NA	No	High
		Unclear	Unclear	NA	Unclear	NA
Franceschi F, 2008	RCT Yes	Yes	No	No	Yes	High
		Yes	No	No	Unclear	High
Franceschi F, 2007	RCT No	Yes	No	No	Yes	High
		Unclear	Yes	Yes	Yes	High
Franceschi F, 2007	RCT Yes	Yes	No	No	Yes	High
		Yes	No	No	Yes	High
Gartsman GM, 2004	RCT No	Yes	No	NA	Yes	High
		Unclear	Yes	NA	Unclear	NA

CCT = controlled clinical trial; ITT = intention-to-treat analysis; pt = patient; NA = not applicable; Pt = patient; RCT = randomized controlled trial; RoB = risk of bias

Table D-1. Methodological quality of randomized controlled trials (RCTs) and controlled clinical trials (CCTs) (continued)

Author, year	Study design, ITT	Sequence generation	Blinding		Selective outcome reporting	Overall RoB – Pt-rated outcomes
			Pt-rated outcomes	Clinical outcomes		
		Allocation concealment	Incomplete outcome data		Other sources of bias	Overall RoB – Clinical outcomes
			Pt-rated outcomes	Clinical outcomes		
Grasso A, 2009	RCT No	Yes	No	No	Yes	High
		Yes	Yes	Yes	Yes	High
Hayes K, 2004	RCT No	Yes	No	No	Yes	High
		No	No	No	Yes	High
Iannotti JP, 2006	RCT No	Yes	No	NA	Yes	High
		Unclear	Yes	NA	No	NA
Kim SH, 2003	CCT No	No	No	No	Yes	High
		No	Yes	Yes	Unclear	High
Klintberg IH, 2009	RCT No	Yes	No	No	Yes	High
		Yes	No	No	Yes	High
Ko S, 2009	CCT No	No	No	NA	Yes	High
		No	Yes	NA	Yes	NA
LaStayo PC, 1998	RCT No	Yes	No	No	Yes	High
		Unclear	Unclear	Unclear	Yes	High
Michael JWP, 2005	RCT Yes	Yes	No	No	Yes	High
		Unclear	Yes	Yes	No	High
Milano G, 2007	RCT No	Yes	No	NA	Yes	High
		Yes	No	NA	Yes	NA
Mohtadi NG, 2008	RCT Yes	Yes	No	No	No	High
		Yes	Yes	Yes	No	High
Montgomery TJ, 1994	CCT No	No	No	No	Yes	High
		No	No	No	Unclear	High

Table D-1. Methodological quality of randomized controlled trials (RCTs) and controlled clinical trials (CCTs) (continued)

Author, year	Study design, ITT	Sequence generation / Allocation concealment	Blinding: Pt-rated outcomes / Incomplete outcome data: Pt-rated outcomes	Blinding: Clinical outcomes / Incomplete outcome data: Clinical outcomes	Selective outcome reporting / Other sources of bias	Overall RoB – Pt-rated outcomes / Overall RoB – Clinical outcomes
Moosmayer S, 2010	RCT yes	Yes	No	NA	Yes	High
		Yes	Yes	NA	Unclear	NA
Ogilvie-Harris DJ, 1993	CCT No	No	No	NA	Yes	High
		No	Unclear	NA	Yes	High
Raab MG, 1996	RCT No	Unclear	No	NA	Yes	High
		Unclear	No	NA	No	NA
Roddey TS, 2002	RCT No	Yes	No	NA	Yes	High
		Unclear	No	NA	Yes	NA
Shibata Y, 2001	RCT No	Unclear	No	No	Yes	High
		Unclear	Yes	Yes	Unclear	High
Torrens C, 2003	CCT No	No	No	NA	Yes	High
		No	Yes	NA	Unclear	NA

Table D-2. Methodological quality of cohort studies

Author, year	Study design	Representativeness of cohort	Ascertainment of exposure	Comparability of cohorts	Adequate duration of followup	Total Stars
		Selection of non-exposed cohort	Assessment of outcome		Adequate followup of cohort	
Baker CL, 1995	Retrospective	B (1*)	A (1*)	C (0*)	A (1*)	5 *
		A (1*)	C (0*)		A (1*)	
Bennett WF, 2003	Prospective	C (0*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	E (0*)		A (1*)	
Bishop J, 2006	Prospective	A (1*)	A (1*)	A (1*)	A (1*)	5 *
		A (1*)	C (0*)		C (0*)	
Boileau P, 2007	Retrospective	C (0*)	A (1*)	A, B (2*)	A (1*)	6 *
		A (1*)	D (0*)		B (1*)	
Buess E, 2005	Prospective	A (1*)	A (1*)	A (1*)	A (1*)	6 *
		A (1*)	C (0*)		A (1*)	
Colegate-Stone T, 2009	Prospective	B (1*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	C (0*)		D (0*)	
Costouros JG, 2006	Retrospective	B (1*)	A (1*)	A (1*)	A (1*)	5 *
		A (1*)	C (0*)		D (0*)	
Cummins CA, 2003	Prospective	A (1*)	A (1*)	C (0*)	A (1*)	5 *
		A (1*)	C (0*)		A (1*)	
Delbrouck C, 2003	Prospective	D (0*)	A (1*)	C (0*)	B (0*)	2 *
		A (1*)	E (0*)		C (0*)	
Favard L, 2009	Retrospective	C (0*)	A (1*)	C (0*)	A (1*)	2 *
		B (1*)	C (0*)		D (0*)	
Hata Y, 2004	Retrospective	A (1*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	E (0*)		D (0*)	
Ide J, 2005	Prospective	A (1*)	A (1*)	A (1*)	A (1*)	7 *
		A (1*)	A (1*)		B (1*)	
Ito J, 2003	Retrospective	B (1*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	C (0*)		C (0*)	
Klinger HM, 2005	Retrospective	C (0*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	C (0*)		A (1*)	
Ko SH, 2008	Prospective	B (1*)	A (1*)	C (0*)	A (1*)	5 *
		A (1*)	C (0*)		A (1*)	
Kose KC, 2008	Retrospective	A (1*)	A (1*)	A (1*)	A (1*)	5 *
		A (1*)	E (0*)		C (0*)	
Leroux JL, 1993	Retrospective	B (0*)	A (1*)	C (0*)	B (0*)	3 *
		A (1*)	D (0*)		A (1*)	
Liem D, 2007	Retrospective	A (1*)	A (1*)	A, B (2*)	A (1*)	7 *
		A (1*)	C (0*)		A (1*)	
Lunn JV, 2008	Prospective	C (0*)	A (1*)	B (1*)	A (1*)	5 *
		A (1*)	D (0*)		A (1*)	

Table D-2. Methodological quality of cohort studies (continued)

Author, year	Study design	Representativeness of cohort	Ascertainment of exposure	Comparability of cohorts	Adequate duration of followup	Total stars
		Selection of non-exposed cohort	Assessment of outcome		Adequate followup of cohort	
Marc T, 2009	Retrospective	A (1*)	A (1*)	A (1*)	A (1*)	6 *
		A (1*)	D (0*)		A (1*)	
Matis N, 2006	Prospective	A (1*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	D (0*)		C (0*)	
McIntyre LF, 2006	Retrospective	A (1*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	E (0*)		C (0*)	
Millar NL, 2009	Retrospective	B (1*)	A (1*)	A, B (2*)	A (1*)	7 *
		A (1*)	A (1*)		C (0*)	
Milroy DR, 2008	Retrospective	D (0*)	A (1*)	C (0*)	B (0*)	3 *
		A (1*)	D (0*)		A (1*)	
Moser M, 2007	Retrospective	C (0*)	A (1*)	C (0*)	A (1*)	3 *
		A (1*)	E (0*)		D (0*)	
Motycka T, 2004	Retrospective	A (1*)	A (1*)	C (0*)	A (1*)	4 *
		B (0*)	D (0*)		A (1*)	
Mullett H, 2006	Prospective	B (1*)	A (1*)	C (0*)	A (1*)	6 *
		A (1*)	C (0*)		D (0*)	
Park JY, 2008	Prospective	B (1*)	A (1*)	A (1*)	A (1*)	7 *
		A (1*)	A (1*)		A (1*)	
Pearsall AW, 2007	Prospective	A (1*)	A (1*)	A, B (2*)	A (1*)	8 *
		A (1*)	A (1*)		B (1*)	
Sauerbrey AM, 2005	Retrospective	A (1*)	A (1*)	A (1*)	A (1*)	6 *
		A (1*)	C (0*)		B (1*)	
Severud EL, 2003	Retrospective	B (1*)	A (1*)	C (0*)	A (1*)	4 *
		A (1*)	D (0*)		C (0*)	
Sugaya H, 2005	Retrospective	A (1*)	A (1*)	A (1*)	A (1*)	6 *
		A (1*)	C (0*)		B (1*)	
Vad VB, 2002	Retrospective	C (0*)	A (1*)	A (1*)	A (1*)	5 *
		A (1*)	C (0*)		A (1*)	
Verma NN, 2006	Retrospective	A (1*)	A (1*)	A, B (2*)	A (1*)	6 *
		A (1*)	C (0*)		C (0*)	
Walton JR, 2007	Retrospective	C (0*)	A (1*)	A, B (2*)	A (1*)	6 *
		A (1*)	C (0*)		A (1*)	
Warner JJ, 2005	Retrospective	B (1*)	A (1*)	C (0*)	A (1*)	5 *
		A (1*)	C (0*)		A (1*)	
Wilson F, 2002	Retrospective	B (1*)	A (1*)	C (0*)	A (1*)	5 *
		A (1*)	D (0*)		A (1*)	
Yamada N, 2000	Retrospective	C (0*)	A (1*)	C (0*)	A (1*)	3 *
		B (0*)	C (0*)		A (1*)	
Youm T, 2005	Retrospective	A (1*)	A (1*)	A (1*)	A (1*)	6 *
		A (1*)	C (0*)		B (1*)	

Table D-3. Methodological quality of before-and-after (BA) studies and cohorts treated as BA studies*

Author, year	Study design	Patients enrolled consecutively	Incomplete outcome data adequately addressed	Standardized approach used to assess outcomes
Audenaert E, 2006	BA	Yes	Yes	Yes
Baysal D, 2005	BA	Unclear	No	Yes
Bennett WF, 2003	BA	Yes	Yes	Unclear
Bennett WF, 2003	Cohort treated as BA	Yes	Yes	Unclear
Boileau P, 2005	BA	Yes	Yes	Yes
Boissonnault WG, 2007	BA	Unclear	No	No
Boszotta H, 2004	BA	No	Yes	Unclear
Caniggia M, 1995	BA	No	Yes	Unclear
Charousset C, 2008	BA	Yes	Yes	No
Checchia SL, 2005	BA	Unclear	Yes	Unclear
Cofield RH, 2001	BA	Yes	Yes	Unclear
Cole BJ, 2007	BA	Yes	Yes	Yes
Cools A, 2006	Cohort treated as BA	Unclear	Yes	Yes
Davidson PA, 2000	BA	Yes	Unclear	Unclear
DeFranco MJ, 2007	BA	Yes	Yes	No
Deutsch A, 2008	Cohort treated as BA	Yes	Yes	Yes
Deutsch A, 2007	BA	Yes	Yes	Yes
Ellman H, 1993	BA	No	Yes	No
Fenlin JM, 2002	BA	Unclear	Yes	Yes
Fuchs B, 2006	BA	Yes	Yes	Unclear

*Cohort for which groups were combined in our analysis and, therefore, considered functionally equivalent to BA studies

Table D-3. Methodological quality of before-and-after (BA) studies and cohorts treated as BAs (continued)

Author, year	Study design	Patients enrolled consecutively	Incomplete outcome data adequately addressed	Standardized approach used to assess outcomes
Gartsman GM, 1998	BA	Yes	Yes	No
Gartsman GM, 1997	BA	Yes	Yes	No
Gazielly DF, 1994	BA	Yes	Yes	Yes
Ghroubi S, 2008	BA	Unclear	Unclear	Unclear
Gladstone JN, 2007	BA	Unclear	Yes	Yes
Hawkins RH, 1995	BA	Yes	No	Yes
Heers G, 2005	BA	Unclear	Yes	Unclear
Henn RF III, 2008	Cohort treated as BA	Unclear	Unclear	Unclear
Hsu SL, 2007	BA	Yes	Yes	Unclear
Iannotti JP, 1996	BA	Yes	Yes	Yes
Ide J, 2007	BA	Yes	Yes	Yes
Ide J, 2005	BA	Yes	Yes	Yes
Kane TP, 2008	BA	Yes	Unclear	Unclear
Kirschenbaum D, 1993	BA	Unclear	Yes	Yes
Klepps S, 2004	BA	Yes	No	Yes
Klinger HM, 2005	BA	Yes	Yes	Yes
Koubaa S, 2006	BA	Unclear	Unclear	Unclear
Kreuz PC, 2005	BA	Unclear	Yes	Unclear
Lafosse L, 2007	BA	Yes	Yes	Unclear
Lafosse L, 2007	BA	Yes	Yes	Yes
Levy O, 2008	BA	Yes	Unclear	Unclear

Table D-3. Methodological quality of before-and-after (BA) studies and cohorts treated as BAs (continued)

Author, year	Study design	Patients enrolled consecutively	Incomplete outcome data adequately addressed	Standardized approach used to assess outcomes
Levy O, 2008	BA	Unclear	Yes	Unclear
Lichtenberg S, 2006	BA	Yes	Unclear	Unclear
Liem D, 2008	BA	Yes	Yes	Unclear
Lim JT, 2005	Cohort treated as BA	Yes	Yes	Yes
Maier D, 2007	BA	Unclear	Yes	Yes
Mallon WJ, 2004	Cohort treated as BA	Yes	Yes	Yes
McBirnie JM, 2005	BA	Unclear	Yes	Unclear
McCallister WV, 2005	BA	Yes	No	No
Misamore GW, 1995	Cohort treated as BA	Yes	Yes	Unclear
Nam SC, 2008	Cohort treated as BA	Unclear	Yes	Yes
Nho SJ, 2009	BA	Yes	No	Unclear
Oh JH, 2008	Cohort treated as BA	Yes	Yes	Yes
Pai VS, 2001	BA	Yes	Yes	Yes
Park JY, 2004	Cohort treated as BA	Yes	Yes	Unclear
Pillay R, 1994	Cohort treated as BA	Unclear	Unclear	No
Porcellini G, 2006	Cohort treated as BA	Yes	Yes	Yes
Prasad N, 2005	BA	Yes	Yes	Yes
Randelli PS, 2008	BA	Unclear	Yes	Unclear
Rokito AS, 1999	BA	Yes	Yes	Yes
Rokito AS, 1996	BA	Yes	Yes	Unclear

Table D-3. Methodological quality of before-and-after (BA) studies and cohorts treated as BAs (continued)

Author, year	Study design	Patients enrolled consecutively	Incomplete outcome data adequately addressed	Standardized approach used to assess outcomes
Scheibel M, 2007	BA	Unclear	Yes	Unclear
Scheibel M, 2004	BA	Unclear	Yes	Unclear
Scheuermann R, 1991	BA	Unclear	Yes	Unclear
Sugaya H, 2007	BA	Yes	Unclear	Unclear
Tashjian RZ, 2008	BA	Unclear	Unclear	No
Tashjian RZ, 2006	BA	Yes	No	No
Tauro JC, 2006	Cohort treated as BA	Yes	Yes	Unclear
Tauro JC, 2004	BA	Yes	Yes	No
Trenerry K, 2005	Case control treated as BA	Yes	Yes	Unclear
Vaz S, 2000	BA	Unclear	Yes	Yes
Vitale MA, 2007	BA	Unclear	Yes	No
Waibl B, 2005	BA	Yes	Yes	Unclear
Zumstein MA, 2008	BA	Yes	Yes	Yes

Appendix E. Evidence Tables

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Audenaert E, 2006 **Country:** Belgium **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Dec 1996 to Aug 2002 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 43 mo (24–86 mo) **Inclusion criteria:** Pre-op ultrasonographic evidence of a primary mass FT-RC tear ≥ 2 tendons measuring > 4 cm (max) thought to be irreparable by simple suture **Exclusion criteria:** Revision repairs	**Enrolled:** 41 **Analyzed:** 39 **Withdrawals:** 2 **Duration since symptom onset, mean (range):** 11.5 mo (3 mo–4.5 yr) **Type of tear:** FTT **Tendon(s) torn:** SS+IS, SS+IS+SC, SS+SC **GROUP 1** **N:** 41 **Age, mean±SD (range):** 67 yr (51–80 yr) **Males %:** 56.1 **Cause of tear:** degenerative (23), traumatic (16) **Tear size:** lg **Dominant shoulder %:** 63.4 **Comorbidities:** partially torn biceps tendon	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenodesis (4) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • acromiohumeral interval • mesh thickness • cuff integrity	Synthetic grafts for massive RC tendon defect combined with subacromial decompression can give significant pain relief and improvement of ROM and strength with few complications for short term periods.

AC = acromioclavicular; ADL = activities of daily living; ant = anterior; ASES =American Shoulder and Elbow Scale; cm = centimeter; CCT = controlled clinical trial; CMS = Constant-Murley score; CPM = continuous passive motion; DASH = Disabilities of the Arm, Shoulder, and Hand; DM = diabetes mellitus; dx = diagnosis; ER = external rotation; FT-RC tear = full-thickness rotator cuff tear; FTT = full-thickness tear; hr = hour; HRQL = health-related quality of life; hx = history; Insalata = L'Insalata Shoulder Rating Questionnaire; IR = internal rotation; IS = infraspinatus; lg = large; JOA = Japanese Orthopaedic Association; LHB = long head of biceps; mass = massive; max = maximum; med = medium; min = minimum; mm = millimeter; MRI = magnetic resonance imaging; mo = month; N = number; NA = not applicable; NOS = not otherwise specified; NR = not reported; NSAID = non-steroidal anti-inflammatory drugs; OA = osteoarthritis; OSS = Oxford Shoulder Score; PENN = University of Pennsylvania Shoulder Score; pos = posterior; post-op = post-operative; pre-op = preoperative; pt(s) = patient(s); PT = physical therapy; PTT = partial thickness tear; QOL = quality of life; RA = rheumatoid arthritis; RC tear = rotator cuff tear; RCR = rotator cuff repair; RCT = randomized controlled trial; rep = repetition; ROM = range of motion; sm = small; SC = subscapularis; SD = standard deviation; SE = standard error; SF-12 = Short-Form (12) Health Survey; SF-36 = Short-Form (36) Health Survey; sec = second; shld = shoulder; SLAP = superior labral from anterior to posterior; SPADI = Shoulder Pain and Disability Index; SS = supraspinatus; SST = simple shoulder test; TM = teres minor; tx = treatment; UCLA = University of California Los Angeles Scale; VAS = visual analog scale; WCB = workers' compensation board; WORC Index = Western Ontario Rotator Cuff Index; yr = year

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Baker CL, 1995 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** No funding	**Recruitment dates:** Jan 1987 to Jan 1990 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, (minimum):** 2 yr **Inclusion criteria:** (1) chronic RC tear + pain, weakness, disability not improved by nonoperative tx >3mo, (2) FTT, (3) RC tear ≤5 cm that had been repaired, (4) follow up ≥ 2 yr, (5) surgical procedure: open RCR, acromioplasty/mini-open RCR and subacromial decompression **Exclusion criteria:** Mass tears	**Enrolled:** 36 (shld: 37) **Analyzed:** 36 (shld: 37) **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 20 (shld: 20) **Age, mean±SD (range):** 62 yr. (38-81 yr.) **Males %:** 60 **Cause of tear: NR** **Tear size:** sm, med, lg **Dominant shoulder %:** 50 **Comorbidities:** NR **GROUP 2** **N:** 16 (shld: 17) **Age, mean±SD (range):** 59 yr. (41-71 yr.) **Males %:** 56.3 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 81.3 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 3); active-assisted stretching (wk. 3–6 or 8); strengthening (wk 6–8) **Rehab regime:** NR **GROUP 2** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** none **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 3); active-assisted stretching (wk 3–6 or 8); strengthening (wk 6–8) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** • VAS **ROM:** • flexion • abduction • external rotation **Strength:** • flexion • abduction • external rotation **Other:** • time to return to work • days of hospitalization • cuff integrity	Arthroscopically assisted RCR is as effective as open repair in the surgical tx of symptomatic complete RC tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Baysal D, 2005 **Country:** Canada **Treatment category:** Operative **Questions:** Q2 **Funding:** NR **BA Quality:** Consecutive: U Followup: N Outcome assessment: Y	**Recruitment dates:** Apr 1997 to Jul 2000 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (endpoint):** 1–5 yr **Inclusion criteria:** Symptomatic FTT confirmed by MRI or arthrogram **Exclusion criteria:** (1) previous surgery of affected shld, (2) PTT, (3) SC involvement, (4) Bankart lesions or severe glenohumeral OA	**Enrolled:** 84 **Analyzed:** 60 **Withdrawals:** 24 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS+TM **GROUP 1** **N:** 84 **Age, mean±SD (range):** 53.2±9.9 yr (22–82 yr) **Males %:** 72.6 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** biceps, labral and/or articular abnormalities in addition to tears (35)	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); SLAP repair (NR); biceps tenotomy/tenodesis (NR) **Duration of immobilization:** 6 wk. **Duration of rehab:** 26 wk **Rehab components:** passive/active-assisted stretching (wk 1–6); active stretching and strengthening (wk 6–10); strengthening and therapist-assisted joint mobilization (wk 10–26) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** • WORC Index **Function:** • ASES **Pain:** NR **ROM:** • flexion (standing) • flexion (supine) • external rotation (arm at side) • external rotation (arm abducted) **Strength:** NR **Other:** • return to work status • satisfaction	Mini-open RCR led to improved shoulder function and health related quality of life up to 5 yr post surgery.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Bennett WF, 2003 **Country:** USA **Treatment category:** Operative **Questions:** Q2 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** 1997 to 1999 **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.2 yr (2–4 yr) **Inclusion criteria:** Mass RC tear **Exclusion criteria:** (1) stage 4 fatty degeneration, (2) loss of passive ROM, (3) arthroscope identified intra-articular lesion, (4) RC tear + stiff shld, (5) cartilage damage; (6) SLAP lesion, (7) concomitant Bankart lesion, (8) labral tear	**Enrolled:** 37 **Analyzed:** 37 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 29 **Age, mean±SD (range):** 68.2 yr (NR) **Males %:** 58.6 **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** 86.2 **Comorbidities:** NR **GROUP 2** **N:** 8 **Age, mean±SD (range):** 63 yr (NR) **Males %:** 75 **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** 100 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** inferolateral coracoplasty **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 3); strengthening (wk 6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures:** inferolateral coracoplasty **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 3); strengthening (wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • percent function • CMS **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** • satisfaction	The arthroscopic RCR of massive RC tear is effective for decreasing pain and improving the functional status of the shld for most patients.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Bennett WF, 2003 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** 1997 to 1999 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** NR (2-4 yr.) **Inclusion criteria:** (1) FTT with involvement of the SS tendon alone, (2) positive Jobe test **Exclusion criteria:** (1) RC tear with involvement of the SC, IS or either of the medial or lateral heads of the coracohumeral ligament; (2) PTT; (3) pts with FTT and loss of passive ROM or an intra-articular lesion	**Enrolled:** 24 **Analyzed:** 24 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 24 **Age, mean±SD (range):** 59.9 yr. (NR) **Males %:** 58.3 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** 79.2 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (NR) **Duration of immobilization:** 6 wk. **Duration of rehab:** NR **Rehab components:** passive stretching–wk. 1-6; strengthening–wk. 6; active-assisted stretching–wk. 6; active stretching–wk. 9; **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo. (min) **Type of treatment:** physical therapy NOS; cortisone injection; NSAID	**HRQL:** NR **Function:** • CMS • ASES **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** • percent function	Arthroscopic RCR is effective for improving the functional status of the shoulder.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Bennett WF, 2003 **Country:** USA **Treatment category:** Operative technique **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** 1995 to 1999 **Study design:** prospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** NR (2–4 yr) **Inclusion criteria:** (1) PTT and FTT of SC tendon, (2) FTT of SS lesion **Exclusion criteria:** (1) involvement of any other tendon of the RC, (2) PTT of SS tendon, (3) auto accidents, (4) pts with an intra-articular lesion	**Enrolled:** 35 **Analyzed:** 19 **Withdrawals:** 16 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SC **GROUP 1** **N:** 9 **Age, mean±SD (range):** 58 yr (NR) **Males %:** 55.6 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 100 **Comorbidities:** biceps pathology (total from both groups: 18) **GROUP 2** **N:** 10 **Age, mean±SD (range):** 64 yr (NR) **Males %:** 70 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 100 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** NR **Technique:** bioabsorbable tacs **Duration of immobilization:** 3 wk (daytime); 6 wk (nighttime) **Duration of rehab:** NR **Rehab components:** passive stretching (wk 6); active-assisted stretching (≥wk 6 wk; strengthening (≥wk 6); active stretching (≥wk 9) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** biceps tenotomy/tenodesis (NR) **Technique:** routine suture tying with metal corkscrew **Duration of immobilization:** 4 wk (daytime); 6 wk (nighttime) **Duration of rehab:** NR **Rehab components:** passive stretching (wk 6); active-assisted stretching (≥wk 6); strengthening (≥wk 6); active stretching (≥wk 9) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • ASES • percent function **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	Arthroscopic repair of anterosuperior RC tear provides improvement in function, decreases in pain, decreases in clinical findings of biceps subluxation and inflammation, improvement in shoulder scores, and increased clinical findings of subscapularis insufficiency.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Bigoni M, 2009 **Country:** Italy **Treatment category:** Operative technique **Questions:** Q2, Q6 **Funding:** NR **ROB:** High	**Recruitment dates:** Sept 2004 to Sept 2006 **Study design:** RCT (parallel) **Enrolled consecutively:** yes **Followup duration, mean (range):** 12 mo **Inclusion criteria:** (1) age 50–65 year, (2) FTT of SS with an intact SC, (3) healthy contralateral shoulder, (4) concomitant pathology of LHB **Exclusion criteria:** (1) PTT, (2) mass RC tears, (3) previous surgery on affected shoulder, (4) degenerative OA of glenohumeral joint, (5) neurologic pathology, (6) cervical slipped disk, (7) WCB, (8) disease of opposite shoulder	**Enrolled:** 50 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 25 **Age, mean±SD (range):** NR **Males %:** 40 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 84 **Comorbidities:** NR **GROUP 2** **N:** 25 **Age, mean±SD (range):** NR **Males %:** 56 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 88 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** NR **Technique:** side-to-side repair & permanent sutures **Duration of immobilization:** NR **Duration of rehab:** >6 mo **Rehab components:** neutral rotation in sling (day 1–wk 4); passive stretching with pool therapy (≥wk 3); active-assisted stretching (≥wk 6); isometric, isotonic & isokinetic training after full ROM **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** NR **Technique:** tendon-to-bone fixation & metal suture anchors (double sutures) **Duration of immobilization:** NR **Duration of rehab:** >6 mo **Rehab components:** neutral rotation in sling (day 1–wk 4); passive stretching with pool therapy (≥wk 3); active-assisted stretching (≥wk 6); isometric, isotonic & isokinetic training after full ROM **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** • IR peak torque % • ER peak torque %	There was a significant difference in strength between the groups, favouring the tendon-to-bone over the side-to-side technique for arthroscopic repairs.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Bishop J, 2006 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q6 **Funding:** Government, foundation **NOS:** 5*/8*	**Recruitment dates:** 1996 to 2002 **Study design:** Prospective cohort **Enrolled consecutively:** yes **Followup duration, (endpoint):** 1 yr **Inclusion criteria:** FTT confirmed by MRI **Exclusion criteria:** (1) glenohumeral arthritis, (2) fracture, (3) osteonecrosis labral pathology; 4) unable/unwilling to undergo MRI	**Enrolled:** 102 **Analyzed:** 72 **Withdrawals:** 30 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 47 **Age, mean±SD (range):** 64 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** sm,med, lg, mass (mean: 2.6 cm) **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 55 **Age, mean±SD (range):** 64 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** sm, med, lg, mass (mean: 3.0 cm) **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (24); mini-open (8) **Type of surgery:** repair **Additional procedures (N):** distal clavical resection (4); revision surgery (2); capsular release (all) **Duration of immobilization:** 6 wk **Duration of rehab:** 3–4 mo **Rehab components:** passive stretching (wk 1–6); active stretching (wk ≥6); strengthening (wk 6–12 or 16) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** distal clavicle resection (11); revision (1) **Duration of immobilization:** 6 wk **Duration of rehab:** 3–4 mo **Rehab components:** passive stretching (wk 1–6); active stretching (wk ≥6); strengthening (wk 6–12 or 16) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • CMS **Pain:** • VAS **ROM:** NR **Strength:** • flexion • external rotation **Other:** • cuff integrity	Open and arthroscopic RCR have similar clinical outcomes.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Boehm TD, 2005 **Country:** Germany **Treatment category:** Operative technique **Questions:** Q2, Q5, Q6 **Funding:** No funding **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** Group 1: 27 mo (24–30); Group 2: 26 mo (24–29) **Inclusion criteria:** (1) repairable, nontraumatic FTT (1–5 cm), (2) suitable for direct tendon-to-bone repair **Exclusion criteria:** (1) previous shld surgery, (2) presence of os acromiale, (3) neurological deficit in upper limb, (4) cervical disc disease, (5) systemic locomotor disease, (6) metastatic malignancy, (7) >grade 1 glenohumeral OA, (8) SC tear requiring repair, (9) shld instability	**Enrolled:** 100 **Analyzed:** 93 **Withdrawals:** 7 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 50 **Age, mean±SD (range):** 56 yr (38–69 yr) **Males %:** 72 **Cause of tear:** degenerative (44), traumatic (5) **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** rupture of long head biceps (4) **GROUP 2** **N:** 50 **Age, mean±SD (range):** 57 yr (41–71 yr) **Males %:** 64 **Cause of tear:** degenerative (49), traumatic (1) **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** rupture of LHB (2)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/ tenodesis (9); lateral clavicle resection (40) **Suture/anchor type:** non-absorbable suture with Mason-Allen technique; side-to-side sutures **Duration of immobilization:** 6 wk **Duration of rehab:** 6 wk **Rehab components:** passive stretching (day 1–wk 6); CPM (day 1–wk 6); active stretching (wk ≥6) **Rehab regime:** Frequency–passive stretching, 3x/wk.; active stretching 2x daily; Intensity–CPM, 30 min **GROUP 2** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (10); lateral clavicle resection (34) **Suture/anchor type:** absorbable suture with modified Kessler technique; side-to side sutures **Duration of immobilization:** 6 wk **Duration of rehab:** 6 wk	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • pt satisfaction • pt willingness to have the same surgery again • cuff integrity	The advantages of special suture techniques and non-absorbable materials are unproven in the clinical setting in terms of both clinical outcome and rate of recurrence. Absorbable suture material may have advantages in repair of the RC when the quality of the tendon is poor.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Boehm TD, 2005 (continued)			**Rehab components:** passive stretching (day 1–wk 6); CPM (day 1–wk 6); active stretching (wk ≥6) **Rehab regime:** Frequency–passive stretching, 3x/wk; active stretching, 2x daily; Intensity–CPM, 30 min **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR		

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Boileau P, 2007 **Country:** France **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** No funding **NOS:** 6*/8*	**Recruitment dates:** Oct 1999 to Feb 2002 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean±SD (range):** 35±7 mo (24–76 mo) **Inclusion criteria:** (1) mass, irreparable RC tear; (2) treated with tenotomy or tenodesis **Exclusion criteria:** (1) concomittant procedure (attempted RCR, acromioplasty, or other); (2) previous surgery	**Enrolled:** 78 (shld: 82) **Analyzed:** 68 (shld: 72) **Withdrawals:** 10 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** shld: 39 **Age, mean±SD (range):** all groups: 68 yr (52–85 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** 80.8 (all groups) **Comorbidities:** lesion of LHB (all groups) **GROUP 2** **N:** shld: 33 **Age, mean±SD (range):** see group 1 **Males %:** NR **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** see group 1 **Comorbidities:** see group 1	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** NA **Additional procedures (N):** biceps tenotomy/tenodesis (39)/(36) **Duration of immobilization:** 2–3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1); strengthening (wk ≥6) **Rehab regime:** Frequency–5x/day; Intensity–5 min. **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** NA **Additional procedures (N):** biceps tenotomy/tenodesis (39)/(36) **Duration of immobilization:** 2-3 wk. **Duration of rehab:** NR **Rehab components:** passive stretching (day 1); strengthening (wk ≥6) **Rehab regime:** Frequency–5x/day; Intensity–6 min. **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** • flexion (active) • external rotation (active) • internal rotation • external rotation (passive) • flexion (passive) **Strength:** NR **Other:** • number of pts satisfied with procedure • post-op symptoms related to biceps	Both arthroscopic biceps tenotomy and tenodesis can effectively treat severe pain or dysfunction caused by irreparable RC tears associated with biceps lesions.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Boileau P, 2005 **Country:** France **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** May 1999 to Dec 2001 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 29 mo (24–46 mo) **Inclusion criteria:** (1) chronic FTT limited to SS tendon, (2) arthroscopic RCR, (3) evaluation of tendon healing and cuff integrity at least 6 mo after surgery, (4) clinical exam ≥2 yr after surgery **Exclusion criteria:** (1) PTT, (2) partial repair, (3) previous operation on involved cuff	**Enrolled:** 65 **Analyzed:** 65 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 2.2 yr (7 mo–20 yr) **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 65 **Age, mean±SD (range):** 60 yr (29–79 yr) **Males %:** 49.2 **Cause of tear:** degenerative (36), traumatic (29) **Tear size:** sm, med, lg **Dominant shoulder %:** 76.9 **Comorbidities:** biceps pathology (56)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (61); biceps tenotomy/tenodesis (3)/(53); resection of distal clavicle (4) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); CPM (wk 3); hydrotherapy encouraged **Rehab regime:** Frequency–5x/day; Intensity–5 min **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection, medication NOS	**HRQL:** NR **Function:** • CMS • UCLA • SST **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Arthroscopic RCR leads to complete tendon healing. Patients with associated delamination of SC and/or IS and >65 yr have significantly lower healing.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Boissonnault WG, 2007 **Country:** USA **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q6 **Funding:** Professional association **BA Quality:** Consecutive: U Followup: N Outcome assessment: N	**Recruitment dates:** May 2002 to Jun 2003 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean±SD (range):** 13±5.1 wk (3–28 wk) **Inclusion criteria:** (1) recent surgical repair of RC tear + outpatient rehab, (2) >45 yr **Exclusion criteria:** (1) involved in litigation for shld condition, (2) previous shld surgery, (3) concurrent significant shld injuries (fracture or dislocation), (4) worker compensation/ permanent disability of shld	**Enrolled:** 118 **Analyzed:** 86 **Withdrawals:** 32 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 118 **Age, mean±SD (range):** 67±8.6 yr (49–82 yr) **Males %:** 31.4 **Cause of tear:** traumatic (86) **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** BMI >25; high blood pressure; degenerative OA; asthma; depression; headache; pneumonia; kidney disease; sinus infection	**GROUP 1** **Surgical approach:** open (NR) or all-arthroscopic (NR) **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** 12 wk **Rehab components:** passive stretching (wk 1–16); active stretching (wk 1–16); active-assisted stretching (wk 2/3–16); strengthening (wk 2/3–16); Modalities as needed for pain; cold; transcutaneous electrical nerve stimulation **Rehab regime:** Frequency– daily; Intensity–2x/day (home program) **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS	**HRQL:** • SF-36 **Function:** • DASH **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	The presence of medical comorbidities should not be considered a negative factor for RCR and subsequent rehabilitation. However, the impact of general health status should be considered by physical therapists for postoperative progression.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Boszotta H, 2004 **Country:** Austria **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: N Followup: Y Outcome assessment: U	**Recruitment dates:** 1997 to NR **Study design:** before-and-after **Enrolled consecutively:** No **Followup duration, mean (range):** 35 mo (28–44 mo) **Inclusion criteria:** Failed nonoperative tx **Exclusion criteria:** NR	**Enrolled:** 84 **Analyzed:** 84 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 84 **Age, mean±SD (range):** 54.8 yr (32–74 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** biceps pathology (32)	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy (7) **Duration of immobilization:** 3–4 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–3/4); active stretching (wk ≥4) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3–14 mo (range) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • CMS • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Arthroscopically assisted repair of the RC was shown to be an effective procedure with good clinical results for medium and large tears with adequate mobility, including primary stability comparable to that seen with open repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Brady B, 2008 **Country:** Australia **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** Nov 2004 to Apr 2005 **Study design (trial type):** CCT (parallel) **Enrolled consecutively:** yes **Followup duration (endpoint):** 12 wk **Inclusion criteria:** (1) >18 yr, (2) symptoms >3 mo and <12 mo, (3) transportation for appointments, (4) diagnostic evidence of RC tear **Exclusion criteria:** NR	**Enrolled:** 18 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 12 **Age, mean±SD (range):** 56.3±9 yr (41–67 yr) **Males %:** 66.7 **Cause of tear:** NR **Tear size:** sm, med, lg, mass **Dominant shoulder %:** 50 **Comorbidities:** NR **GROUP 2** **N:** 6 **Age, mean±SD (range):** 53.5±16 yr (26–69 yr) **Males %:** 50 **Cause of tear:** NR **Tear size:** sm, med, lg, mass **Dominant shoulder %:** 66.7 **Comorbidities:** NR	**GROUP 1** **Duration of immobilization:** NR **Duration of rehab:** 12 wk **Rehab components:** passive stretching (wk 1–3); active-assisted stretching (wk 4–6); strengthening (wk 10–12); aquatic therapy (day 10–wk 6 or 10) **Rehab regime:** Frequency– land, 5x/day; Intensity–land,10 reps; aqua, 3 sets of 5–10 reps **GROUP 2** **Duration of immobilization:** NR **Duration of rehab:** 12 wk **Rehab components:** passive stretching (wk 1–3); active-assisted stretching (wk 4–6); strengthening (wk 10–12) **Rehab regime:** Frequency– 5x/day; Intensity–10 reps **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** • WORC index **Function:** NR **Pain:** NR **ROM:** • flexion • external rotation **Strength:** NR **Other:** NR	A combined aquatic and land-based physical therapy program following surgical RCR has comparable outcomes with a conventional land-based program.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Buess E, 2005 **Country:** Switzerland **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** Mar 1999 to Feb 2001 **Study design:** prospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 24.6 mo (15–40 mo) **Inclusion criteria:** (1) RCR with bony reattachment, (2) surgery performed by the same surgeon **Exclusion criteria:** (1) intratendinous sutures, (2) open repair by a different surgeon	**Enrolled:** 95 (shld: 99) **Analyzed:** 92 (shld: 96) **Withdrawals:** 3 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** Group 1: SS and/or IS, SC Group 2: SS and/or IS **GROUP 1** **N:** 29 (shld: 30) **Age, mean±SD (range):** 48.3 yr (18–73 yr) **Males %:** 72.4 **Cause of tear:** degenerative (11), traumatic (18) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 63 (shld: 66) **Age, mean±SD (range):** 53.2 yr (20–77 yr) **Males %:** 69.8 **Cause of tear:** degenerative (19), traumatic (44) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (NR), mini-open (NR) **Type of surgery:** repair and debridement **Additional procedures (N):** biceps /tenodesis (9); SLAP repair (1); AC resection (5) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching; active stretching **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** biceps tenodesis (10); SLAP repair (19) + AC resection (9) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** active-assisted stretching (wk 1–6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** physical thearpy NOS	**HRQL:** NR **Function:** • SST **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** • mean days free of pain • number of pts satisfied	Equal or better results were obtained by arthroscopic RCR than open RCR. Pain decreased and a better functional result concerning mobility in patients with arthroscopic RCR was achieved. Arthroscopic repair is successful for large and small tears. Biomechanically, large tears might benefit more than small tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Burks RT, 2009 **Country:** USA **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** Industry **ROB:** High	**Recruitment dates:** NR **Study design:** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 12 mo **Inclusion criteria:** (1) FTT on MRI, (2) complete serial MRIs, (3) willingness to undergo standard RC physical therapy, (4) willingness to be randomized to single-row or double-row repair, (5) repairable tear when evaluated at the time of surgery **Exclusion criteria:** (1) active hx of smoking, (2) autoimmune or rheumatological disease, (3) active use of steroids, (4) previous RC surgery on the affected shoulder, (5) irrepairable RC tear, (6) WCB, (7) significant SC tear, (8) tear pattern that required a significant side-to-side repair	**Enrolled:** 40 **Analyzed:** 40 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SC **Cause of tear:** degenerative (15), traumatic (25) **GROUP 1** **N:** 20 **Age, mean±SD (range):** 57 yr (41–81 yr) **Males %:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 20 **Age, mean±SD (range):** 56 yr (43–74 yr) **Males %:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); distal clavicle resection (8); debridement of frayed upper SC (3); biceps tenodesis/tenotomy (total: 7); debridement of SLAP lesion (total: 1) **Technique:** double-row repair **Duration of immobilization:** <1 wk **Duration of rehab:** >6 mo **Rehab components:** passive stretching (1 wk); active-assisted stretching (4–6 wk); active stretching (6–8 wk); strengthening (10–12 wk) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); distal clavicle resection (4); debridement of frayed upper SC (3); biceps tenodesis/tenotomy (total: 7); debridement of SLAP lesion (total: 1) **Technique:** single-row repair **Duration of immobilization:** <1 wk **Duration of rehab:** >6 mo **Rehab components:** passive stretching (1 wk); active-assisted	**HRQL:** • WORC Index **Function:** • ASES • CMS • Single Assessment Numeric Evaluation • UCLA **Pain:** NR **ROM:** NR **Strength:** • internal rotation • external rotation **Other:** • Cuff integrity	No clinical or MRI differences were seen between patients repaired with a single-row or double-row technique.

Burks RT, 2009 (continued)	stretching (4–6 wk); active stretching (6–8 wk); strengthening (10–12 wk) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Caniggia M, 1995 **Country:** Italy **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: N Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** No **Followup duration, mean (range):** 17.5 mo (6–24 mo) **Inclusion criteria:** (1) <60 yr; (2) no history of DM or decreased heritable connective tissue disorders; (3) no osteopenia, osteoporosis, OA, bony cysts, subacromial sclerosis, acromial spurs **Exclusion criteria:** NR	**Enrolled:** 34 **Analyzed:** 34 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 10.7 mo (1 mo–3 yr) **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 34 **Age, mean±SD (range):** 41.2 yr (22–56 yr) **Males %:** 58.8 **Cause of tear:** traumatic (34) **Tear size:** all sizes **Dominant shoulder %:** 85.3 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** *sm to lg tears:* passive stretching (day 4); active stretching (day 20); *mass tears:* passive stretching (day 20); active stretching following passtive stretching **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	The use of titanium anchors shortens postoperative time and UCLA score is comparable with the traditional technique. Titanium anchors should not be used when bone quality is poor or good patient compliance is doubtful.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Charousset C, 2008 **Country:** France **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: N	**Recruitment dates:** Jan 2001 to Dec 2003 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration (maximum):** 2 yr **Inclusion criteria:** (1) FTT and chronic shld pain, (2) min 6 mo nonoperative tx **Exclusion criteria:** (1) PTT, (2) shld instability, (3) prior shld surgery, (4) OA, (5) allergy to iodine, (6) total rupture of the SC tendon	**Enrolled:** 114 **Analyzed:** 104 **Withdrawals:** 10 **Duration since symptom onset, mean (range):** 15.2 mo (1 mo–10.2 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+SC, SS+IS+SC **GROUP 1** **N:** 114 **Age, mean±SD (range):** 59.4 yr (32–78 yr) **Males %:** 46.5 **Cause of tear:** degenerative (80), traumatic (34) **Tear size:** NR **Dominant shoulder %:** 84.2 **Comorbidities:** degenerative disease (80)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (60)/(2); coplaning of AC joint (18) **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo **Rehab components:** passive stretching (day 1–wk 6); active stretching (wk 6–3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • number of pts satisfied • cuff integrity	Good results in a terms of functional recovery can be achieved by arthroscopic RCR. Female sex, upper-limb heavy work, and poor bone quality are negative prognostic factors.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Charousset C, 2007 **Country:** France **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** Oct 2001 to Mar 2003 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 28.1 mo (24–40 mo) **Inclusion criteria:** (1) no previous surgery, (2) no sign of adhesive capsulitis or shld instability, (3) complete SS tear **Exclusion criteria:** (1) irreparable tear, (2) extension of SS tear to more than 1/3 of SC or IS tendon	**Enrolled:** 66 **Analyzed:** 61 **Withdrawals:** 5 **Duration since symptom onset, mean (range):** Group 1: 14.7 mo (1–73 mo); Group 2: 11.9 mo (1–52 mo) **Type of tear:** NR **Tendon(s) torn:** IS, SC, SS **GROUP 1** **N:** 31 **Age, mean±SD (range):** 60 yr (37–62 yr) **Males %:** 51.6 **Cause of tear:** degenerative (22), traumatic (9) **Tear size:** NR **Dominant shoulder %:** 74.2 **Comorbidities:** NR **GROUP 2** **N:** 35 **Age, mean±SD (range):** 58 yr (32–74 yr) **Males %:** 42.9 **Cause of tear:** degenerative (26), traumatic (9) **Tear size:** NR **Dominant shoulder %:** 77.1 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy (9) **Technique:** double-row anchor; side-to-side suture **Duration of immobilization:** 5 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–5 wk); active stretching (wk ≥6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy (5) **Technique:** single-row anchor; side-to-side suture **Duration of immobilization:** 5wk. **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (wk ≥6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** ≥6 mo (min) **Type of treatment:** physical therapy NOS; infiltrations, medication NOS	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • time to return to work • number of pts back to work • cuff integrity	No significant difference in clinical results, but tendon healing rates were better with the double-row anchorage. Improvements in the double-row technique might lead to better clinical and tendon healing results.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Checchia SL, 2005 **Country:** Brazil **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 2.7 yr (20 mo–5.6 mo) **Inclusion criteria:** 1) RC tear associated with severe biceps tendon lesions **Exclusion criteria:** 1) self-adherent rupture (no mobility of the biceps tendon)	**Enrolled:** 15 **Analyzed:** 15 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR (7 mo.) **Type of tear:** FTT **Tendon(s) torn:** SS , SS+IS, SS+IS+SC, SS+SC **GROUP 1** **N:** 15 **Age, mean±SD (range):** 62 yr (41–80 yr) **Males %:** 60 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 100 **Comorbidities:** SLAP lesion (1); biceps tendon: dislocation (6); subluxated (2); severe incomplete tear (7)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); labral repair (1); biceps tenodesis (all); resection of distal clavicle (10) **Duration of immobilization:** 4–6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk ≥6); active stretching (wk 6–8+) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** NR **Pain:** NR **ROM:** • flexion • external rotation • internal rotation **Strength:** NR **Other:** NR	The suture involving the RC and the biceps tendon was effective to correct both lesions.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Cofield RH, 2001 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** Jan 1975 to Dec 1983 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 13.4 yr (2–22 yr) **Inclusion criteria:** (1) ≥2 yr post operative, (2) open surgical repair of chronic FTT **Exclusion criteria:** NR	**Enrolled:** 97 (shld: 105) **Analyzed:** 97 (shld: 105) **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 2.5 yr (1 mo–15 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, IS, SS+SC, SS+IS+SC, SS+IS **GROUP 1** **N:** 97 (shld: 105) **Age, mean±SD (range):** 58 yr (38–75 yr) **Males %:** 74.2 **Cause of tear:** degenerative (43), traumatic (62) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** mild glenohumeral arthritis (3); biceps pathology (44)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (3) **Duration of immobilization:** 4–6 wk. **Duration of rehab:** NR **Rehab components:** passive stretching (day 2–wk 4/6); active-assisted stretching and strengthening (wk 4/6); strengthening (≥3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** injections (mean/range): 2 (1–15) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** NR **Pain:** NR **ROM:** • abduction (active) • internal rotation • external rotation **Strength:** • abduction • flexion • external roation **Other:** • number pts return to work, sports	Standard tendon repair techniques combined with anterior acromioplasty, posterior operative limb protection, and monitored physical therapy can produce consistent and lasting relief and improvement in ROM.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Cole BJ, 2007 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** 2001 to 2004 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.7 yr (2–3.8 yr) **Inclusion criteria:** Symptomatic FTT **Exclusion criteria:** (1) prior shld surgery; (2) ongoing litigation; (3) ipsilateral greater tuberosity or clavicle fracture; (4) adhesive capulitis contaminant tear in the labrum; (5) SC, TM tear	**Enrolled:** NR (shld: 55) **Analyzed:** 47 (shld: 49) **Withdrawals:** 6 shld **Duration since symptom onset, mean (range):** 17 mo (2 mo–16.4 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS **GROUP 1** **N:** 47 (shld: 49) **Age, mean±SD (range):** 57 yr (34–80 yr) **Males %:** 59.6 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 74.5 **Comorbidities:** biceps pathology (23)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** biceps tenotomy/tenodesis (4)/(19) **Duration of immobilization:** 4 wk **Duration of rehab:** 4–6 mo **Rehab components:** passive stretching (day 1–wk 4); active-assisted stretching (wk 4–6); strengthening (wk 6–12) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • SST • ASES • Rowe test • SF-12 **Pain:** • VAS **ROM:** • flexion • external rotation • abduction **Strength:** • flexion • external rotation **Other:** • cuff integrity	All outcomes improved after a short term followup after arthroscopic RCR. Significant differences were present in age, active ROM, and strength between intact and retear group.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Colegate-Stone T, 2009 **Country:** UK **Treatment category:** Operative approach **Questions:** Q2 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** 2003-2006 **Study design:** Prospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 24 mo **Inclusion criteria:** (1) RC repair **Exclusion criteria:** (1) other significant glenohumeral pathology	**Enrolled:** 123 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 31 **Age, mean±SD (range):** 62 yr **Males %:** 52 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 92 **Age, mean±SD (range):** 57 yr **Males %:** 36 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • DASH • OSS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Arthroscopic RCR is comparable with the mini-open repair with well correlated postoperative recovery rates.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Cools A, 2006 **Country:** Belgium **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 18 mo (12–20 mo) **Inclusion criteria:** Group 1: FTT repaired in the same hospital by the same surgeon Group 2: healthy participants **Exclusion criteria:** (1) prior surgery to the shld, (2) neurologic pathology	**Enrolled:** 53 **Analyzed:** 53 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 24 **Age, mean±SD (range):** 57.2±9.8 yr **Males %:** 45.8 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** all groups: 79.2 **Comorbidities:** NR **GROUP 2** **N:** 29 **Age, mean±SD (range):** 56.4±9.8 yr (NR) **Males %:** 44.8 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** see group 1 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** >12 wk **Rehab components:** strengthening (wk 1–12) **Rehab regime:** NR **GROUP 2** **Surgical approach:** none **Type of surgery:** NA **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** • internal rotation 60°/sec and 180°/sec • external rotation 60°/sec and 180°/sec **Other:** NR	Shoulder function is not completely normalised, although significant strength gains are present 18 mo after RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Costouros JG, 2006 **Country:** NR **Treatment category:** Operative approach **Questions:** Q2 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** NR **Study design:** Retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** G1: 24 mo (12 mo–4 yr) G2: 18 mo (12 mo–3.5 yr) **Inclusion criteria:** (1) isolated FTT of SS **Exclusion criteria:** NR	**Enrolled:** 37 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 19 **Age, mean±SD (range):** 57 yr (40–75 yr) **Males %:** 74 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 18 **Age, mean±SD (range):** 54 yr (34–65 yr) **Males %:** 67 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open RCR **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • fatty infiltration	Isolated SS FTT can be treated with open or arthroscopic repair but open repair is associated with increased progression of fatty degeneration.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Cummins CA, 2003 **Country:** USA **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** Sept 1999 to May 2000 **Study design:** Prospective cohort **Enrolled consecutively:** yes **Followup duration (endpoint):** 1 yr **Inclusion criteria:** (1) RC tear <4cm², (2) involved only SS **Exclusion criteria:** NR	**Enrolled:** 27 **Analyzed:** 27 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** SS **GROUP 1** **N:** 18 **Age, mean±SD (range):** 63±8 yr (NR) **Males %:** 66.7 **Cause of tear:** NR **Tear size:** mean: 1.9 cm² **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 9 **Age, mean±SD (range):** 58±10 yr (NR) **Males %:** 77.8 **Cause of tear:** NR **Tear size:** mean: 1.1 cm² **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** Mitek metal RC suture anchors; mattress stitch configuration **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** headed bio-corkscrews **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • Shoulder overall function rating **Pain:** NR **ROM:** • abduction **Strength:** NR **Other:** NR	Found poorer early outcomes and a lower shoulder function score 1 yr after repair, and a higher rate of repeat surgery in repair with a bioabsorbable screw than with a standard metal suture anchors.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Davidson PA, 2000 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: U Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration (minimum):** 24 mo **Inclusion criteria:** FTT **Exclusion criteria:** NR	**Enrolled:** 63 (shld: 67) **Analyzed:** 63 (shld: 67) **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 63 (shld: 67) **Age, mean±SD (range):** 62.5 yr (41–83 yr) **Males %:** 61.9 **Cause of tear:** NR **Tear size:** mean: 6.6 cm²; range: 0.6–25 cm² **Dominant shoulder %:** 63.5 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** lg / mass tears: open; sm / med tears: all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty–open (30), all-arthroscopic (42); distal clavicle resection (13) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Increased tension repairs are associated with poor functional outcomes.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
De Carli A, 2006 **Country:** Italy **Treatment category:** Nonoperative vs. operative **Questions:** Q4 **Funding:** Industry **ROB:** High	**Recruitment dates:** Oct 2001 to Mar 2004 **Study design:** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** G1: 19 mo (12 mo–2.2 yr); G2: 24 mo (12 mo–3 yr) **Inclusion criteria:** (1) complete RCT **Exclusion criteria:** NR	**Enrolled:** 30 **Analyzed:** NR **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 20 **Age, mean±SD (range):** 56 yr (43–74) yr **Males %:** NR **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 20 **Age, mean±SD (range):** 57 yr (41–81 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Intervention:** electromagnetic shock wave therapy **Drug name:** NR **Duration of treatment:** NR **Treatment Regime:** NR **Degree of supervision:** NR **Treatment provider:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • CMS • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Surgical tx shows better overall results for strength and function than ESWT.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
DeFranco MJ, 2007 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: N	**Recruitment dates:** May 2000 to Mar 2003 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 22.3 mo (12 mo–3 yr) **Inclusion criteria:** (1) isolated SS tear, (2) failure of nonoperative tx **Exclusion criteria:** (1) previous shld surgery, (2) instability, (3) symptomatic AC joint pathology, (4) glenohumeral OA, (5) active infection, (6) stiffness	**Enrolled:** 30 **Analyzed:** 30 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (22); PTT (8) **Tendon(s) torn:** SS **GROUP 1** **N:** 30 **Age, mean±SD (range):** 56.3±12.3 yr (30–78 yr) **Males %:** 63.3 **Cause of tear:** NR **Tear size:** sm, med, mean: 2.3 cm **Dominant shoulder %:** NR **Comorbidities:** biceps pathology (4), SLAP lesion (3), immobile mesoacromiale (1), coronary artery disease/heart attack/ cerebrovascular disease or a stroke/ congestive heart failure/ peripheral vascular disease/ dementia / chronic obstructive pulmonary disease/ connective tissue disease	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (29); biceps tenotomy/tenodesis (4) **Duration of immobilization:** NR **Duration of rehab:** 6 mo **Rehab components:** passive stretching (day 1–wk 6); active stretching and strengthening (wk 6–6 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** • SF-36 **Function:** • PENN **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • actual physical activity • cuff integrity	Confirmed that RC integrity and functional outcomes after repair of small and medium sized SS tendon tear are improved by single-row arthroscopic repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Delbrouck C, 2003 **Country:** France **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 2*/8*	**Recruitment dates:** NR **Study design:** Prospective cohort **Enrolled consecutively:** NR **Followup duration (endpoint):** 60 days **Inclusion criteria:** (1) RC tear due to overuse, (2) surgical RCR by simple suture or "systeme d'ancrape" **Exclusion criteria:** (1) non-operated RC tear, (2) isolated acromioplasty, (3) isolated ruptures of SC, (4) tendon transfers or deltoid flaps, (5) retractable capsularis preoperative, (6) previous shld surgry, (7) associated surgical procedures (prosthesis Rx for instability), (8) RC tear associated with fractures	**Enrolled:** 79 (shld: 84) **Analyzed:** 71 (shld: 76) **Withdrawals:** 8 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (71) PTT (13) **Tendon(s) torn:** NR **GROUP 1** **N:** shld: 53 **Age, mean±SD (range):** 52.7±8 yr (NR) **Males %:** 47.2 **Cause of tear:** Degenerative (53) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** shld: 23 **Age, mean±SD (range):** 55±5 yr (NR) **Males %:** 69.6 **Cause of tear:** degenerative (23) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (20); mini-open (12); all-arthroscopic (21) **Type of surgery:** repair **Additional procedures (N):** acromioplasty (53); labral repair (NR); biceps tenotomy/tenodesis (23); manipulation (NR); clavicle resection, coracoplasty (NR) **Duration of immobilization:** mean 22.8–29.6 days **Duration of rehab:** NR **Rehab components:** passive stretching; active-assisted stretching (23.2±6 day); Modality–pool **Rehab regime:** Frequency– 2x/day, 5x/wk; Intensity–NR **GROUP 2** **Surgical approach:** open (14); mini-open (7); all-arthroscopic (2) **Type of surgery:** repair **Additional procedures (N):** acromioplasty (23); lalbral repair (NR); biceps tenotomy/tenodesis (16); manipulation (NR) **Duration of immobilization:** mean 22.8–29.6 days **Duration of rehab:** NR **Rehab components:** passive stretching; active-assisted stretching (23.2±6 day); Modality–pool **Rehab regime:** Frequency– 2x/day, 5x/wk; Intensity—NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** NR **Pain:** • VAS **ROM:** • abduction • flexion • external rotation **Strength:** NR **Other:** NR	Equivalent results were achieved for post operative rehab in hospital compared to day patients. Choice of setting should be made based on other considerations such as social context or patients family needs.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Deutsch A, 2008 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.2 yr (2–5 yr) **Inclusion criteria:** FTT involved at least the full width of the SS tendon insertion **Exclusion criteria:** (1) mass tears, (2) previous shld surgery, (3) glenohumeral OA, (4) adhesive capsulitis, (5) osacromidale requiring stabilization	**Enrolled:** 48 **Analyzed:** 39 **Withdrawals:** 9 **Duration since symptom onset, mean (range):** Group 1: 15 mo (3 mo–5 yr) Group 2: 11 mo (1 mo–5 yr) Total: 15 mo (1 mo–5 yr) **Type of tear:** FTT **Tendon(s) torn:** Group 1: SS Group 2: SS, IS, SS **GROUP 1** **N:** 21 **Age, mean±SD (range):** 54±9.7 yr (32–71 yr) **Males %:** 71.4 **Cause of tear:** NR **Tear size:** mean: 2.0 cm; range:1.8–2.2 cm **Dominant shoulder %:** 77 (all) **Comorbidities:** NR **GROUP 2** **N:** 18 **Age, mean±SD (range):** 51.8±8.6 yr (34–67 yr) **Males %:** 61.1 **Cause of tear:** NR **Tear size:** mean: 3.1 cm; range: 2.5–4.0 cm **Dominant shoulder %:** see group 1 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (2); biceps debridement (2) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching–post operative; strengthening (wk 6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (1)/(4); biceps debridement (3) **Duration of immobilization:** 6 wk. **Duration of rehab:** NR **Rehab components:** passive stretching–post operative; strengthening (wk 8) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • ASES **Pain:** • VAS **ROM:** • forward flexion • external rotation • internal rotation **Strength:** NR **Other:** • satisfaction • cuff integrity	Arthroscopic RCR using single-row fixation resulted in significant improvements in clinical outcomes and reliable repair integrity for both single tendon and two tendon tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Deutsch A, 2007 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.2 yr (2–4.2 yr) **Inclusion criteria:** Arthroscopic repair for PTT of SS that involved >50% of tendon thickness **Exclusion criteria:** (1) previous surgery, (2) adhesive capsulitis, (3) concomitant glenohumeral instability	**Enrolled:** 46 **Analyzed:** 41 **Withdrawals:** 5 **Duration since symptom onset, mean (range):** Group 1: 10 mo (6 mo–3 yr) **Type of tear:** PTT **Tendon(s) torn:** SS **GROUP 1** **N:** 46 **Age, mean±SD (range):** 49 yr (23–70 yr) **Males %:** 56.5 **Cause of tear:** degenerative (29), traumatic (12) **Tear size:** mean: 0.9 cm **Dominant shoulder %:** 54.3 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (39); SLAP repair (5); biceps tenodesis (3); AC joint resection (18) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching and strengthening (wk 6–3 mo); strengthening (abduction, flexion) (3–6 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • ASES **Pain:** • VAS **ROM:** • flexion • internal rotation • external rotation **Strength:** • strength **Other:** NR	Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ellman H, 1993 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: N Followup: Y Outcome assessment: N	**Recruitment dates:** Nov 1983 to Jul 1989 **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** No **Followup duration, mean (range):** 3.6 yr (2–7.3 yr) **Inclusion criteria:** FTT **Exclusion criteria:** Pts not ideal for arthroscopic subacromial decompression as determined by investigator	**Enrolled:** 80 **Analyzed:** 80 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** Group 1: 4.5 yr (NR) Group 2: 16.8 yr (NR) Group 3: 3.7 yr (NR) Group 4: 5.2 yr (NR) **Type of tear:** FTT **Tendon(s) torn:** SS, IS **GROUP 1** **N:** 40 **Age, mean±SD (range):** 67.9 yr (41–89 yr) **Males %:** 60 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 50 **Comorbidities:** NR **GROUP 2** **N:** 10 **Age, mean±SD (range):** 63 yr (41–89 yr) **Males %:** 60 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** 60 **Comorbidities:** NR **GROUP 3** **N:** 8 **Age, mean±SD (range):** 66.7 yr (41–89 yr) **Males %:** 87.5 **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** 50	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 3** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 4** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all)	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** • flexion • external rotation **Strength:** • flexion (grade) • external rotation (grade) **Other:** NR	Proper patient selection is needed for arthroscopic tx of FTT as it influences outcomes.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ellman H, 1993 (continued)		**Comorbidities:** NR **GROUP 4** **N:** 22 **Age, mean±SD (range):** 73.9 yr (41–89 yr) **Males %:** 50 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** 77.3 **Comorbidities:** NR	**Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR		

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Favard L, 2009 **Country:** France **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** No funding **NOS:** 2*/8*	**Recruitment dates:** NR **Study design:** Retrospective cohort **Enrolled consecutively:** no **Followup duration, mean (range):** 5.6±3.5 yr **Inclusion criteria:** (1) <65 years, (2) massive RC tear, (3) minimum 2 year clinical and radiographic followup **Exclusion criteria:** (1) ≥ stage III glenohumeral or acromiohumeral arthritis	**Enrolled:** 192 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 103 **Age, mean±SD (range):** 55.2±6.2 yr **Males %:** NR **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 89 **Age, mean±SD (range):** 57.1±5.5 yr **Males %:** NR **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (68), all-arthroscopic (34) **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** open (50), all-arthroscopic (39) **Type of surgery:** repair **Additional procedures (N):** biceps tenotomy (89) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	In patients younger than 65 years with large or massive tears, the most appropriate surgical treatment option depends on patient functional status, height of subacromial space, fatty muscle infiltration, and presence of the long head of the biceps.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Fenlin JM Jr, 2002 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 3.4 yr (7 mo–4.8 yr) **Inclusion criteria:** Mass, irreparable RC tear with superior humeral head migration **Exclusion criteria:** (1) glenohumeral arthritis, (2) ability to re-establish functional rotator cable, (3) RC tear arthropathy	**Enrolled:** 20 **Analyzed:** 19 **Withdrawals:** 1 **Duration since symptom onset, mean (range):** Group 1: 15 mo (2 mo–6 yr) **Type of tear:** FTT **Tendon(s) torn:** SS+IS, SS+IS+SC **GROUP 1** **N:** 20 **Age, mean±SD (range):** 63 yr (44–82 yr) **Males %:** 75 **Cause of tear:** degenerative (7), traumatic (12) **Tear size:** mass **Dominant shoulder %:** 63.2 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** debidement **Additional procedures (N):** bursectomy/tuberoplasty (all) **Duration of immobilization:** NR **Duration of rehab:** 10–12 mo **Rehab components:** passive stretching (day 1); strengthening (wk 2/4–10/12 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 wk (min) **Type of treatment:** physical therapy NOS	**HRQL:** NR **Function:** • modified UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	In the short term, tuberoplasty can provide pain relief and improved function in patients with massive irreparable RC tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Franceschi F, 2008 **Country:** UK **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** Jan 1999 to Dec 2003 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 5.2 yr (2.9–7.8 yr) **Inclusion criteria:** (1) symptoms ≥3 mo, (2) RC tear dx clinically, 3) ≥50 yr, (4) no shld instability, (5) no signs of fracture of glenoid or the greater or lesser tuberoscity, (6) failure of nonoperative tx, (7) RC tear and type II SLAP lesion **Exclusion criteria:** (1) <50 yr, (2) inflammatory joint disease, (3) prior shld surgery, (4) SC tendon tear, (5) pt inability to complete questionnaires	**Enrolled:** 63 **Analyzed:** 63 **Withdrawals:** 7 **Duration since symptom onset, mean (range):** ≥ 3 mo (NR) **Type of tear:** NR **Tendon(s) torn:** SS, SS+IS **GROUP 1** **N:** 31 **Age, mean±SD (range):** 61.8 yr (51–79 yr) **Males %:** 58.1 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 80.6 **Comorbidities:** NR **GROUP 2** **N:** 32 **Age, mean±SD (range):** 64.7 yr (53–81 yr) **Males %:** 46.9 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 71.9 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (7); labral repair (NR) **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo. **Rehab components:** passive stretching (day 1–6 wk); active-assisted stretching (wk 6); strengthening (wk 10/12–6 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (9); biceps tenotomy (NR) **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo **Rehab components:** passive stretching (day 1); active-assisted stretching (wk 6); strengthening (wk 10/12–6 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID, rest	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** • flexion • internal rotation • external rotation **Strength:** NR **Other:** NR	Repairing a type 2 SLAP lesion when associated with a RC tear has no advantages. RCR and biceps tenotomy provides better clinical outcomes in comparison with repair of type 2 SLAP lesion and the RC tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Franceschi F, 2007 **Country:** Italy **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** Feb to Sep 2004 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 22.5 mo (18 mo–2.1 yr) **Inclusion criteria:** (1) RC tears, (2) no shld instability, (3) no fracture of glenoid or greater/lesser tuberosity, (4) symptoms >3mo, (5) failure of conservative tx, (6) unretracted and mobile FTT **Exclusion criteria:** (1) inablilty to complete questionnaire, (2) inflammatory joint disease, (3) retracted and insufficient mobile lesion to allow double-row technique, (4) prior surgery on affected shld	**Enrolled:** 60 **Analyzed:** 52 **Withdrawals:** 8 **Duration since symptom onset, mean (range):** ≥ 3 mo (NR) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+SC **GROUP 1** **N:** 30 **Age, mean (range):** 59.6 yr (45–80 yr) **Males %:** 53.3 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** 63.3 **Comorbidities:** NR **GROUP 2** **N:** 30 **Age, mean±SD (range):** 63.5 yr (43–76 yr) **Males %:** 40 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** 66.7 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** NR **Technique:** double-row mattress suture, anchors, side-to-side sutures **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo **Rehab components:** passive stretching (wk 1–10); strengthening (wk 10/12–6 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** NR **Technique:** single-row mattress suture, anchors **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo **Rehab components:** passive stretching (wk 1–10); strengthening (wk 10 or 12–26) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** • flexion • external rotation • internal rotation **Strength:** NR **Other:** • cuff integrity	Comparable clinical outcomes were present at 2 yr for single and double-row techniques.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Franceschi F, 2007 **Country:** Italy **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** 1999 to 2001 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 3.9 yr (3–4.9 yr) **Inclusion criteria:** (1) RC repair with severe associated bicep tendon lesion, (2) failure of nonoperative tx **Exclusion criteria:** NR	**Enrolled:** 22 **Analyzed:** 22 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, IS, SC **GROUP 1** **N:** 11 **Age, mean±SD (range):** 60.3±12.4 yr (41–79 yr) **Males %:** 54.5 **Cause of tear:** degenerative (6), traumatic (5) **Tear size:** mass **Dominant shoulder %:** 63.6 **Comorbidities:** biceps pathology: dislocation (4), unstable (3), tear ≥50% (4) **GROUP 2** **N:** 11 **Age, mean±SD (range):** 58.1±14.5 yr (40–81 yr) **Males %:** 45.5 **Cause of tear:** degenerative (6), traumatic (5) **Tear size:** mass **Dominant shoulder %:** 72.7 **Comorbidities:** biceps pathology: dislocation (3), unstable (4), tear ≥50%	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenodesis (all) **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo **Rehab components:** passive stretching (day 1–wk 6); active-assisted stretching (wk 6–10/12); strengthening (wk 10/12–6 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (all) **Duration of immobilization:** 6 wk **Duration of rehab:** 6 mo **Rehab components:** passive stretching (day 1–wk 6); active-assisted stretching (wk 6–10/12); strengthening (wk 10/12–6 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID, rest	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** • flexion • internal rotation • external rotation **Strength:** NR **Other:** NR	No difference was found between detaching and not detaching the biceps after including it in the RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Fuchs B, 2006 **Country:** Switzerland **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.2 yr (2–4.4 yr) **Inclusion criteria:** (1) single RC tendon FTT, (2) pain and/or disability following ≥3 mo nonoperative tx, (3) used of arm at or above head level, (4) use of an abduction brace for 6 wk postoperative **Exclusion criteria:** (1) FTT involving 2 tendons, (2) prior RCR, (3) moderate-severe OA of glenohumeral joint, (4) history of infection, (5) glenohumeral stiffness with loss of 20° of passive elevation and 10° of passive external rotation compared to contra-lateral side	**Enrolled:** 32 **Analyzed:** 32 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SC **GROUP 1** **N:** 32 **Age, mean±SD (range):** 59 yr (40–75 yr) **Males %:** 65.6 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 71.9 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** capsulectomy (all) **Duration of immobilization:** 6 wk. **Duration of rehab:** NR **Rehab components:** passive stretching immediately post operative; active stretching (wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** • VAS (15 points) **ROM:** • flexion (active) • abduction (active) • internal rotation (active) • external rotation (active) **Strength:** • abduction strength (kilos) • abduction strength (points) **Other:** • activities of daily living • cuff integrity	Direct, open repair of a complete isolated tear of one tendon resulted in significant improvement in clinical and structural measures.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Gartsman GM, 2004 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2 **Funding:** NR **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** yes **Followup duration, mean±SD (range):** 15.6±3.3 mo (NR) **Inclusion criteria:** (1) isolated, repairable SS tendon FTT, (2) type 2 acromion **Exclusion criteria:** (1) type 1/3 acromion, (2) two-tendon tears (3) PTT, (4) irrepairable tears, (5) concomittant procedure, (6) WCB claim, (7) prior surgery	**Enrolled:** 93 **Analyzed:** 93 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 47 **Age, mean±SD (range):** 59.3 yr (39–81 yr) **Males %:** 57.4 **Cause of tear:** mean: 2.1 cm **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 46 **Age, mean±SD (range):** 60 yr (37–79 yr) **Males %:** 52.2 **Cause of tear:** NR **Tear size:** mean: 2.3 cm **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** CPM (day 1–wk 2); passive stretching (wk 2–6); active stretching (wk 6–12); strengthening (wk12 onward) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** none **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** CPM (day 1–wk 2); passive stretching (wk 2–6); active stretching (wk 6–12); strengthening (wk 12 onward) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Arthroscopic subacromial decompression does not appear to change the functional outcome after arthroscopic RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Gartsman GM, 1998 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: N	**Recruitment dates:** Jan to Dec 1994 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 12.7 mo (11–21 mo) **Inclusion criteria:** 1) reparable FTT of one or more tendons; 2) verified at operation **Exclusion criteria:** 1) previous shld operation; 2) PTT; 3) irreparable tears; 4) WCB claim; 5) acute tear repaired <3 mo after injury	**Enrolled:** 50 **Analyzed:** 50 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 20.4 mo (6 mo–12 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+IS+TM, SS+IS+SC, SS+SC **GROUP 1** **N:** 50 **Age, mean±SD (range):** 61 yr (37–78 yr) **Males %:** 52 **Cause of tear:** NR **Tear size** mean (range): length: 28.2 mm (0–55 mm); width:12.5 mm, (5–30 mm); area: 406 mm² (50–1500 mm²) **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures:** acromioplasty (NR) **Duration of immobilization:** NR **Duration of rehab:** 1 yr **Rehab components:** passive stretching (wk 1–6); active stretching (wk 6–1 yr); strengthening (wk 12–1 yr) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** physical therapy, cortisone injection, NSAID	**HRQL:** • SF-36 **Function:** • CMS • UCLA • ASES **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Comparison of pre-operative and postoperative responses demonstrated highly significant improvements in patient assessment of general health and shld function.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Gartsman GM, 1997 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: N	**Recruitment dates:** 1984 to 1991 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 5.3 yr (4–9.8 yr) **Inclusion criteria:** (1) mass RC tear involving 2–4 tendons, could not be closed without excessive tension after lysis of intra and extra articular adhesions; (2) release of the coracohumeral ligament and rotator interval and incision of the superior and posterior aspects of the capsule **Exclusion criteria:** (1) reparable tear, (2) partial tendon repair or previous RC operation	**Enrolled:** 33 **Analyzed:** 33 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 17 mo (6 mo–8 yr) **Type of tear:** FTT **Tendon(s) torn:** SS+IS, SS+SC **GROUP 1** **N:** 33 **Age, mean±SD (range):** 62 yr (42–77 yr) **Males %:** 90.9 **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** 75.8 **Comorbidities:** biceps pathology: (absent (12); frayed but intact (14); hypertrophied (4)); osteoarthrosis (10); AC joint; OA of glenohumeral (4)	**GROUP 1** **Surgical approach:** open **Type of surgery:** debidement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (1)/(1); resection of greater tuberosity (7) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 1 until max movement achieved); active stretching (wk 3); strengthening (wk 6 until pain absent) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • UCLA • ASES • CMS **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	Open operative debridement and decompression of irreparable tears of RC showed improvements in functional scores.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Gazielly DF, 1994 **Country:** France **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Sep 1985 to Nov 1989 **Study design:** Before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 4 yr (2–6 yr) **Inclusion criteria:** (1) no previous cuff surgery, (2) FTT, (3) follow up ≥2 yr **Exclusion criteria:** (1) PTT, (2) stiff shld	**Enrolled:** 98 **Analyzed:** 98 **Withdrawals:** 0 **Duration since symptom onset, mean±SE (range):** 24.19±3.05 mo (1 mo–10 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+IS+SC **GROUP 1** **N:** 98 **Age, mean±SD (range):** 56 yr (35–77 yr) **Males %:** 63.3 **Cause of tear:** degenerative (31), traumatic (67) **Tear size:** NR **Dominant shoulder %:** 73.5 **Comorbidities:** degeneration of LHB (21); torn LHB (6)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk. **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–6); active-assisted stretching (wk 6–8); strengthening (wk 12) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** exercise	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Predictive clinical factors for recurrence included overall CMS, reduce ability to do daily activities, decreased ROM and muscle strength. CMS reflected accurate, reliable and reproducible results.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ghroubi S, 2008 **Country:** Tunisia **Treatment category:** Nonoperative **Questions:** Q3, Q5 **Funding:** NR **BA Quality:** Consecutive: U Followup: U Outcome assessment: U	**Recruitment dates:** Jan 1995 to Dec 2004 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 7 yr (4–12 yr) **Inclusion criteria:** (1) RC tear, (2) complete baseline evaluation, (3) ≥4 yr followup, (4) adhere to rehab program **Exclusion criteria:** (1) traumatic rupture; (2) infections, inflammation, tumor or neurological symptoms; (3) severe psychological problems; (4) refuse examination or interview	**Enrolled:** 59 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (39); PTT (20) **Tendon(s) torn:** SS, SS+IS **GROUP 1** **N:** 59 **Age, mean±SD (range):** 61 yr (46–75 yr) **Males %:** 35.6 **Cause of tear:** degenerative (59) **Tear size:** NR **Dominant shoulder %:** 72.9 **Comorbidities:** NR	**GROUP 1** **Intervention:** strengthening, soft tissue massage, corticosteroid injection, NSAIDs, analgesics, movement awareness **Drug name:** NR **Duration of treatment:** varied by PT **Treatment regime:** varied by PT **Degree of supervision:** NR **Treatment provider:** PT	**HRQL:** • SF-36 **Function:** • CMS **Pain:** • VAS **ROM:** • abduction (active) • flexion (active) • external rotation (active) • internal rotation (active) **Strength:** NR **Other:** • return to work • pt compliance • pt satisfaction • required surgery	Study results demonstrate benefits of individualized rehab program combined with medical tx.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Gladstone JN, 2007 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 1 yr (12–15 mo) **Inclusion criteria:** pre- and postoperative MRI permitted evaluation of fatty infiltration **Exclusion criteria:** (1) glenohumeral arthritis, (2) fracture, (3) osteonecrosis	**Enrolled:** 38 **Analyzed:** 38 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 10.5 mo (2 wk–4.3 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, IS **GROUP 1** **N:** 15 **Age, mean±SD (range):** all groups: 62 yr (3–6.5 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 23 **Age, mean±SD (range):** see group 1 **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** tendon mobilization **Duration of immobilization:** 6 wk **Duration of rehab:** 3–4 mo **Rehab components:** passive stretching (wk 1–6); active stretching (wk 6); strengthening (wk 6–12 or 16) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 6 wk **Duration of rehab:** 3–4 mo **Rehab components:** passive stretching (wk 1–6); active stretching (wk 6); strengthening (wk 6–12 or 16) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • ASES **Pain:** • VAS **ROM:** NR **Strength:** • flexion • external rotation **Other:** • cuff integrity	Fatty infiltration and muscle atrophy of the IS and SS significantly affect the functional outcome after RCR even if pain is consistently relieved. Tear size appears to have the most influential effect on repair integrity. Repairs should be performed prior to more significant deterioration of cuff muscle to optimize outcomes.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Grasso A, 2009 **Country:** Italy **Treatment category:** Operative technique **Questions:** Q2, Q6 **Funding:** No funding **ROB:** High	**Recruitment dates:** NR **Study design:** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 24.8±1.4 mo **Inclusion criteria:** (1) repairable FTT of SS or the posterior-superior RC ± biceps pathology or rotator interval involvement **Exclusion criteria:** (1) PTT, (2) irreparable FTT, (3) extension of tear to SC, (4) isolated SC tear, (5) reparable labral pathology, degenerative OA of glenohumeral joint, symptomatic OA of AC joint, RC arthropathy, previous surgery on the same shoulder, WCB	**Enrolled:** 80 **Analyzed:** 72 **Withdrawals:** 8 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 37 **Age, mean±SD (range):** 58.3±10.3 yr **Males %:** 43 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 73 **Comorbidities:** NR **GROUP 2** **N:** 35 **Age, mean±SD (range):** 55.2±6.5 yr **Males %:** 51 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 83 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); tenotomy (12); tenodesis (8) **Technique:** single-row repair **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive, active and active-assisted stretching (4–8 wk); strengthening exercises (10–12 wk); open kinetic chain exercises (13–16 wk) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); tenotomy (13); tenodesis (7) **Technique:** double-row repair **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive, active and active-assisted stretching (4–8 wk); strengthening exercises (10–12 wk); open kinetic chain exercises (13–16 wk) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • DASH • Work-DASH **Pain:** NR **ROM:** NR **Strength:** • Strength (lbs) **Other:** NR	At short-term followup, there was no significant difference in clinical or functional outcomes between single-row and double-row repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Hata Y, 2004 **Country:** Japan **Treatment category:** Operative approach **Questions:** Q2 **Funding:** No funding **NOS:** 4*/8*	**Recruitment dates:** 1994 to 1997 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** all: 4 yr (2–6.8 yr); group 1: 2.6 yr (2–3.1 yr); group 2: 5.1 yr (3.8–6.8 yr) **Inclusion criteria:** RC **Exclusion criteria:** (1) tears >3 tendons, (2) tendon retraction >5cm	**Enrolled:** 78 **Analyzed:** 78 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 43 **Age, mean±SD (range):** 58.1 yr (31–78 yr) **Males %:** 58.1 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 35 **Age, mean±SD (range):** 60.6 yr (39–71 yr) **Males %:** 60 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3 wk. **Duration of rehab:** NR **Rehab components:** passive and active stretching (day 1–wk 6); strengthening (wk 4); active-assisted stretching (wk 4); active stretching and strengthening (wk 6); strenuous muscle training (intrinsic or extrinsic) (2 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** mini-open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3 wk. **Duration of rehab:** NR **Rehab components:** passive and active stretching (day 1–wk 6); strengthening (wk 4); active-assisted stretching (wk 4); active stretching and strengthening (wk 6); strenuous muscle training (intrinsic or extrinsic) (2 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** NR • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • time to return to work • cuff integrity	Less postoperative atrophy of the deltoid muscle and quick recovery of pts, were obtained by the mini-open repair of RC tears than conventional open repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Hawkins RH, 1995 **Country:** Canada **Treatment category:** Nonoperative **Questions:** Q3, Q6 **Funding:** Foundation **Other**: German **BA Quality:** Consecutive: Y Followup: N Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.8 yr (2.6–4.6 yr) **Inclusion criteria:** (1) FTT, (2) within geographic area, (3) symptomatic, non-acute **Exclusion criteria:** NR	**Enrolled:** 50 **Analyzed:** 33 **Withdrawals:** 17 **Duration since symptom onset, mean±SD (range):** 59.8±116.7 mo (1 mo–25 yr) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 50 **Age, mean±SD (range):** 59.6±10.5 yr (NR) **Males %:** 54 **Cause of tear:** degenerative (12), traumatic (21) **Tear size:** all sizes **Dominant shoulder %:** 52 **Comorbidities:** NR	**GROUP 1** **Intervention:** active ROM, strengthening **Drug name:** NR **Duration of treatment:** >10 wk **Treatment regime:** Frequency–daily for 10 wk, 3x/wk.; Intensity–3 sets x 10 reps of 6 exercises **Degree of supervision:** unsupervised **Treatment provider:** PT **Additional comments:** exercises at home; PT taught and reinforced technique at visits	**HRQL:** NR **Function:** • CMS **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** • work and recreation status • satisfaction scale • sleep loss	Pts who have insurance claims or are experiencing significant sleep loss due to pain are unlikely to be satisfied with nonoperative tx.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Hayes K, 2004 **Country:** Australia **Treatment category:** Post-op rehabilitation **Questions:** Q2 **Funding:** Government **ROB:** High	**Recruitment dates:** Feb 1999 to Mar 2001 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration (endpoint):** 24 wk **Inclusion criteria:** RCR **Exclusion criteria:** (1) irreparable tear; (2) previous shld surgery; (3) additional procedure: humeral/ clavical/ scapula fracture; (4) RA, DM	**Enrolled:** 58 **Analyzed:** 42 **Withdrawals:** 16 **Duration since symptom onset, mean±SD (range):** Group 1: 12±16 mo (0 mo–4 yr); Group 2: 19±27 mo (1 mo–8 yr) **Type of tear:** FTT (50); PTT (8) **Tendon(s) torn:** SS, SS+IS, SS+SC, SS+IS+SC **GROUP 1** **N:** 26 **Age, mean±SD (range):** 58±10 yr (41–81 yr) **Males %:** 76.9 **Cause of tear:** degenerative (7), traumatic (19) **Tear size:** mean: 5 cm² **Dominant shoulder %:** 76.9 **Comorbidities:** NR **GROUP 2** **N:** 32 **Age, mean±SD (range):** 62±11 yr (42–83 yr) **Males %:** 62.5 **Cause of tear:** degenerative (18), traumatic (14) **Tear size:** mean: 6 cm² **Dominant shoulder %:** 59.4 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 1 day **Duration of rehab:** 24 wk **Rehab components:** active stretching (day 2–wk 6); active stretching and strengthening (wk 6–24); Modality–heat/cold, day 2–7 **Rehab regime:** Frequency–1-5x/day; Intensity–5-10 reps per position **GROUP 2** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 1 day **Duration of rehab:** 24 wk. **Rehab components:** active therapy (day 2–wk 6); active stretching and strengthening (wk 6–24); Modality–heat/cold, day 2–7 **Rehab regime:** Frequency–1-5x/day; Intensity–5-10 reps per position **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • Insalata **Pain:** NR **ROM:** • flexion (passive) • external rotation (passive) • abduction (passive) **Strength:** • internal rotation • external rotation • flexion **Other:** NR	Outcomes for patients allocated to individualized PT tx after RCR were no better than for patients receiving standardized home exercise regime.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Heers G, 2005 **Country:** Germany **Treatment category:** Nonoperative **Questions:** Q3 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** NR **Followup duration (endpoint):** 12 wk **Inclusion criteria:** (1) RC tear, (2) 40–70 yr **Exclusion criteria:** (1) abnormal subacromial spur, (2) previous shld surgery	**Enrolled:** 34 **Analyzed:** 30 (shld: 38) **Withdrawals:** 4 **Duration since symptom onset, mean±SD (range):** Group 1: 2.5±2.9 yr; Group 2: 2.4±2.0 yr; Group 3: 5.9±4 yr; All: 3.4±3.3 yr **Type of tear:** FTT (24); PTT (14) **Tendon(s) torn:** Group 1–2: SS; Group 3: SS, IS **ALL GROUPS** **N:** Group 1, shld: 14; Group 2, shld: 14; Group 3, shld: 10 **Age, mean±SD (range):** all groups: 60.4 yr (44–69 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**All GROUPS** **Intervention:** passive and active ROM, strengthening **Drug name:** NR **Duration of treatment:** 12 wk. **Treatment Regime:** Frequency–daily; Intensity–40 min/day, 5 sets of 10 reps for 11 exercises **Degree of supervision:** indirect **Treatment provider:** physician	**HRQL:** NR **Function:** • CMS **Pain:** • night pain (15-point VAS) **ROM:** • external rotation • abduction • anteversion **Strength:** NR **Other:** NR	Patients with RC defects benefit from simple home exercises independent from the size of the defect.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Henn RF III, 2008 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** No funding **BA Quality:** Consecutive: U Followup: U Outcome assessment: U	**Recruitment dates:** Jan 1998 to Sep 2001 **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** NR **Followup duration, mean±SD (range):** 54.1±7.6 wk (32.7–88.7 wk) **Inclusion criteria:** (1) primary repair of a unilateral symptomatic chronic FTT, (2) failed nonoperative tx **Exclusion criteria:** (1) previous shld surgery (2) partial/incomplete repair of a mass tear, (3) glenohumeral arthritis	**Enrolled:** 125 **Analyzed:** 125 **Withdrawals:** 0 **Duration since symptom onset, mean±SD (range):** Group 1: 13.0±13.9 mo (3 mo–5.3 mo); Group 2: 17.5±29.9 mo (13 mo–18 yr) All: 16.0±25.9 mo (3 mo–18 yr) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 39 **Age, mean±SD (range):** 52.5±1.6 yr (32–79 yr) **Males %:** 61.5 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 59 **Comorbidities, mean±SD (range):** number of comorbidities: 1.8±1.5 (0–5) **GROUP 2** **N:** 86 **Age, mean±SD (range):** 57.8±1.3 yr (35–84 yr) **Males %:** 55.8 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 68.6 **Comorbidities, mean±SD (range):** number of comorbidities: 2.0±1.5 (0–6)	**GROUP 1** **Surgical approach:** open (7); mini-open (19); all-arthoscopic (13) **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (1)/(2); bicep relocation (2); clavicular resection (14) **Duration of immobilization:** 5 wk **Duration of rehab:** 5 wk **Rehab components:** mini open/open surgery: passive stretching; all-arthroscopic repair: passive stretching **Rehab regime:** NR **GROUP 2** **Surgical approach:** open (19); mini-open (43); all-arthoscopic (24) **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (1)/(3); bicep relocation (3); clavicular resection (34); **Duration of immobilization:** 5 wk **Duration of rehab:** 5 wk **Rehab components:** mini open/open surgery: passive stretching; all-arthroscopic repair: passive stretching **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection	**HRQL:** • VAS-QOL • SF-36 **Function:** • VAS shld function • STT • DASH **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	Pts with worker's compensation claims reported worse outcomes, even after controlling for confounding factors.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Hsu SL, 2007 **Country:** Taiwan **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 48.6 mo (24–85 mo) **Inclusion criteria:** (1) RC tear with associated shld stiffness, (2) ≥2yr followup **Exclusion criteria:** (1) previous operations, (2) traumatic fracture on the involved shld	**Enrolled:** shld: 47 **Analyzed:** shld: 47 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (20); PTT (27) **Tendon(s) torn:** Group 1 and 3: NR; Group 2: SS **GROUP 1** **N:** shld: 27 **Age, mean±SD (range):** 54±7 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** shld stiffness (all); DM - 10 (11 shlds); rectal carcinoma (2); thalassemia (1); hypertension (1); cervical carcinoma (1); bronchietasis (1) **GROUP 2** **N:** shld: 15 **Age, mean±SD (range):** 52±10 yr(NR) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** see group 1 **GROUP 3** **N:** shld: 5 **Age, mean±SD (range):** 62±11 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** see group 1	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures:** acromioplasty (all); manipulation (all); surgical lysis of the adhesive tissue (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 2); active-assisted stretching (day 3/4); active-stretching (day 7/10) **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); manipulation (all); surgical lysis of the adhesive tissue (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 2); active-assisted stretching (day 3/4); active stretching (day 7/10) **Rehab regime:** NR **GROUP 3** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); manipulation (all); surgical lysis of the adhesive tissue (all); deltoid flap transfer (1) **Duration of immobilization:** 3 day **Duration of rehab:** NR **Rehab components:** passive stretching (day 3/4); active-assisted stretching (wk 2) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** physical therapy	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** • abduction • flexion • external rotation **Strength:** NR **Other:** NR	Gentle manipulation, extensive lysis of adhesions, and acromioplasty with RCR is a satisfactory procedure for pts with RC tear and associated shld stiffness.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Iannotti JP, 2006 **Country:** USA **Treatment category:** Operative augmentation **Questions:** Q2, Q5, Q6 **Funding:** Government, industry **ROB:** High	**Recruitment dates:** Jan 2002 to Jan 2004 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 14 mo (12–26.5 mo) **Inclusion criteria:** (1) a tear of both SS and IS tendons (MRI), (2) >18 yrs old, (3) tear of 3 mo duration, (4) fully reparable tear **Exclusion criteria:** (1) prior shld surgery, (2) cervical spine disease, (3) adhesive capsulitis, (4) glenohumeral arthritis	**Enrolled:** 32 **Analyzed:** 30 **Withdrawals:** 2 **Duration since symptom onset, mean (range):** ≥ 3 mo (NR) **Type of tear:** FTT **Tendon(s) torn:** SS+IS **GROUP 1** **N:** 16 **Age, mean±SD (range):** 58 yr (NR) **Males %:** 68.8 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 16 **Age, mean±SD (range):** 57 yr (NR) **Males %:** 75 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (4); osacromiale repair (3) **Technique:** polyester tape through bone tunnels; Mason-Allen and horizonal matterness sutures; simple or figure 8 suture configuration (convergence repairs) **Augmentation:** circular restore path (10 cm diameter) **Duration of immobilization:** 1 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–8); active stretching (wk ≥8); strengthening (wk ≥10/12) **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (5); os acromiale repair (1) **Technique:** polyester tape through bone tunnels; Mason-Allen and horizonal matterness sutures; simple or figure 8 suture configuration (convergence repairs) **Augmentation:** NR **Duration of immobilization:** 1 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–8); active stretching (wk ≥8); strengthening (wk ≥10/12) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • PENN **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Augmentation of the surgical repair of large and massive chronic RC tears with porcine small intestine submucosa did not improve the rate of tendon healing or the clinical outcome scores.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Iannotti JP, 1996 (10-year followup in Galatz LM, 2001) **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Jun 1988 to Jun 1990 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 10 yr **Inclusion criteria:** FTT **Exclusion criteria:** (1) operation within 3 mo. of injury, (2) previous shld surgery	**Enrolled:** 46 **Analyzed:** 40 (shld: 41) **Withdrawals:** 6 **Duration since symptom onset, mean (range):** 8.9±7.4 mo. (3-36 mo.) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 40 (shld: 41) **Age, mean±SD (range):** 55±11 yr. (39-71 yr.) **Males %:** 77.5 **Cause of tear:** degenerative (13), traumatic (27) **Tear size:** all sizes **Dominant shoulder %:** 72.5 **Comorbidities:** rupture of LHB (7)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); tendon transfer (2) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** active-assisted stretching–wk. 1-6; stretching–wk. ≥6; strengthening–wk. ≥8/12 **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** exercise, cortisone injection	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • time to return to work	Normalized CMS show a significant correlation between functional outcomes and tear size.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ide J, 2007 **Country:** Japan **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Apr 2001 to Oct 2004 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 36.1 mo. (24-60 mo.) **Inclusion criteria:** (1) arthroscopic repair of FTT, (2) MRI of involved shld pre- or post-op, (3) followup >2 yr **Exclusion criteria:** (1) irreparable RC tears, (2) partial RC repair, (3) stage 3 or 4 fatty infiltration, (4) pre-operative cuff tear arthropathy, (5) failed RC repair, (6) WCB claim	**Enrolled:** 20 **Analyzed:** 20 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 2.7 mo. (1-6 mo.) **Type of tear:** FTT **Tendon(s) torn:** SS+SC, SS+IS+SC **GROUP 1** **N:** 20 **Age, mean±SD (range):** 61.7 yr. (45-79 yr.) **Males %:** 85 **Cause of tear:** traumatic (20) **Tear size:** med **Dominant shoulder %:** 75 **Comorbidities:** biceps tendon complete tear (5); biceps tendon dislocated/subluxated (6); biceps tendon partial tear (3); subluxation and partial tear of biceps tendon (3)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** biceps tenotomy/tenodesis (5)/(7); coracoplasty (6) **Duration of immobilization:** 6 wk. **Duration of rehab:** 3-6 mo. **Rehab components:** passive stretching and active-assisted stretching–day 1-wk. 4; active stretching–wk. ≥6; strengthening–wk. 9-12 **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • JOA • UCLA **Pain:** NR **ROM:** • flexion • external rotation • internal rotation **Strength:** NR **Other:** • cuff integrity	For the Tx of combined RC tears involving SC tendon, arthroscopic RCR with use of the suture anchor technique is a safe and effective procedure. It can reduce shoulder pain or improve function and ROM. Integrity of the repair can be affected by patients age and degree of tendon retraction.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ide J, 2005 **Country:** Japan **Treatment category:** Operative **Questions:** Q2 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** 1999 to 2002 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 39 mo (25–57 mo) **Inclusion criteria:** articular side SS PTT involving ≥6 mm of the tendon, treated with arthroscopic transtendon repair **Exclusion criteria:** (1) arthroscopic SLAP repair, (2) arthroscopic Bankart repair	**Enrolled:** 21 **Analyzed:** 17 **Withdrawals:** 4 excluded (SLAP repair [3]; Bankart repair [1]) **Duration since symptom onset, mean (range):** 11 mo (7–24 mo) **Type of tear:** PTT **Tendon(s) torn:** SS **GROUP 1** **N:** 21 **Age, mean±SD (range):** 42 yr (17–51 yr) **Males %:** 66.7 **Cause of tear:** degenerative (10), traumatic (7) **Tear size:** NR **Dominant shoulder %:** 66.7 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 4 wk **Duration of rehab:** 3 mo **Rehab components:** CPM (day 1–3 mo); active-assisted stretching (wk 2–3 mo); strengthening (wk 4/6–3 mo) **Rehab regime:** Frequency–NR; Intensity–CPM, 2 hr/day **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA • JOA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • Number of pts returning to original level of sport	Arthroscopic transtendon repair is a safe, reliable procedure in patients with grade III PTT.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ide J, 2005 **Country:** Japan **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 7*/8*	**Recruitment dates:** 1996 to 2001 **Study design:** prospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 49 mo (25–83 mo) **Inclusion criteria:** FTT including mass tears **Exclusion criteria:** (1) PTT, (2) irreparable RC tear reconstructed with implatation of fascia lata, (3) SC repair/ prior surgery on shld, (4) other significant intraarticular pathology, (5) WCB claim	**Enrolled:** NR **Analyzed:** 100 **Withdrawals:** NR **Duration since symptom onset, mean (range):** Group 1: 8 mo (2–24 mo); Group 2: 6.4 mo (2–36 mo) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 50 **Age, mean±SD (range):** 57.1 yr (24–72 yr) **Males %:** 78 **Cause of tear:** degenerative (18), traumatic (32) **Tear size:** all sizes **Dominant shoulder %:** 78 **Comorbidities:** NR **GROUP 2** **N:** 50 **Age, mean±SD (range):** 57 yr (25–78 yr) **Males %:** 82 **Cause of tear:** degenerative (24), traumatic (26) **Tear size:** all sizes **Dominant shoulder %:** 62 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3 wk **Duration of rehab:** 3 mo **Rehab components:** passive stretching and CPM (day 1–wk 6/9); strengthening (wk 6–9); active-assisted stretching (wk 2–4) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3 wk **Duration of rehab:** 3 mo **Rehab components:** passive stretching and CPM (day 1–wk 6/9); active-assisted stretching (wk 2–4); strengthening (wk 6–9) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA • JOA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • pt satisfaction	Equivalent outcomes obtained by open and arthroscopic RCR of small to massive RC tears. Regardless of repair methods, outcomes in pts with large to massive tears were inferior to those in patients with small to medium tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ito J, 2003 **Country:** Japan **Treatment category:** Operative augmentation **Questions:** Q2, Q5 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** 1983 to 1987 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 3.7 yr (2–8.4 yr) **Inclusion criteria:** (1) surgical tx for RC tear between 1983–1997, (2) lg or mass tear **Exclusion criteria:** NR	**Enrolled:** 28 (shld: 30) **Analyzed:** 21 (shld: 21) **Withdrawals:** 7 **Duration since symptom onset, mean±SD (range):** Group 1: 5.8±4.7 mo (NR); Group 2: 4.1±2.9 mo (NR) **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 9 **Age, mean±SD (range):** 62.8±6.9 yr (49–70 yr) **Males %:** 66.7 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 12 **Age, mean±SD (range):** 52.3±8.6 yr (36–66 yr) **Males %:** 83.3 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Augmentation:** Patch graft placed between the margin of the RC and the anatomical insertion at the humeral head in order to avoid excessive tension **Duration of immobilization:** 5 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 5); active stretching (wk 5) **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Augmentation:** McLaughlin procedure, the margin of the RC was attached to the ‘anatomical insertion’ at the humeral head **Duration of immobilization:** 5 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 5); active stretching (wk 5) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • JOA **Pain:** NR **ROM:** • abduction • external rotation • flexion **Strength:** NR **Other:** NR	Based on this study, patch grafts are considered to have the advantages of achieving anatomical repair with minimal restriction of ROM and minimal occurrence of retearing.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Kane TP, 2008 **Country:** England **Treatment category:** Nonoperative **Questions:** Q3, Q5 **Funding:** NR **BA Quality:** Consecutive: Y Followup: U Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 6 mo (NR) **Inclusion criteria:** (1) painful endstage RC tear arthropathy, (2) medically unfit for surgery, (3) failure of nonoperative tx **Exclusion criteria:** (1) previous surgery, (2) nerve block	**Enrolled:** 12 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 12 **Age, mean±SD (range):** 68 yr (60–83 yr) **Males %:** 25 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** OA (11); RA (1); renal failure; DM; chronic obstructive pulmonary disease; heart failure	**GROUP 1** **Intervention:** pulsed radio frequency ablation **Drug name:** NR **Duration of treatment:** NR **Treatment Regime:** Frequency–once in study duration; Intensity–6–8 min. **Degree of supervision:** direct one-to-one **Treatment provider:** NR	**HRQL:** NR **Function:** • CMS • OSS **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	In patients with painful, endstage RC tear arthropathy who are not fit for surgery, pulsed radio frequency may be a useful therapeutic adjunct.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Kim SH, 2003 **Country:** South Korea **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** NR **ROB:** High	**Recruitment dates:** 1995 to 1998 **Study design (trial type):** CCT (parallel) **Enrolled consecutively:** yes **Followup duration, mean (range):** 39 mo (24–64 mo) **Inclusion criteria:** med/lg RC tears **Exclusion criteria:** (1) bilateral RC tear, (2) sm and mass tears, (3) advanced glenohumeral OA, (4) AC arthritis, (5) SLAP lesion, (6) previous surgery of shld, (7) tenodesis of biceps tendon, (8) anterior glenohumeral instability, (9) post traumatic stiff shld, (10) neurological deficit	**Enrolled:** NR **Analyzed:** 76 **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 34 **Age, mean±SD (range):** 58±9 yr (42–68 yr) **Males %:** 64.7 **Cause of tear:** degenerative (28), traumatic (6) **Tear size:** med, lg **Dominant shoulder %:** 88.2 **Comorbidities (all groups):** fraying of biceps tendons (6); early degenerative arthritis changes of glenoid articular surface (4) **GROUP 2** **N:** 42 **Age, mean±SD (range):** 55±10.5 yr (42–75 yr) **Males %:** 64.3 **Cause of tear:** degenerative (33), traumatic (9) **Tear size:** med, lg **Dominant shoulder %:** 88.1 **Comorbidities:** see group 1	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); manipulation (NR) **Duration of immobilization:** 3 wk **Duration of rehab (N):** <6 mo (18); 6–12 mo (12); >12 mo (4) **Rehab components:** CPM (day 1–3); passive stretching (day 3–wk 3); active-assisted stretching (wk 3–6/9); strengthening (wk 6/9–6 mo) **Rehab regime:** Frequency–CPM, daily; Intensity–2 hr **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); manipulation (NR) **Duration of immobilization:** 3 wk **Duration of rehab (N):** <6 mo (21); 6–12 mo (14); >12 mo (7) **Rehab components:** CPM (day 1–3); passive stretching (day 3–wk 3); active-assisted stretching (wk 3–wk 6/9); strengthening (wk 6/9–6 mo) **Rehab regime:** Frequency– CPM, daily; Intensity—2 hr **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA • VAS-function • ASES **Pain:** • VAS **ROM:** • flexion • internal rotation • external rotation **Strength:** • manual muscle testing **Other:** NR	For repair of medium and large RC tears there are equal outcomes between all arthroscopic repairs and unsuccessful arthroscopic repair converted to mini-open repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Kirschen-baum D, 1993 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, (endpoint):** 12 mo **Inclusion criteria:** 1) positive arthrogram of RC tears and shld pain limiting everyday activity **Exclusion criteria:** 1) shld pain on the nonoperative side	**Enrolled:** 25 **Analyzed:** 22 **Withdrawals:** 3 **Duration since symptom onset, mean (range):** 10 mo (2 mo–5 yr) **Type of tear:** NR **Tendon(s) torn:** SS, IS, TM **GROUP 1** **N:** 25 **Age, mean±SD (range):** 62 yr (27–76 yr) **Males %:** 64 **Cause of tear:** degenerative (4), traumatic (21) **Tear size:** all sizes **Dominant shoulder %:** 56 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (23); excision of distal clavicle (14) **Duration of immobilization:** 2 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 2); active stretching (wk 6); strengthening (wk 8–12) **Rehab regime:** Frequency– daily; Intensity–NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** NR **Pain:** • NR **ROM:** NR **Strength:** • isokinetic shld strength (abduction, flexion, external rotation) **Other:** NR	Shoulder strength is significantly improved by RC repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Klepps S, 2004 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** Foundation **BA Quality:** Consecutive: Y Followup: N Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, (minimum):** 1 yr **Inclusion criteria:** (1) 40–80 yr, (2) able to communicate and give informed consent **Exclusion criteria:** (1) medically unstable for surgery; (2) concomitant disease: glenohumeral arthritis, fracture or osteonecrosis; (3) unable or unwilling to undergo MRI	**Enrolled:** 47 **Analyzed:** 32 **Withdrawals:** 15 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 47 **Age, mean±SD (range):** 64 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (24); mini-open (8) **Type of surgery:** repair **Additional procedures (N):** acromioplasty (NR); capsular release (13); distal clavicle resection (4) **Duration of immobilization:** 6 wk **Duration of rehab:** 3–4 mo **Rehab components:** passive stretching (wk 1–6); active stretching (wk 6–3/4 mo); strengthening (wk 6–3/4 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • CMS • UCLA **Pain:** • VAS **ROM:** NR **Strength:** • flexion (lb) • external rotation (lb) **Other:** • cuff integrity	Open and mini-open RCR restores RC function, regardless of RC integrity.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Klinger HM, 2005 **Country:** Germany **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** 1997 to 1999 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 31 mo (24–46 mo) **Inclusion criteria:** irreparable mass tear **Exclusion criteria:** reparable tears or previous procedures involving the shld	**Enrolled:** 33 **Analyzed:** 33 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 11 mo (6–23 mo) **Type of tear:** FTT **Tendon(s) torn:** SS+IS, SS+SC, SS+IS+SC **GROUP 1** **N:** 33 **Age, mean±SD (range):** 69 yr (62–79 yr) **Males %:** 69.7 **Cause of tear:** NR **Tear size:** lg **Dominant shoulder %:** 69.7 **Comorbidities:** biceps pathology (23); degenerative OA (24%)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** debidement **Additional procedures:** acromioplasty (28); labral repair (NR); biceps tenotomy (6); resection of distal clavicle (1) **Duration of immobilization:** 0 **Duration of rehab:** NR **Rehab components:** active stretching–immediately post operative; stretching–NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Arthroscopic debridement early results suggest it is an acceptable tx for elderly pts with modest functional demands.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Klinger HM, 2005 **Country:** Germany **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** 1998 to 2000 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 2.6 yr (2–4 yr) **Inclusion criteria:** (1) mass irreparable RC tears, (2) persisting pain and functional disability after nonoperative Tx, (3) >6 mo arthroscopic dx of LHB pathology **Exclusion criteria:** (1) reparable RC tears, (2) previous shld surgery	**Enrolled:** 41 **Analyzed:** 41 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** Group 1: 11 mo (6–23 mo); Group 2: 10 mo (6–18 mo) **Type of tear:** FTT **GROUP 1** **N:** 24 **Age, mean±SD (range):** 66 yr (61–79 yr) **Males %:** 62.5 **Cause of tear:** NR **Tear size:** mass **Tendon(s) torn:** NR **Dominant shoulder %:** 58.3 **Comorbidities:** superior migration of humeral head (1); glenohumeral OA (1) **GROUP 2** **N:** 17 **Age, mean±SD (range):** 68 yr (63–82 yr) **Males %:** 58.8 **Cause of tear:** NR **Tear size:** mass **Tendon(s) torn:** NR **Dominant shoulder %:** 58.8 **Comorbidities:** LHB: tendinosis (3); subluxation (5); prerupture (3); dislocation (6)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** debidement **Additional procedures (N):** acromioplasty (all); labral repair (NR) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** active stretching (≥day 1); strengthening (NR) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** debidement **Additional procedures (N):** acromioplasty (alll); labral repair (NR); biceps tenotomy (17) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** active stretching (≥day 1); strengthening (NR) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Arthroscopic RCR improves function, decreases pain, and improves shoulder score for most patients who underwent arthroscopic debridement of massive irreparable RC tears. Additional LHB tenotomy did not significantly influence the postoperative results at the latest followup.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Klintberg IH, 2009 **Country:** Sweden **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q5 **Funding:** Academic **ROB:** High	**Recruitment dates:** NR **Study design:** RCT (parallel) **Enrolled consecutively:** yes **Followup duration, mean (range):** 2 yr **Inclusion criteria:** (1) FTT of RC **Exclusion criteria:** (1) No previous RC repair to the involved shoulder (2) interfering disease with treatment or shoulder function (e.g. RA, DM, neurological or psychological disease), (3) difficulties in reading & writing in Swedish	**Enrolled:** 18 **Analyzed:** 14 **Withdrawals:** 4 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 7 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** degenerative (NR); traumatic (4) **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 7 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** degenerative (NR); traumatic (5) **Tear size:** med, lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** NR **Type of surgery:** repair & debridement **Additional procedures (N):** NR **Duration of immobilization:** 4 wk **Duration of rehab:** >12 mo **Rehab components:** passive stretching (1–4 wk); active-assisted stretching with aquatic training program (4–6 wk); active stretching (6–8 wk); strengthening exercises (8–10 wk); aquatic training program (10–12 wk); eccentric load on RC (12–24 wk) **Rehab regime:** supervised PT 2–3 times/wk; active-assisted stretching- 3x/day; aquatic training 1 (1x/week); strengthening exercises- 2x/day; aquatic training 2 (2x/wk) **Treatment provider:** PT **GROUP 2** **Surgical approach:** NR **Type of surgery:** repair & debridement **Additional procedures (N):** NR **Duration of immobilization:** 6 wk **Duration of rehab:** >24 mo **Rehab components:** passive stretching (1–6 wk); active and active-assisted stretching (6–10 wk); active-assisted stretching with aquatic training program (10–16 wk); strengthening exercises with aquatic program (16–24 wk); eccentric load on RC (24 wk) **Rehab regime:** supervised PT 2–3 times/wk; aquatic training 1 (1x/week); aquatic training 2 (2x/wk) **Treatment provider:** PT **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • Functional Score Index **Pain:** NR **ROM:** • adduction • external rotation in adduction • external rotation in abduction • internal rotation • extension • flexion **Strength:** • external rotation • internal rotation • elevation **Other:** NR	The progressive rehabilitation protocol has no adverse effects compared with the traditional protocol.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ko SH, 2009 **Country:** South Korea **Treatment category:** Operative technique **Questions:** Q2, Q5, Q6 **Funding:** No funding **ROB:** High	**Recruitment dates:** Dec 2004 to Jun 2006 **Study design:** Prospective cohort **Enrolled consecutively:** no **Followup duration, mean (range):** 2.8 yr (2–3.4 yr) **Inclusion criteria:** (1) SS tear (0.5 - 1.5 cm) (2) fail at least 6 mo conservative tx, (3) subscapularis tears involving less than 0.5 mm, (4) stable biceps **Exclusion criteria:** (1) AC arthritis (2) biceps subluxation and dislocation, (3) SC tears that require repair, (4) stiffness requiring capsulatomy, (5) fractures around shoulder, (6) flexion<120 degrees, abduction <120 degrees, external rotation<0 degrees	**Enrolled:** 77 **Analyzed:** 71 **Withdrawals:** 6 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 35 **Age, mean±SD (range):** 53.6 yr (39–68) **Males %:** 51 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 36 **Age, mean±SD (range):** 52.4 yr (15–68 yr) **Males %:** 47 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (7) **Technique:** massive cuff stitch repair **Duration of immobilization:** NR **Duration of rehab:** >12 mo **Rehab components:** passive stretching (1–4 wk); active-assisted stretching (4 wk); active stretching (6 wk); strengthening exercises (10–12 wk) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (7) **Technique:** simple stitch repair **Duration of immobilization:** NR **Duration of rehab:** >24 mo **Rehab components:** passive stretching (1–4 wk); active-assisted stretching (4 wk); active stretching (6 wk); strengthening exercises (10–12 wk) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration, min, mean (range):** 6 mo, 19.1 mo (6 mo–2.8 yr) **Type of treatment:** exercise	**HRQL:** NR **Function:** • ASES (ADL) • UCLA **Pain:** • VAS **ROM:** • Forward motion **Strength:** NR **Other:** • Cuff integrity	No difference in clinical outcomes between massive cuff stitch or simple stitch, but massive cuff stitch was superior to simple stitch in repair integrity.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ko SH, 2008 **Country:** South Korea **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** Dec 2004 to Jan 2006 **Study design:** prospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.6 yr (2–3.1 yr) **Inclusion criteria:** med FTT **Exclusion criteria:** (1) sm, lg or mass RC tear, PTT; (2) impingement syndrome; (3) severe stiffness; (4) biceps subluxation tear; (5) mini-open/open repair; (6) double-row repair	**Enrolled:** 78 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SC **GROUP 1** **N:** NR **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** med **Dominant shoulder %:** NR **Comorbidities:** arthritis of AC joint (4); hypertrophied membrane **GROUP 2** **N:** NR **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** med **Dominant shoulder %:** NR **Comorbidities:** arthritis of AC joint (3); synovial around cuff	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** lateral clavical excision (for AC arthritis) (4) **Technique:** modified mattress locking stitch (mean/ range: 1.7/ 1–3 suture anchors; 3.3/ 2–6 sutures) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** lateral clavical excision (for AC arthritis) (3) **Technique:** simple stitch (mean/range: 1.8/ 1–3) suture anchors; (mean/range: 3.3/ 2–sutures) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration (mean/range):** 12 mo/ 3–33 mo **Type of treatment:** exercise	**HRQL:** NR **Function:** • ASES • UCLA **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Arthroscopic repair of med sized FTT by use of modified mattress lock stitch improves patient satisfaction rates and radiographic repair integrity compared to simple stitch repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Köse KC, 2008 **Country:** Turkey **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** 2001 to 2005 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** Group 1: 21.6 mo (12 mo–2.8 yr); Group 2: 2.6 yr (13 mo–6.8 yr) **Inclusion criteria:** (1) required RCR, (2) tear confirmed intraoperatively. **Exclusion criteria:** (1) <1 yr of followup, (2) no regular followup, (3) arthroscopically assisted mini-open repair, (4) traditional open repair cuff debridement + subacromial decompression without repair, (5) revision procedure, (6) concomitant stiffness	**Enrolled:** 57 **Analyzed:** 50 **Withdrawals:** 7 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 25 **Age, mean±SD (range):** 62±10 yr (32–75 yr) **Males %:** 16 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 25 **Age, mean±SD (range):** 55±7.6 yr (34–72 yr) **Males %:** 28 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (up to wk 6); active stretching (wk 6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (up to wk 6); active stretching (wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS	**HRQL:** NR **Function:** • CMS • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Clinical results are similar but have a higher cost for arthroscopic RCR compared with mini-open RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Koubaa S, 2006 **Country:** Tunisia **Treatment category:** Non-operative **Questions:** Q3, Q5 **Funding:** NR **BA Quality:** Consecutive: U Followup: U Outcome assessment: U	**Recruitment dates:** Aug 2001 to Mar 2002 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, (minimum):** 6 mo **Inclusion criteria:** (1) rupture or perforation "transfixiante" degenerative of RC, (2) adherence to therapeutic protocol, (3) ≥6 mo followup **Exclusion criteria:** NR	**Enrolled:** 24 **Analyzed:** 24 **Withdrawals:** 0 **Duration since symptom onset, mean±SD (range):** 9.1±12.3 mo (3 mo–2.7 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+IS+SC **GROUP 1** **N:** 24 **Age, mean±SD (range):** 59.2±10 yr (44–83 yr) **Males %:** 37.5 **Cause of tear:** degenerative (24) **Tear size:** mean: 13.5 mm² **Dominant shoulder %:** 62.5 **Comorbidities:** NR	**GROUP 1** **Intervention:** passive/active stretching, strengthening, corticosteroid injection, NSAIDs, analgesics, other PT techniques e.g., proprioception, re-education, ultrasound **Drug name:** analgesics, piroxicam **Duration of treatment:** 2 mo **Treatment Regime:** Frequency–3x/wk.; Intensity– NR **Degree of supervision:** NR **Treatment provider:** PT **Additional comments:** NA	**HRQL:** NR **Function:** • CMS • VAS (100 points) **Pain:** • VAS (100 point) • night pain **ROM:** • abduction (passive and active) • flexion (passive and active) • external rotation (active) • internal rotation **Strength:** NR **Other:** • number of pts returning to work • success • pt reported efficacy of tx	Study confirms the efficacy of nonoperative tx despite methodological limitations. Good results were achieved in 75% of patients (lasted 6 mo). Nonoperative tx should be offered as first option.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Kreuz PC, 2005 **Country:** Germany **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** 1994 to 1999 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 3 yr (2.3–4 yr) **Inclusion criteria:** isolated traumatic rupture of SC tendon **Exclusion criteria:** NR	**Enrolled:** 16 **Analyzed:** 16 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (9); PTT (7) **Tendon(s) torn:** SC **GROUP 1** **N:** 16 **Age, mean±SD (range):** 46 yr (27–64 yr) **Males %:** 87.5 **Cause of tear:** traumatic (16) **Tear size:** NR **Dominant shoulder %:** 93.8 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** manipulation (1) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching–NR; active-assisted stretching (wk 4); stretching (3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration (mean/range):** PTT (4.7 mo; 3–7 mo); FTT (0.9 mo; 0.25–2 mo) **Type of treatment:** PT NOS, NSAID	**HRQL:** NR **Function:** • CMS • Shld function rating **Pain:** • pain NOS **ROM:** NR **Strength:** NR **Other:** NR	Repair of FTT and PTT of SC tendon shows improvement in CMS. Delay between trauma and surgery was inversely proportional to the improvement in CMS.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Lafosse L, 2007 **Country:** France **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** 1999 to 2003 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3 yr (2–4.8 yr) **Inclusion criteria:** (1) FTT ≥1 tendon, underwent repair with double-row technique, (2) followup ≥2 yr **Exclusion criteria:** (1) single-row repair, (2) open repair, (3) a contaminant SC tear, (4) refusal of having postop arthrogram, (5) follow up <2 yr	**Enrolled:** 95 (shld: 105) **Analyzed:** 95 (shld: 105) **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS **GROUP 1** **N:** 95 (shld: 105) **Age, mean±SD (range):** 52 yr (37–79 yr) **Males %:** 49.5 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 72.4 **Comorbidities:** SC fraying (17)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures:** acromioplasty (105); biceps tenotomy/tenodesis (59)/(50) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 3); active stretching (≥wk 6); Modalities–hydrotherapy (encouraged) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS	**HRQL:** NR **Function:** • CMS **Pain:** • VAS **ROM:** • abduction • flexion (active) **Strength:** • mean strength **Other:** • cuff integrity	Much lower rate of failure can be achieved by arthroscopic RCR with use of the double-row suture anchor technique compared with previous reports of either open or arthroscopic repair methods.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Lafosse L, 2007 **Country:** France **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** May 2000 to Jul 2002 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.4 yr (2–3.3 yr) **Inclusion criteria:** pt with RC tear involving the SC tendon **Exclusion criteria:** RC tear involving other tendons	**Enrolled:** 17 **Analyzed:** 17 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 2 yr (3 mo–3.7 yr) **Type of tear:** FTT (15); PTT (2) **Tendon(s) torn:** SC **GROUP 1** **N:** 17 **Age, mean±SD (range):** 47 yr (29–59 yr) **Males %:** 76.5 **Cause of tear:** degenerative (4), traumatic (13) **Tear size:** sm, med, lg **Dominant shoulder %:** 94.1 **Comorbidities:** rupture of LHB (2); partial tear of biceps tendon (7)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** biceps tenodesis (9) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 6); active stretching (≥wk 6); strengthening (≥3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • UCLA **Pain:** • VAS (15 points) **ROM:** • flexion • external rotation • internal rotation **Strength:** • strength (25 points) **Other:** • cuff integrity	Arthroscopic SC repair can result in durable RC repair with clinical results that are at least comparable with those open repair techniques.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
LaStayo PC, 1998 **Country:** USA **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q5, Q6 **Funding:** No funding **ROB:** High	**Recruitment dates:** 1991 to 1994 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean±SD (range):** 22±9.8 mo (6 mo–3.8 yr) **Inclusion criteria:** RCR **Exclusion criteria:** (1) mass, irreparable RC tear; (2) pre-op evidence of instability; (3) rheumatol disorder; (4) repetitive stress disorder; (5) fracture; (6) glenohumeral arthritis; (7) adhesive capsulitis; (8) previous surgery	**Enrolled:** 31 (shld: 32) **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** shld: 17 **Age, mean±SD (range):** 62.9 yr (30–80 yr) **Males %:** 47.1 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 58.8 **Comorbidities:** NR **GROUP 2** **N:** shld: 15 **Age, mean±SD (range):** 63.7 yr (45–75 yr) **Males %:** 40 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 80 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** 6 wk **Rehab components:** in hospital: passive stretching (1–3 days); at home: CPM (day 3–4 wk); passive stretching (wk 4–6); active stretching (wk 4–6); strengthening (wk 10–1 yr) **Rehab regime:** Frequency –daily; Intensity–4 hr/day **GROUP 2** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** 6 wk **Rehab components:** in hospital: passive stretching (1–3 days); at home: passive stretching (day 3–wk 6); active stretching (wk 6–10).; strengthening (wk 10–1 yr) **Rehab regime:** Frequency–3x/day; Intensity–3 sets, 10–15 reps **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • SPADI **Pain:** • VAS **ROM:** • flexion (passive and active) • external rotation (passive and active) **Strength:** • flexion • external rotation **Other:** • number of outpt physical therapist visits	CPM results in little disability and excellent or good outcome after repair. It does not provide a better outcome than manual passive ROM exercises, which is more cost effective.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Leroux JL, 1993 **Country:** France **Treatment category:** Nonoperative **Questions:** Q3 **Funding:** NR **NOS:** 3*/8*	**Recruitment dates:** NR **Study design:** Retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 114.4 days (5 days–2 yr) **Inclusion criteria:** NR **Exclusion criteria:** NR	**Enrolled:** 112 (shld: 115) **Analyzed:** 60 **Withdrawals:** 52 **Duration since symptom onset, mean±SD (range):** 7.5±0.5 mo (NR) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+SC **GROUP 1** **N:** 18 **Age, mean±SD (range):** all groups: 61.5 yr (36–85 yr) **Males %:** all groups 60.7 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** all groups 70 **Comorbidities:** all groups: pseudoparalytic shld (6%) **GROUP 2** **N:** 42 **Age, mean±SD (range):** see group 1 **Males %:** see group 1 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** see group 1 **Comorbidities:** see group1	**GROUP 1** **Intervention:** PT NOS, corticosteroid injection **Drug name:** NR **Duration of treatment:** NA **Treatment Regime:** Frequency–NR; Intensity–(mean±SD) 1.9±0.6 injections **Degree of supervision:** NR **Treatment provider:** NR **GROUP 2** **Intervention:** PT NOS**,** corticosteroid injection **Drug name:** NR **Duration of treatment:** (mean/range) 16 day/5 day–3 mo **Treatment Regime:** Frequency–NR; Intensity–(mean±SD) 1.6±0.1 injections **Degree of supervision**: NR **Treatment provider**: NR	**HRQL:** NR **Function:** • Scapular function Index **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Significantly higher functional improvement was obtained in patients receiving rehabilitative tx than those who were not. This confirms the beneficial effect of rehabilitative therapy in RC tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Levy O, 2008 **Country:** UK **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: U Outcome assessment: U	**Recruitment dates:** Oct 1998 to May 2003 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.0 yr (2–6.1 yr) **Inclusion criteria:** RC tears + undergoing arthroscopic repair **Exclusion criteria:** lost to followup	**Enrolled:** 115 **Analyzed:** 102 **Withdrawals:** 13 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** SS+IS+SC **GROUP 1** **N:** 115 **Age, mean±SD (range):** 57.3 yr (23–78 yr) **Males %:** 55.7 **Cause of tear:** degenerative (54), traumatic (48) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** biceps pathology (15)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (99); biceps tenotomy/tenodesis (12); manipulation (all); resection arthroplasty of joint (41) **Duration of immobilization:** 6 wk. **Duration of rehab:** 6 mo (min) **Rehab components:** passive stretching (up to wk 6); active stretching and strengthening (wk 6 onward) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • number of pts able to return to work/leisure activities • cuff integrity	There was a significant improvement in the mean pre-operative CMS after repair of RC tears. Higher score for: (1) intact repair in comparison with recurrent tears, (2) small tears with arthroscopic repair of RC tears leads to higher rates of satisfaction and good functional results.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Levy O, 2008 **Country:** UK **Treatment category:** Non-operative **Questions:** Q3, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, (minimum):** 9 mo **Inclusion criteria:** (1) mass irreparable RC tears, (2) severely medially retracted (grade 3) **Exclusion criteria:** NR	**Enrolled:** 17 **Analyzed:** 17 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 17 **Age, mean±SD (range):** 80 yr (70–96 yr) **Males %:** 35.3 **Cause of tear:** degenerative (17) **Tear size:** mass **Dominant shoulder %:** NR **Comorbidities:** pseudo paralysis (all); multiple medical comorbidities (all)	**GROUP 1** **Intervention:** strengthening, corticosteroid injection, NSAIDs, PT NOS **Drug name:** Marcaine 0.5%; Depomedrone **Duration of treatment:** 12 wk (min) **Treatment Regime:** Frequency–3-5 x/day (first 6 wk); Intensity–Marcaine 10 mg, Depomedrone 40 mg **Degree of supervision:** NR **Treatment provider:** PT	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** • flexion **Strength:** NR **Other:** NR	A structured deltoid rehabilitation program is suitable for massive RC tears in elderly pts.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Lichtenberg S, 2006 **Country:** Germany **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: U Outcome assessment: U	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.2 yr (NR) **Inclusion criteria:** FTT of SS tendon **Exclusion criteria:** (1) IS/SC tears; (2) PTT, partial repairs; (3) adhesive capsulitis; (4) glenohumeral arthritis; (5) upward migration of the head of the humerus, severe muscle atrophy or fatty infiltration	**Enrolled:** 53 **Analyzed:** 53 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 11.7 mo (1 mo–6 yr) **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 53 **Age, mean±SD (range):** 60.9 yr (46–74 yr) **Males %:** 64.2 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 69.8 **Comorbidities:** biceps pathology (18)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (52); biceps tenotomy/tenodesis (18) resection of lateral clavicle (14) **Duration of immobilization:** 3 wk **Duration of rehab:** 4 mo (min) **Rehab components:** passive stretching (day 1–wk 6); active stretching (NR); stretching (min 4 mo); hydrotherapy (NR) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Arthroscopic repair with subacromial decompression gives good clinical and subjective results, comparable to open or mini-open repair results. Pts over the age of 65 yr show a higher retear rate.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Liem D, 2007 **Country:** Germany **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** Jan 2000 to Aug 2003 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, (endpoint):** group 1: 25 mo.; group 2: 17.6 mo. **Inclusion criteria:** isolated SS tear with persistent pain and reduced function **Exclusion criteria:** (1) previous surgery; (2) major trauma including dislocation or fracture; (3) concomitant adhesive capsulitis; grade 3 atrophy	**Enrolled:** 77 **Analyzed:** 38 **Withdrawals:** 39 **Duration since symptom onset, mean±SD (range):** Group 1: 10.6±7.9 mo (NR); Group 2: 9.6±5.2 mo (NR) **Type of tear:** NR **Tendon(s) torn:** SS **GROUP 1** **N:** 24 **Age, mean±SD (range):** 62.9±6.7 yr (NR) **Males %:** 66.7 **Cause of tear:** degenerative (13), traumatic (6) **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (1) **GROUP 2** **N:** 53 **Age, mean±SD (range):** 61.9±6.6 yr (NR) **Males %:** 30.2 **Cause of tear:** degenerative (9), traumatic (10) **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (2)	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (18); labral repair (1); biceps tenodesis/tenotomy (2)/(1); AC joint resection (4) **Duration of immobilization:** 48 hr. **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (≥wk 7); strengthening (wk 9–12) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); labral tear (2); biceps tenotomy (5); AC joint resection (6) **Duration of immobilization:** 48 hr. **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (≥wk 7); strengthening (wk 9–12) **Rehab regime:** NR **PRE-OP TREATMENT:** YES **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** • abduction • external rotation • flexion **Strength:** NR **Other:** • cuff integrity	In isolated SS tears, arthroscopic RC repair produces excellent clinical results and equivalent tendon integrity compared with mini-open repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Lim JTK, 2005 **Country:** England **Treatment category:** Operative **Questions:** Q2 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 14 mo (3–24 mo) **Inclusion criteria:** (1) sympromatic >6 mo; (2) failed nonoperative tx; (3) impingement syndrome with/ without tear **Exclusion criteria:** (1) instability; (2) no impinge; (3) injection test in another unit; (4) FTT with proximal humeral migration tx nonoperatively or with open RCR	**Enrolled:** 23 **Analyzed:** 23 **Withdrawals:** 0 **Duration since symptom onset, minimum (range):** 6 mo (NR) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 19 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 4 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** NA **Additional procedures (N):** acromioplasty (all); excision of AC joint (52) **Duration of immobilization:** 3–5 day **Duration of rehab:** NR **Rehab components:** passive stretching (immediately post-operative); stretching NOS (NR) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** NA **Additional procedures (N):** acromioplasty (all); excision of AC joint (10) **Duration of immobilization:** 3–5 day **Duration of rehab:** NR **Rehab components:** passive stretching (immediately post-operative); stretching NOS (NR) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** cortisone injection	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Substantial improvement of CMS following decompression in patients with FTT with predominant symptoms of impingement. No patients went on to further surgery.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Lunn JV, 2008 **Country:** France **Treatment category:** Nonoperative vs. operative **Questions:** Q4, Q5 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** 1998 to 2004 **Study design:** prospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 4.2 yr (2–6.6 yr) **Inclusion criteria:** isolated IS rupture and characteristic edema pattern of IS muscle on MRI **Exclusion criteria:** No other FTT of RC, no bilateral disease	**Enrolled:** 19 **Analyzed:** 19 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 4.3 yr (6 mo–10 yr) **Type of tear:** FTT **Tendon(s) torn:** IS **GROUP 1** **N:** 14 **Age, mean±SD (range):** 47.1 yr (30–66 yr) **Males %:** 7.1 **Cause of tear:** degenerative (13), traumatic (1) **Tear size:** NR **Dominant shoulder %:** 57.1 **Comorbidities:** all groups: SS tendinitis (4); partial SS tear (3) **GROUP 2** **N:** 5 **Age, mean±SD (range):** 46.2 yr (38–59 yr) **Males %:** 60 **Cause of tear:** degenerative (4), traumatic (1) **Tear size:** NR **Dominant shoulder %:** 60 **Comorbidities:** see group1	**GROUP 1** **Intervention:** corticosteroid injection, PT NOS, activity modification **Drug name:** NR **Duration of treatment:** NR **Treatment Regime:** NR **Degree of supervision:** NR **Treatment provider:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures:** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** (mean/range) 2.3 injections/ 0–5 injection **Type of treatment:** injections	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** • flexion (active) • external rotation • internal rotation **Strength:** NR **Other:** • degree of fatty muscle infiltration • cuff integrity	Comparing the gain in the CMS, there was no significant benefit between those treated operatively and nonoperatively.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Maier D, 2007 **Country:** Germany **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** No funding **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 2.4 yr (2–4.5 yr) **Inclusion criteria:** (1) written informed consent, (2) instability of gross intact LHB tendon, (3) FTT of SC tendon, (4) >24 mo followup **Exclusion criteria:** (1) no trauma to cause the injury, (2) pathological changes in LHB tendon at the time of surgery, (3) posterior RC tear, (4) atrophy of SC muscle, (5) ≥10 wk since injury	**Enrolled:** 21 **Analyzed:** 21 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 6.2 wk (3–9 wk) **Type of tear:** NR **Tendon(s) torn:** SS, SC **GROUP 1** **N:** 21 **Age, mean±SD (range):** 51 yr (30–70 yr) **Males %:** 76.2 **Cause of tear:** traumatic (21) **Tear size:** sm **Dominant shoulder %:** NR **Comorbidities:** anterior inferior shld dislocation (traumatic) (4)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** NR **Duration of immobilization:** 6 wk **Duration of rehab:** 3 mo **Rehab components:** passive stretching (day 1); active-assisted stretching (individualized); active stretching (wk 6); strengthening (≥wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • subjective shld function **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Stabilization of the LHB tendon in early repair of a traumatic tear of the SC tendon has functional outcomes comparable with the result of tenodesis or tenotomy reported in previous studies.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Mallon WJ, 2004 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Jan 1990 to May 1993 **Study design:** retrospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, (minimum):** 1 yr **Inclusion criteria:** open repair of chronic FTT **Exclusion criteria:** chronic mass tears	**Enrolled:** 224 **Analyzed:** 224 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 95 **Age, mean±SD (range):** 51.8±6.4 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 129 **Age, mean±SD (range):** 53.1±9 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 4–6 wk **Duration of rehab:** 12 mo **Rehab components:** passive stretching (day 3–wk 6); active-assisted stretching (wk 6); strengthening (3 mo–1 yr) **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 4–6 wk **Duration of rehab:** 12 mo **Rehab components:** passive stretching (day 3–wk 6); active-assisted stretching (wk 6); strengthening (3 mo–1 yr) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	Non-smokers undergoing RCR have greater improvement of pain and better functional results than smokers.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Marc T, 2009 **Country:** France **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q6 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** 2004 **Study design:** Retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 2 yr **Inclusion criteria:** (1) FT RC repair by one of the authors (2) seen ≥2 years postoperatively **Exclusion criteria:** NR	**Enrolled:** 80 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, IS, SC **Age, mean±SD (range):** 61 yr (36–80) **Males %:** 61 **GROUP 1** **N:** 26 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 38 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 3** **N:** 16 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 3–8 wk, depending on surgical intervention **Duration of rehab:** 4–10 wk **Rehab components:** kinébalnéotherapie; kinésithérapie; ergothérapie; physical therapy **Rehab regime:** NR **GROUP 2** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 3–8 wk, depending on surgical intervention **Duration of rehab:** 3–4 mo **Rehab components:** Concept Global d'Epaule (CGE); 3 principles: 1) movements done with ext post-int pressure on humeral head to increase subacromial space; 2) gradual progression from passive to active movement at patient's tolerance; 3) restore dynamic equilibrium between muscle responsible fore elevating humeral head and rotation cuff muscles **Rehab regime:** NA **GROUP 3** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 3–8 wk, depending on surgical intervention **Rehabilitation:** Initially, following Group 1 protocol; subsequently, received CGE following Group 2 treatment protocol.	**HRQL:** NR **Function:** • CMS **Pain:** • VAS **ROM:** NR **Strength:** • Strength (NR) **Other:** NR	Functional outcome was the same for inpatient and outpatient rehab; pain reduction was greater for patients with outpatient rehab.

Marc T, 2009 (continued)	**PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** exercise

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Matis N, 2006 **Country:** Austria **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** 1998 to 2003 **Study design:** prospective cohort **Enrolled consecutively:** No **Followup duration, mean (range):** Group 1: 26.8 mo (5–59 mo); Group 2: 14.3 mo (5–33 mo) **Inclusion criteria:** (1) SS and IS tendon tears (total, PTT), (2) <75 yr old, (3) mobilized tendon **Exclusion criteria:** (1) retracted tendon cannot be sufficiently mobilized to provide a tension free reinsertion, (2) SC tear, (3) extremely high head of humerus, (4) atrophy of RC muscle ≥50% on MRI, (5) pts >75 yr	**Enrolled:** 99 **Analyzed:** 96 **Withdrawals:** 3 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (NR); PTT (NR) **Tendon(s) torn:** SS, IS **GROUP 1** **N:** 75 **Age, mean±SD (range):** 58.2 yr (35–75 yr) **Males %:** 68 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 24 **Age, mean±SD (range):** 58 yr (35–75 yr) **Males %:** 66.7 **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Technique:** single transoseous suture; central mattress **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive and active stretching; Modality–heat/cold; electrotherapy; under water tx; lymph drainage **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Technique:** central mattress suture **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive and active stretching; Modality–heat/cold; electrotherapy; under water tx; lymph drainage **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Arthroscopic RC reinsertion provides comparable results to open refixation, after allowing for an appropriate learning curve, with less surgical trauma and faster recovery.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
McBirnie JM, 2005 **Country:** Scotland **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** Apr 1995 to Apr 1998 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 2.4 yr (2–5 yr) **Inclusion criteria:** presence of mobile, FTT **Exclusion criteria:** (1) non-mobilized irreparable tears, (2) PTT, (3) previous shld surgery	**Enrolled:** 53 **Analyzed:** 53 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 53 **Age, mean±SD (range):** 51 yr (23–74 yr) **Males %:** 71.7 **Cause of tear:** NR **Tear size:** sm/med, lg/ mass, mean: 2.5 cm **Dominant shoulder %:** 62.3 **Comorbidities:** SLAP lesion total (33); SLAP lesion type I (22); SLAP lesion type II (11); biceps tenodesis (1)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); labral repair (33); biceps tenotomy/tenodesis (1); distal clavical resection (NR) **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 3); active stretching and strengthening (wk 6); physical therapy (6 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** • SF-36 **Function:** • ASES • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Use of bioabsorbable tacks for arthroscopic repair produced satisfactory clinical outcome results.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
McCallister WV, 2005 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: N Outcome assessment: N	**Recruitment dates:** Nov 1992 to Dec 2000 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean±SD (range):** 5.5±2.2 yr (2–10 yr) **Inclusion criteria:** FTT **Exclusion criteria:** (1) irreparable RC tear; (2) previous RC or acromial surgery, or PTT; (3) WCB claim	**Enrolled:** 96 **Analyzed:** 61 **Withdrawals:** 35 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+IS+SC **GROUP 1** **N:** 96 **Age, mean±SD (range):** 61±11 yr (30–84 yr) **Males %:** 43.8 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** bursectomy (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** • SF-36 **Function:** • SST **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Open RCR without acromioplasty showed improvement in self-assessed shoulder comfort.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
McIntyre LF, 2006 **Country:** USA **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** Jan 2001 to Feb 2002 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.3 yr (18 mo–3.3 yr) **Inclusion criteria:** NR **Exclusion criteria:** NR	**Enrolled:** 105 **Analyzed:** 87 **Withdrawals:** 18 **Duration since symptom onset, mean (range):** Group 1: 9.9 mo (1 mo–3 yr); Group 2: 10.4 mo (1 mo–3 yr) **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 50 **Age, mean±SD (range):** 55.7 yr (37–78 yr) **Males %:** 58 **Cause of tear:** degenerative (26), traumatic (24) **Tear size:** mean: 3.4 cm; range:1–6 cm **Dominant shoulder %:** 62 **Comorbidities:** adhesive capsulitis **GROUP 2** **N:** 55 **Age, mean±SD (range):** 54.7 yr (17–78 yr) **Males %:** 69.1 **Cause of tear:** degenerative (30), traumatic (25) **Tear size:** mean: 3.0 cm; range: 1–6 cm **Dominant shoulder %:** 65.5 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (4); glenohumeral arthritis debridement (1); SLAP lesion excision (1); calcified tendonitis excision (1); arthroscopic capsular release (1) **Technique:** metalic suture anchor; monofilament stitch and tendon to bone closure **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1); active stretching (wk 4–6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Technique**: hand tied knots; braided polyester suture; simple stitch **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1); active stretching (wk 4–6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	No statistical difference in post operative UCLA score between the 2 groups.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Michael JWP, 2005 **Country:** Germany **Treatment category:** Post-op rehabilitation **Questions:** Q2, Q5 **Funding:** Industry **Other**: German **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration (endpoint):** 56 days **Inclusion criteria:** (1) 30–70 yr, (2) FTT of SS, (3) acromiohumeral space >7 mm, (4) attend followup visits, (5) consent **Exclusion criteria:** (1) previous surgery, (2) shld co-morbidity, (3) ability to use CPM device at home, (4) paralysis, (5) Parkinson's disease, (6) adhesive capsulitis, (7) mental health condition, (8) neurological damage, (9) SC rupture	**Enrolled:** 61 **Analyzed:** 55 **Withdrawals:** 6 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (53); PTT (8) **Tendon(s) torn:** SS **GROUP 1** **N:** 40 **Age, mean±SD (range):** 58 yr (35–70 yr) **Males %:** 62.5 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 21 **Age, mean±SD (range):** 58 yr (43–71 yr) **Males %:** 57.1 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (19); mini-open (14); other (1) **Type of surgery:** repair **Additional procedures (N):** manipulation (4): setting fractures (1) **Duration of immobilization:** NR **Duration of rehab:** 90 days **Rehab components:** CPM (day 1/3–42); passive stretching (day 1–3); active-assisted stretching (day 3–wk 3); active and active-assisted stretching and strengthening (wk 4–6); strengthening (≥wk 7); Modality–cold **Rehab regime:** Frequency– CPM, 5x/day; PT 2x/wk; Intensity–CPM, 20 min. each; PT, 30 min/session **GROUP 2** **Surgical approach:** open (12); mini-open (9); all-arthorscopic (4) **Type of surgery:** repair **Additional procedures (N):** manipulation (1); setting fractures (1) **Duration of immobilization:** 4 wk **Duration of rehab:** 90 days **Rehab components:** passive stretching (day 1–3); active-assisted stretching (day 3–wk 3); active and active-assisted stretching and strengthening (wk 4–6); strengthening (≥wk 7); Modality–cold **Rehab regime:** Frequency– 2x/wk; Intensity–30 min/session **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** • VAS (100 points) **ROM:** • time to 90° active abduction **Strength:** NR **Other:** • time away from work	Postoperative tx of FTT with combined CPM and physical therapy protocol provided a significantly earlier ROM than physical therapy alone.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Milano G, 2007 **Country:** Italy **Treatment category:** Operative approach **Questions:** Q2, Q6 **Funding:** NR **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration (endpoint):** 2 yr **Inclusion criteria:** (1) reparable FTT, (2) type 2 or 3 acromion **Exclusion criteria:** (1) PTT or irreparable tear; (2) labral pathology amenable to surgical repair; (3) type 1 acromion, os acromium, degenerative arthritis of glenohumeral joint; (4) symptomatic arthritis of AC joint; (5) RC arthropathy; (6) previous surgery; (7) WCB claim	**Enrolled:** 80 **Analyzed:** 71 **Withdrawals:** 9 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS+SC **GROUP 1** **N:** 40 **Age, mean±SD (range):** 61±7 yr (NR) **Males %:** 50 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 57.5 **Comorbidities:** pathology of LHB (12) **GROUP 2** **N:** 40 **Age, mean±SD (range):** 59.7±9.7 yr (NR) **Males %:** 47.5 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 60 **Comorbidities:** pathology of LHB (20)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy (7)/tenodesis (14) **Duration of immobilization:** 3 wk. **Duration of rehab:** NR **Rehab components:** stretching (passive, active, active-assisted) (wk 4–8); strengthening (wk 9–12); open kinetic chain exercise, proprioception and polymetric exercises, postural rehab of kinetic chain (wk 13–16) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** biceps tenotomy (15)/tenodesis (5); subacromial bursectomy (all) **Duration of immobilization:** 3 wk. **Duration of rehab:** NR **Rehab components:** stretching (passive, active, active-assisted) (wk 4–8 wk); strengthening (wk 9–12); open kinetic chain exercise, proprioception and polymetric exercises, postural rehab of kinetic chain (wk 13–16) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • DASH • Work-DASH **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	At short-term followup subacromial decompression did not seem to significantly affect the outcome of arthroscopic RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Millar NL, 2009 **Country:** Australia **Treatment category:** Operative approach/ technique **Questions:** Q2, Q5, Q6 **Funding:** Industry **NOS:** 7*/8*	**Recruitment dates:** Feb 2003 to Mar 2006 **Study design:** Retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 2 yr **Inclusion criteria:** (1) symptomatic RC tears **Exclusion criteria:** (1) glenohumeral arthritis (2) fracture, (3) previous shoulder surgery, (4) osteonecrosis, (5) PTT, (6) unable/ unwilling to undergo ultrasound at 6 mo and 2 yr post-op, (7) repairs within the first 6 wk of surgeon changing to new arthroscopic technique	**Enrolled:** 159 **Analyzed:** 87 **Withdrawals:** 72 **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 20 **Age, mean±SD (range):** 58 yr (28–87) **Males %:** 50 **Duration since symptom onset, mean (range):** 15 mo (0.7 mo–6.8 yr) **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 60 **Comorbidities:** NR **GROUP 2** **N:** 29 **Age, mean±SD (range):** 64 yr (40–90 yr) **Males %:** 34 **Duration since symptom onset, mean (range):** 7.2 mo (1–3.3 yr) **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 66 **Comorbidities:** NR **GROUP 3** **N:** 38 **Age, mean±SD (range):** 59 yr (34–86) **Males %:** 53 **Duration since symptom onset, mean (range):** 6.6 mo (0.5 mo–2.6 yr) **Cause of tear:** NR **Tear size:** all sizes	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1); active stretching and strengthening exercises (6 wk); active overhead activity (3 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** knotted **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1); active stretching and strengthening exercises (6 wk); active overhead activity (3 mo) **Rehab regime:** NR **GROUP 3** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** knotless **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1); active stretching and	**HRQL:** NR **Function:** • ASES (1^{o}) • Overall shoulder function • RC Functional Index **Pain:** • At rest (0–4) • At night (0–4) **ROM:** • flexion • abduction • external rotation **Strength:** • supraspinatus • external rotation • liftoff **Other:** • cuff integrity	Open or arthroscopic repair of RC tear resulted in improvements in pain, motion, strength and function. Arthroscopic had 20 percent better ASES scores than the open group.

Millar NL, 2009 (continued)	**Dominant shoulder %:** 76 **Comorbidities:** NR	strengthening exercises (6 wk); active overhead activity (3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Milroy DR, 2008 **Country:** USA **Treatment category:** Post-op rehabilitation **Questions:** Q2 **Funding:** NR **Other**: Abstract **NOS:** 3*/8*	**Recruitment dates:** NR **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** NR **Inclusion criteria:** NR **Exclusion criteria:** NR	**Enrolled:** 67 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 28 **Age, mean±SD (range):** 57±10.9 yr (NR) **Males %:** 57.1 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 39 **Age, mean±SD (range):** 57.8±9.81 yr (NR) **Males %:** 69.2 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures:** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures:** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** • DASH **Function:** NR **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • number of tx visits	Tx of patients with a standardized care process following RCR resulted in greater functional improvement and utilized fewer physical therapy visits.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Misamore GW, 1995 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** 1988 to 1990 **Study design:** retrospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.8 yr (2–5.7 yr) **Inclusion criteria:** (1) operative RCR, (2) active with no serious medical illness, (3) no response to nonoperative **Exclusion criteria:** (1) mass RC tear, (2) not amenable to direct primary repair, (3) treated with debridement alone or with a procedure involving local tissue augmentation	**Enrolled:** 103 (shld: 107) **Analyzed:** 103 (shld: 107) **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 24 **Age, mean±SD (range):** 53 yr (22–67 yr) **Males %:** 75 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 50 **Comorbidities:** NR **GROUP 2** **N:** 79 (shld: 83) **Age, mean±SD (range):** 53 yr (30–68 yr) **Males %:** 70.1 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 64.6 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (≥day 1); active stretching (wk 6–8); strengthening (wk 8–9) **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (≥day 1); active stretching (wk 6–8); strengthening (wk 8–9) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (mean) **Type of treatment:** exercise, physical therapy NOS, cortisone injection	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • number of pts returning to work/sports	Workers compensation patients had poorer functional and return to work results than patients not receiving compensation, with the exception of the active ROM results.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Mohtadi NG, 2008 **Country:** Canada **Treatment category:** Operative approach **Questions:** Q2, Q5, **Funding:** Government, academic, foundation **ROB:** High	**Recruitment dates:** 1999 to 2004 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 2 yr (NR) **Inclusion criteria:** (1) unremitting pain, (2) ≥3 mo nonoperative, (3) weakness, (4) >18 yr, (5) FTT, (6) English speaking **Exclusion criteria:** (1) <grade 3 muscle strength, (2) previous surgery, (3) PTT or irreparable tear	**Enrolled:** 73 **Analyzed:** 60 **Withdrawals:** 14 **Duration since symptom onset, mean (range):** >3 mo (NR) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 37 **Age, mean±SD (range):** 56.2 yr (44–77 yr) **Males %:** 59.5 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 43.2 **Comorbidities:** NR **GROUP 2** **N:** 36 **Age, mean±SD (range):** 57 yr (33–82 yr) **Males %:** 55.6 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 66.7 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (immediately); active stretching (wk 6); CPM (≥wk 8) **Rehab regime:** NR **GROUP 2** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (immediately); active stretching (6 wk); CPM (≥wk 8) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** NR	**HRQL:** • RC-QOL **Function:** • ASES • Shoulder Rating Questionnaire **Pain:** NR **ROM:** • flexion • external rotation at side • external rotation at 90° abduction • internal rotation **Strength:** • Function Shoulder Elevation Test **Other:** NR	No difference in outcomes at 1 and 2 years between mini-open and open acromioplasty. Statistically and clinically significant improvement in quality of life was found in mini-open patients at 3 mo vs. open RCR pts.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Montgomery TJ, 1994 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** Jan 1987 to Mar 1990 **Study design (trial type):** CCT (parallel) **Enrolled consecutively:** yes **Followup duration, mean (range):** NR (2–5 yr) **Inclusion criteria:** **(1)** failure of nonoperative tx, (2) FTT **Exclusion criteria:** NR	**Enrolled:** 106 (shld: 107) **Analyzed:** 87 (shld: 88) **Withdrawals:** 19 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 58 **Age, mean±SD (range):** 58±11.6 yr (32–79 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** all groups 60.4 **Comorbidities:** NR **GROUP 2** **N:** 49 **Age, mean±SD (range):** 60±12.2 yr (36–79 yr) **Males %:** NR **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** see group 1 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching–day 10–30; active rehabilitation >1 mo **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** debridement **Additional procedures (N):** acromioplasty (all); abrasion of the greater tuberoscity (NR) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 10–30); active rehabilitation (>1 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** exercise, physical therapy NOS, cortisone injection, NSAID, avoidance of pain inducing activities	**HRQL:** NR **Function:** NR **Pain:** NR **ROM:** NR **Strength:** • abduction strength • external rotation strength **Other:** NR	Open repair group did significantly better than arthroscopic debridement group. Although arthroscopic tx may be indicated in select patients, this study could not delineate any factors that would allow pre-operative selection of these patients and therefore would recommend RCR for patients with FTT.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Moosemayer S, 2010 **Country:** Norway **Treatment category:** Nonoperative vs. operative **Questions:** Q1, Q4, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** Sept 2004 to Oct 2007 **Study design:** RCT (parallel) **Enrolled consecutively:** NR **Followup duration, mean (range):** 12 mo **Inclusion criteria:** (1) pain at rest or exercise laterally on the shoulder, (2) a painful arch, (3) positive impingement signs and a passive ROM ≥140 for abduction and flexion, (4) FTT <3 cm confirmed by MRI or US, (5) muscle atrophy <stage 2 on MRI, (6) traumatic and atraumatic tears **Exclusion criteria:** (1) age <18 years, (2) tears with absolute indication for surgery, (3) other local or systemic disease influencing shld function, (4) history of tendon surgery, (5) medical contraindication	**Enrolled:** 103 **Analyzed:** 102 **Withdrawals:** 1 **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+SC **GROUP 1** **Duration since symptom onset, mean±SD:** 12.3±18.7 **N:** 51 **Age, mean±SD (range):** 59±7.5 yr **Males %:** 73 **Cause of tear:** degenerative (22); traumatic (30) **Tear size:** sm, med **Dominant shoulder %:** 65 **Comorbidities:** NR **GROUP 2** **Duration since symptom onset, mean±SD:** 9.8±9.8 **N:** 51 **Age, mean±SD (range):** 61±7.6 yr **Males %:** 71 **Cause of tear:** degenerative (22); traumatic (29) **Tear size:** sm, med **Dominant shoulder %:** 61 **Comorbidities:** NR **GROUP 3** **N:** 9 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open (n=42); mini-open (n=9) **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all), biceps tenodesis (18) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (1 wk); active-assisted stretching (6 wk); strengthening exercises (12 wk) **Rehab regime:** NR **Treatment provider:** PT **GROUP 2** **Intervention:** PT – stretching, strengthening and joint mobilization exercise **Drug name:** NR **Duration of treatment:** mean (range): 24 (9–55) training sessions **Treatment Regime:** Frequency – 2x/wk; Intensity – 40 mins/session **Degree of supervision:** direct (1:1) **Treatment provider:** PT **GROUP 3** Initial mean of 24 sessions (range 15–34 session) of nonoperative treatment – see "Group 2" After failed improvement – see "Group 1" **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** • SF-36 **Function:** • ASES • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	In a short-term prospective study, nonoperative and operative interventions can be used for treatment of patients with small and medium-sized RCR. However, better results can be expected after primary surgical repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Moser M, 2007 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **NOS:** 3*/8*	**Recruitment dates:** 1991 to 1999 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration (endpoint):** 2 yr **Inclusion criteria:** (1) tear ≥5 cm with ≥2 tendons involved, (2) failure of nonoperative tx, (3) no prior repair, (4) minimal/no arthritis, (5) follow up ≥24 mo **Exclusion criteria:** NR	**Enrolled:** 38 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **ALL GROUPS** **N:** 21 (group 1), 11 (group 2), 6 (group 3) **Age, mean±SD (range):** all groups: 62.6 yr (33–81 yr) **Males %:** 73.7 (all) **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** 63.6 (all) **Comorbidities:** NR	**ALL GROUPS** **Surgical approach:** open **Type of surgery:** repair (group 1 and 2); debridement (group 3) **Additional procedures (N):** acromioplasty (NR) **Duration of immobilization:** NR **Duration of rehab:** >3 mo **Rehab components:** passive stretching (day 1–wk 6); active stretching (wk 6–3 mo); strengthening (≥3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • SPADI **Pain:** NR **ROM:** • scaption (active) • internal rotation (active) • external rotation (active) **Strength:** • scaption • external rotation **Other:** NR	Pts with partial or complete repair were seen to have the best subjective and objective outcome measures, but due to sample size did not reach statistical significance, except active external rotation. Author will continue to tx mass tears with partial or complete repair over debridement.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Motycka T, 2004 **Country:** Austria **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** 1988 to 1998 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean±SD (range):** 5 yr.±8 mo (2.1–14.2 yr) **Inclusion criteria:** RC tears ≥3 cm **Exclusion criteria:** NR	**Enrolled:** 76 **Analyzed:** 64 **Withdrawals:** 12 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 33 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 31 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** chronic rupture of LHB (3)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); resection of clavicle (1) **Duration of immobilization:** 3–6 wk **Duration of rehab:** NR **Rehab components:** passive stretching; active stretching; strengthening **Rehab regime:** NR **GROUP 2** **Surgical approach:** open (15); all-arthorscopic (16) **Type of surgery:** debridement **Additional procedures (N):** acromioplasty (all); partial closure (8); resection of clavicle (1) **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching; active stretching; strengthening **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Suturing of large RC tear is not superior to debridement in the long term.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Mullett H, 2006 **Country:** UK **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** Dec 2004 to Jun 2006 **Study design:** Prospective cohort **Enrolled consecutively:** no **Followup duration, mean (range):** 3 yr (12 mo–NR) **Inclusion criteria:** (1) sml & med RC tears **Exclusion criteria:** NR	**Enrolled:** 210 **Analyzed:** NR **Withdrawals:** NR **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 114 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 96 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** sm, med **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** debridement **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** • VAS **ROM:** NR **Strength:** • strength (NR) **Other:** NR	The results of the study support arthroscopic RCR compared to decompression alone in patients with small and medium rotator cuff tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Nam SC, 2008 **Country:** South Korea **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** No funding **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** Apr 2000 to Sep 2004 **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 2.6 yr (16 mo–6.2 yr) **Inclusion criteria:** (1) arthroscopic RCR for RC tear with limited ROM; (2) AC group: crepitus heard during manipulation before RC repair **Exclusion criteria:** (1) partial/mass RC tears, (2) AC arthritis that required distal clavicular resection, (3) advanced glenohumeral arthritis, (4) WCB claim, (5) tenotomy or tenodesis of the long head of the biceps, (6) revision procedures	**Enrolled:** 45 **Analyzed:** 45 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** Group 1: 11.7 mo (2 mo–5 yr) Group 2: 11.6 mo (1 mo–2.5 yr) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 15 **Age, mean±SD (range):** 59.8 yr (43–73 yr) **Males %:** 86.7 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** 66.7 (all) **Comorbidities:** shld stiffness(all); DM (5) **GROUP 2** **N:** 30 **Age, mean±SD (range):** 56.1 yr (40–65 yr) **Males %:** 60 **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** see group 1 **Comorbidities:** DM (1)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); manipulation (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (1–6 mo); active-assisted stretching (wk 6); strengthening (wk ≥6) **Rehab regime:** Frequency– daily; Intensity–3x10 rounds/day **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** Frequency–daily; Intensity–3x10 rounds/day **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** • SST **Function:** • CMS • UCLA **Pain:** • VAS (active motion) • VAS (at rest) **ROM:** • abduction • forward flexion • external rotation • internal rotation (pos.) • cross-body adduction **Strength:** • forward flexion (kg) • external rotation (kg) • internal rotation (kg) **Other:** NR	Pts with FTT and stiffness of the shld can be tx with arthroscopic RCR and concomitant manipulation with results comparable to patients with no stiffness.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Nho SJ, 2009 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: N Outcome assessment: U	**Recruitment dates:** 2003 to 2005 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.4 yr **Inclusion criteria:** (1) imaging consistent with RC tear, (2) failure of nonoperative tx, (3) corticosteroid injection **Exclusion criteria:** (1) RCR not performed, (2) revision RCR, (3) glenohumeral OA	**Enrolled:** 193 **Analyzed:** 127 **Withdrawals:** 66 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** SS, IS, SC, TM (single, double, triple) **GROUP 1** **N:** 193 **Age, mean±SD (range):** 58.6 yr **Males %:** 39.9 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (36); biceps pathology (37)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); SLAP repair (1); biceps tenotomy/tenodesis (12)/(6); AC joint coplaning (28); distal clavicle excision (15) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components: Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection	**HRQL:** NR **Function:** • ASES **Pain:** NR **ROM:** • flexion • external rotation **Strength:** • manual muscle testing • flexion • external rotation **Other:** • cuff integrity	Prognostic factors after arthroscopic RCR including age, tear size, and concomitant pathology influences outcomes. The progression from a single-tendon to multiple tendon tear with associated pathology increased the likelihood of tendon defect by at least 9 times. Earlier surgery provides better outcomes.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Ogilvie-Harris DJ, 1993 **Country:** Canada **Treatment category:** Operative approach **Questions:** Q2 **Funding:** No funding **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** CCT (parallel) **Enrolled consecutively:** yes **Followup duration, mean (range):** NR (2–5 yr) **Inclusion criteria:** (1) pre-op dx based on history, (2) physical exam and failed nonoperative tx, (3) confirmation of dx and appropriate tear size **Exclusion criteria:** NR	**Enrolled:** 50 **Analyzed:** 45 **Withdrawals:** 5 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 25 **Age, mean±SD (range):** 30–39 (2); 40–49 (9); 50–59 (9); 60–69 (1); >69 (2) **Males %:** NR **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 25 **Age, mean±SD (range):** 30–39 (3); 40–49 (8); 50–59 (6); 60–69 (4); >69 (1) **Males %:** NR **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–3); active-assisted stretching (wk 3–6); strengthening (6 wk–6 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** active stretching (day 1–3 mo); strengthening (wk 6–3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Subacromial decompression and debridement is ideal for pts with limited demands and whose main complaints are pain and ROM loss. For patients who need good function and strength arthroscopic RCR is not suffficient, in which case the authors advise open repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Oh JH, 2008 **Country:** South Korea **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Jan 2004 to Dec 2005 **Study design:** prospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 15.1 mo. (12 mo–2.7 yr) **Inclusion criteria:** symptomatic FTT with/without shld stiffness **Exclusion criteria:** (1) previous shld surgery, (2) revision repair, (3) irreparable tear, (4) existence of instability or cuff tear arthropathy	**Enrolled:** 125 (shld: 127) **Analyzed:** 125 (shld: 127) **Withdrawals:** 0 **Duration since symptom onset, mean±SD (range):** Group 1: 28.5±52.2 (NR) Group 2: 41.2±52 (NR) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** shld: 30 **Age, mean±SD (range):** 60.9±8.7 yr (NR) **Males %:** 50 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (15); biceps pathology (12); AC arthritis (1); DM (3) **GROUP 2** **N:** shld: 97 **Age, mean±SD (range):** 58.8±9.3 yr (NR) **Males %:** 45.4 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (45); biceps pathology (44); AC arthritis (10); DM (10)	**GROUP 1** **Surgical approach:** open (21); all-arthroscopic (9) **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (12); manipulation (all); capsular release (all); clavicle resection (1) **Duration of immobilization:** sm tears: 4 wk; med tears: 5 wk; lg and mass tears: 6–7 wk **Duration of rehab:** NR **Rehab components:** sm/med: passive stretching (immediate); lg/mass: passive stretching (wk 2–4); active stretching once brace weaned; strengthening (wk 9–12) **Rehab regime:** NR **GROUP 2** **Surgical approach:** open (62); all-arthroscopic (35) **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (44); distal clavicle resection (10) **Duration of immobilization:** sm: 4 wk; med: 5 wk; lg and mass: 6-7 wk **Duration of rehab:** NR **Rehab components:** sm/med: passive stretching (immediate); lg/mass: passive stretching (wk 2–4); active stretching once brace weaned; strengthening (wk 9–12) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • CMS • SST **Pain:** • VAS **ROM:** • forward elevation • external rotation • internal rotation **Strength:** NR **Other:** • cuff integrity	Moderate pre-operative shoulder stiffness does not affect clinical outcomes of RC repair if arthroscopic capsular release is added to the index procedure.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Pai VS, 2001 **Country:** New Zealand **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** 1994 to 1997 **Study design:** Before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 34 mo (NR) **Inclusion criteria:** FTT **Exclusion criteria:** inadequate followup	**Enrolled:** 60 **Analyzed:** 54 (shld: 58) **Withdrawals:** 6 **Duration since symptom onset, mean (range):** Group 1: 9 mo (3–24 mo) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+SC, SS+IS+SC **GROUP 1** **N:** 60 **Age, mean±SD (range):** 65 yr (32–82 yr) **Males %:** 56.7 **Cause of tear:** degenerative (11), traumatic (47) **Tear size:** all sizes **Dominant shoulder %:** 66.7 **Comorbidities:** dislocated shld (1); biceps tendon rupture (7); OA; sclerosis of greater tuberosity; cystic changes; squaring; decreased AC space	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenodesis (3); distal clavical excision (11); repair of coracoacromial ligament (6) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (≥wk 6); strengthening when active motion was comfortable **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** exercise, physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** NR **Pain:** • pain at rest **ROM:** NR **Strength:** NR **Other:** NR	Acromioplasty and RCR can improve pain and shld function in patients with FTT.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Park JY, 2008 **Country:** South Korea **Treatment category:** Operative technique **Questions:** Q2, Q5, Q6 **Funding:** No funding **NOS:** 7*/8*	**Recruitment dates:** May 2002 to May 2004 **Study design:** prospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.1 yr (22 mo–2.5 yr) **Inclusion criteria:** FTT **Exclusion criteria:** (1) incomplete repair, (2) RC tears after shld fracture or dislocation	**Enrolled:** 85 **Analyzed:** 78 **Withdrawals:** 7 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 42 **Age, mean±SD (range):** 54.4 yr (28–76 yr) **Males %:** 52.4 **Cause of tear:** NR **Tear size:** sm/med, lg/mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP2** **N:** 43 **Age, mean±SD (range):** 57 yr (39–78 yr) **Males %:** 46.5 **Cause of tear:** NR **Tear size:** sm/med, lg/mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** double-row knot tying **Duration of immobilization:** 5–8 wk **Duration of rehab:** NR **Rehab components:** passive stretching; active stretching (wk 5); strengthening (wk 8–10) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** single-row **Duration of immobilization:** 5–8 wk **Duration of rehab:** NR **Rehab components:** passive stretching; active stretching (wk 5); strengthening (wk 8–10) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • CMS **Pain:** NR **ROM:** NR **Strength:** • Shoulder Strength Index **Other:** NR	The single-row method should be used to repair small to medium RC tears and the double-row method should be used for repairing large to massive RC tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Park JY, 2004 **Country:** South Korea **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** Prospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.8 yr (2–5.2 yr) **Inclusion criteria:** PTT (>50% tears), FTT **Exclusion criteria:** (1) tears of thickness <6mm, (2) open RCR of mass RC tear	**Enrolled:** 42 **Analyzed:** 42 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 2.5 yr (1 mo–20 yr) **Type of tear:** FTT (20); PTT (22) **Tendon(s) torn:** NR **GROUP 1** **N:** 22 **Age, mean±SD (range):** all groups: 55 yr (NR) **Males %:** NR **Cause of tear:** degenerative (15), traumatic (7) **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** LHB tears (3); OA of AC joint (2) **GROUP 2** **N:** 20 **Age, mean±SD (range):** see group 1 **Males %:** NR **Cause of tear:** degenerative (10), traumatic (10) **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** OA (1)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy (3) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (up to wk 6); active stretching (≥wk 6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (up to wk 6); active stretching (≥wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES **Pain:** • VAS **ROM:** • flexion • external rotation • internal rotation **Strength:** NR **Other:** NR	Satisfactory postoperative pain relief and functional recovery were obtained in both PTT and FTT groups repaired by arthroscopic RC repair and subacromial decompression. To avoid procedural failure, careful pre-operative examination of AC joint is critical.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Pearsall AW, 2007 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q6 **Funding:** Government **NOS:** 8*/8*	**Recruitment dates:** 1999 to 2003 **Study design:** Prospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 4.2 yr (2.3–7 yr) **Inclusion criteria:** (1) tear size between 1–5 cm, (2) minimum followup 24 mo, (3) complete pre- and postoperative evaluation **Exclusion criteria:** (1) massive RCTs, (2) acute tear repaired within 3 mo of injury, (3) <24 mo of followup; radiographic evidence of glenohumeral joint arthritis, (4) WCB	**Enrolled:** 54 **Analyzed:** 52 **Withdrawals:** 2 **Duration since symptom onset, mean (range):** 5.7 (3–16) mo **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 25 **Age, mean±SD (range):** 58 yr (41–76 yr) **Males %:** 40 **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** fraying of biceps tendon (12); humeral OA (4); glenoid OA (3); diabetes (5) **GROUP 2** **N:** 27 **Age, mean±SD (range):** 55 yr (38–78 yr) **Males %:** 41 **Cause of tear:** NR **Tear size:** med, lg **Dominant shoulder %:** NR **Comorbidities:** fraying of biceps tendon (17); humeral OA (4); glenoid OA (2); diabetes (6)	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (23); distal clavicle excision (14); biceps tenotomy/tenodesis (NR); debridement of any exposed bone on humerus or glenoid (NR) **Duration of immobilization:** 6 wk **Duration of rehab:** 3 mo **Rehab components:** passive stretching (1–6 wk); active stretching & strengthening exercises (6 wk–3 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (NR) distal clavicle excision (11); biceps tenotomy/tenodesis (NR); greater tuberosity abrasion (NR) **Duration of immobilization:** 6 wk **Duration of rehab:** 3 mo **Rehab components:** passive stretching (1–6 wk); active stretching & strengthening exercises (6 wk–3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** PT NOS for 6 wk, cortisone injection (≥1 injection)	**HRQL:** NR **Function:** • UCLA **Pain:** • VAS **ROM:** • active flexion • active abduction • internal rotation at 90° • glenohumeral elevation • external rotation at 0° • external rotation at 90° **Strength:** NR **Other:** • Short Shoulder Test Improvement	No difference in outcomes between mini-open and arthroscopic repair and either procedure can be used in the treatment of small and medium-sized rotator cuff tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Pillay R, 1994 **Country:** Singapore **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: U Outcome assessment: N	**Recruitment dates:** Dec 1988 to July 1991 **Study design:** retrospective cohort treated as before-and-after **Enrolled consecutively:** NR **Followup duration (mean / range):** group 1: 18 mo (6 mo–2.5 yr); group 2: 20 mo (6 mo–2.5 yr) **Inclusion criteria:** (1) chronic impingement syndrome, (2) arthroscopic subacromial decompression **Exclusion criteria:** NR	**Enrolled:** 40 (shld: 42) **Analyzed:** 34 (shld: 36) **Withdrawals:** NR **Duration since symptom onset, mean (range):** Group 1: 18 mo (NR); Group 2: 12.5 mo (NR) **Type of tear:** FTT (8); PTT (20) **Tendon(s) torn:** NR **GROUP 1** **N:** 26 **Age, mean±SD (range):** 50.2 yr (33–75 yr) **Males %:** 50 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 77 **Comorbidities:** All groups: diabetic neuropathy and cervical radiculopathy (1 total) **GROUP 2** **N:** 8 (shld: 10) **Age, mean±SD (range):** 52 yr (51–71 yr) **Males %:** 62.5 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 100 **Comorbidities:** see goup 1	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** active-assisted and active stretching (≥day 1) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** active-assisted and active stretching (≥day 1) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • number of pts with improvemed UCLA	Arthroscopic subacromial decompression is effective for tx of PTT and impingement syndrome.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Porcellini G, 2006 **Country:** Italy **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Jan 2000 to May 2002 **Study design:** retrospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 3 yr (2–4.3 yr) **Inclusion criteria:** All: (1) 40–60 yr, (2) no disclocation of unaffected shld, (3) negative apprehension and relocation signs in the unaffected shld, (4) sulcus sign negative bilaterally, (5) no fracture of the glenoid/tuberosities Group 1/3: (1) ≥1 episodes of instability, (2) instability (3) no engaging Hill-Sacks lesion, (4) lesion of the glenoid labrum or capsule Group 2/3: (1) postive cuff signs on pre-operative examination, (2) cuff signs, (3) complete RC tear with ≥1 tendon	**Enrolled:** 100 **Analyzed:** 100 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (100); PTT (6 – in group 1) **Tendon(s) torn:** SS, IS, SC, SS+IS, SS+IS+SC, SS+SC, IS+TM **GROUP 1** **N:** 50 **Age, mean±SD (range):** 47.5±6.36 yr (NR) **Males %:** 64 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 50 **Age, mean±SD (range):** 48.1±6.4 yr (NR) **Males %:** 82 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** Bankart lesions (12); capsular lesions (18); labrum capsule (20); recument ant. Dislocation of shld associated with a cuff tear (all)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 3–8); passive and active stretching (wk 5); strengthening (≥wk 8); Modalities–pool **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** labral repair (NR) **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 3–8); passive and active stretching (wk 5); strengthening (≥wk 8); Modalities–pool **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • Rowe score **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	RC tears and glenohumeral instability are closely related and may affect outcome. Authors recommend arthroscopic RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Porcellini G, 2006 (continued)	Group 1: negative RC signs, (2) no sign of RC tear, (3) intact RC cuff or fraying of the articular side of cuff Group 2: (1) no shld instability, (2) negative apprehension and relocation signs in affected shoulder, (3) no instability, (4) no lesion of the glenoid labrum or capsule **Exclusion criteria:** (1) open surgery, (2) lesions different from those in inclusion, (3) acromion-humeral distance <5 mm, (4) axillary or SC palsy, (5) SC tendon lesion associate with lesion of the ant. And pos. glenoid labrum, (6) pts with PTT associated with a SLAP lesion				

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Prasad N, 2005 **Country:** UK **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** 2000 to 2003 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 1.2 yr (12 mo–4.2 yr) **Inclusion criteria:** NR **Exclusion criteria:** NR	**Enrolled:** 42 **Analyzed:** 40 **Withdrawals:** 2 **Duration since symptom onset, mean (range):** 4.7 yr (6 mo–15 yr) **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SC, SS+IS+SC **GROUP 1** **N:** 42 **Age, mean±SD (range):** 63 yr (22–82 yr) **Males %:** 71.4 **Cause of tear:** degenerative (26), traumatic (16) **Tear size:** all sizes **Dominant shoulder %:** 90.5 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	Older pts and those with mass RC tear could benefit from surgery, although not as much as younger pts and those with small/moderate size cuff tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Raab MG, 1996 **Country:** USA **Treatment category:** Post operative rehabilitation **Questions:** Q2, Q5, Q6 **Funding:** NR **ROB:** High	**Recruitment dates:** Dec 1992 to Jan 1994 **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** yes **Followup duration (endpoint):** 3 mo **Inclusion criteria:** NR **Exclusion criteria:** NR	**Enrolled:** 41 **Analyzed:** 26 **Withdrawals:** 15 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (24); PTT (2) **Tendon(s) torn:** NR **GROUP 1** **N:** 14 **Age, mean±SD (range):** 58 yr (NR) **Males %:** 64.3 **Cause of tear:** NR **Tear size:** sm/med, lg/mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 12 **Age, mean±SD (range):** 58 yr (NR) **Males %:**75 **Cause of tear:** NR **Tear size:** sm/med, lg/mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures (N):** acromioplasty (14) **Duration of immobilization:** NR **Duration of rehab:** ≥6 wk **Rehab components:** passive stretching (wk 1–3); active-assisted stretching (≥wk 4–6); physical therapy NOS (≥wk 6) **Rehab regime:** Frequency–daily for 3 wk; Intensity–8 hr/day **GROUP 2** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures (N):** acromioplasty (12) **Duration of immobilization:** NR **Duration of rehab:** ≥6 wk **Rehab components:** passive stretching (wk 1–3); active-assisted stretching and physical therapy NOS (wk 4–6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • Shoulder Score **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	CPM had no effect on overall shld score with 3 mo followup. CPM had a beneficial effect on ROM for all pt, and pain relief in female pts and pts ≥60 yr.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Randelli PS, 2008 **Country:** UK **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** Jan to May 2004 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration (endpoint):** 24 mo **Inclusion criteria:** (1) FTT (2) underwent arthroscopic RCR, (3) wore a brace for 4 wk post operatively, (4) gave informed consent, (5) pre-operative platelet count >150,000, (6) min pre-operative hemoglobin of 11.0g/dl, (7) no infectious diease or any disease to limit followup, (8) unilateral RC tear **Exclusion criteria:** (1) tear involving SC or biceps tendons, (2) previous RCR, (3) moderate to severe glenohumeral OA, (4) >20° loss of passive flexion compared to contralateral shld,	**Enrolled:** 14 **Analyzed:** 13 **Withdrawals:** 1 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 14 **Age, mean±SD (range):** 66.6±9 yr (NR) **Males %:** 57.1 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** 71.4 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 10 days; followed by 18 nights of immobilization **Duration of rehab:** NR **Rehab components:** passive stretching (day 10); active stretching (≥1 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • UCLA **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	Preliminary results indicate that the application of platelet rich plasma during RCR is safe and effective.

Randelli PS, 2008 (continued)	**Exclusion criteria (continued):** (1) tear involving SC or biceps tendons, (2) previous RCR, (3) moderate to severe glenohumeral OA, (4) >20° loss of passive flexion compared to contralateral shld, (5) fatty infiltration >50% of SS or IS, (6) mass tear in a contracted immobile cuff, (7) infection, (8) metabolite bone disorders, (9) un-cooperative/difficulty with directions, (10) vascular insufficiency, muscular atrophy, or neuromuscular diseases of the affected arm	

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Roddey TS, 2002 **Country:** USA **Treatment category:** Post-op rehabilitation **Questions:** Q2 **Funding:** Foundation **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** RCT (NR) **Enrolled consecutively:** NR **Followup duration (endpoint):** 52 wk **Inclusion criteria:** (1) FTT, (2) arthroscopic RCR **Exclusion criteria:** (1) RA, (2) previous surgery on involved shld	**Enrolled:** 129 **Analyzed:** 108 **Withdrawals:** 21 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 54 **Age, mean±SD (range):** 58.7±10.6 yr (34.6–78.0 yr) **Males %:** 66.7 **Cause of tear:** NR **Tear size:** mean: 2.5 cm, range: 1–5 cm, mass tears n=4 **Dominant shoulder %:** NR **Comorbidities:** For all groups: biceps tear (5); SLAP lesion (5); Bankart lesion (1) **GROUP 2** **N:** 54 **Age, mean±SD (range):** 57.2±9.1 yr (40.0–75.8 yr) **Males %:** 61.1 **Cause of tear:** NR **Tear size:** mean: 2.6 cm; range:1.5–4.0 cm, mass tears n=8 **Dominant shoulder %:** NR **Comorbidities:** see group1	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** all groups: acromioplasty (all); manipulation (3); SLAP repair (5); biceps tear repair (1); Bankart repair (1) **Duration of immobilization:** 6 wk **Duration of rehab:** 52 wk **Rehab components:** passive stretching (day 1–6 wk); active stretching (wk 6 onward); strengthening (≥3 mo); free-weight exercise and weight bearing exercise (6 mo onward) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** see group1 **Duration of immobilization:** 6 wk **Duration of rehab:** 52 wk. **Rehab components:** passive stretching (day 1); active stretching (≥wk 6); strengthening (3 mo); free-weight exercise and weight bearing exercise (6 mo onward) **Rehab regime:** Frequency–NR; Intensity–15 min./phase **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • PENN • SPADI **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	With a therapist available for questions, patients who used the videotape method for their home program instruction had self-reported outcomes equal to patients instructed in their home program personally by a physical therapist. Self-reported compliance with the rehabilitation program had little effect on the outcomes.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Rokito AS, 1999 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** Jun 1989 to Jul 1993 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 65 mo (46–93 mo) **Inclusion criteria:** lg or mass, reparable chronic tear of RC **Exclusion criteria:** (1) irreparable tears, (2) previous procedure involving the shld, (3) symptoms in the contralateral shld	**Enrolled:** 30 **Analyzed:** 30 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 30 **Age, mean±SD (range):** 57 yr (39–78 yr) **Males %:** 70 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** 76.7 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (≥day 1); active stretching (≥wk 6–8); strengthening (≥wk12) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** exercise, NSAID	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** • isokinetic strength (flexion, abduction, external rotation) **Other:** NR	Large or massive RC tears can have satisfactory outcomes with operative RCR but more than one year is needed for restoration of strength.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Sauerbrey AM, 2005 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q6 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** Jan 1997 to Dec 1999 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** Group 1: 33 mo (18–48 mo); Group 2: 19 mo (13–26 mo) **Inclusion criteria:** (1) FTT, (2) followup ≥ 1 yr **Exclusion criteria:** NR	**Enrolled:** 63 **Analyzed:** 54 **Withdrawals:** 9 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 26 **Age, mean±SD (range):** 57 yr (40–84 yr) **Males %:** 61.5 **Cause of tear:** degenerative (6), traumatic (16), NR (4) **Tear size:** med, lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 28 **Age, mean±SD (range):** 56 yr (38–86 yr) **Males %:** 57.1 **Cause of tear:** degenerative (7), traumatic (15), NR (6) **Tear size:** med, lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); labral repair (2); biceps tenotomy (3)/tenodesis (4); distal clavicle excision (5); capsular release (2) **Duration of immobilization:** 4–6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (wk 6–≥1 yr); strengthening (wk 6–≥1 yr) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenodesis (7); distal clavicle excision (5); capsular release (3); **Duration of immobilization:** 4–6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (wk 6–≥1 yr); strengthening (≥wk 6–≥1 yr) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • ASES **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Short-term results for arthroscopic and mini-open RCR are similar. This study supports the continued use of arthroscopic RCR techniques.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Scheibel M, 2007 **Country:** Germany **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** May 2003 to May 2004 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 14.4 mo (12–21 mo) **Inclusion criteria:** degenerative symptomatic FTT SS tears with variable ant./pos. expansion into the upper SC or IS **Exclusion criteria:** (1) PTT; (2) traumatic history; (3) previous surgery on the affected shld; (4) signs of cuff tear arthropathy; (5) grade III tendon retraction according to Patte, grade III atrophy according to Thomazeau + grade III-IV fatty infiltration according to Goutailler adjusted to MRI scans by Fuchs; (6) intraoperatively dx tears having to be fixed using side to side technique	**Enrolled:** 23 **Analyzed:** 20 **Withdrawals:** 3 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS, SS+IS, SS+SC, SS+IS+SC **GROUP 1** **N:** 23 **Age, mean±SD (range):** 59.7 yr (44–71 yr) **Males %:** 69.6 **Cause of tear:** NR **Tear size:** med, lg, mass **Dominant shoulder %:** 73.9 **Comorbidities:** ectopic ossification in SS tendon (4); biceps pathology (19); controlled hypertension (5); DM type II (1); chronic bronchitis (1)	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenodesis (18); AC joint resection (9) **Duration of immobilization:** 4 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–6); active-assisted and active stretching (≥wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • SST **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Open RCR augmented with an autologous periosteal flap shows high patient satisfaction level with low re-rupture rates.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Scheibel M, 2004 **Country:** Germany **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** Apr 1997 to Sept 2000 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 3.3 yr (20 mo–4.8 yr) **Inclusion criteria:** (1) mass defect of RC, (2) 3 mo conservative therapy **Exclusion criteria:** previous surgery on the shld	**Enrolled:** 23 **Analyzed:** 22 **Withdrawals:** 1 **Duration since symptom onset, mean (range):** 12 mo (3–48 mo) **Type of tear:** FTT **Tendon(s) torn:** SS+IS, SS+IS+SC, SS+SC **GROUP 1** **N:** 23 **Age, mean±SD (range):** 69 yr (60–81 yr) **Males %:** 78.3 **Cause of tear:** degenerative (14), traumatic (8) **Tear size:** mass **Dominant shoulder %:** 65.2 **Comorbidities:** biceps pathology (16); OA (3)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy/tenodesis (NR); tuberoplasty (NR) **Duration of immobilization:** 24 hr **Duration of rehab:** 3 mo **Rehab components:** passive stretching (immediately–wk 2); active stretching (wk 2–3 mo); strengthening (wk 2–3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Reversed arthorscopic subacromial decompression with tenotomy of the LHB tendon offers a less invasive tx strategy for massive RC tears while preserving the integrity of the corcoacromial arch.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Scheuermann R, 1991 **Country:** Germany **Treatment category:** Nonoperative **Questions:** Q3 **Funding:** Industry **Other**: German **BA Quality:** Consecutive: U Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** Before-and-after **Enrolled consecutively:** NR **Followup duration (endpoint):** 25 days **Inclusion criteria:** RC rupture **Exclusion criteria:** (1) complete loss of function and resistant to conservative therapy, (2) long-term ruptures	**Enrolled:** 29 **Analyzed:** 24 **Withdrawals:** 5 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 29 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Intervention:** active ROM, strengthening, soft tissue massage, posture control, active shld support with bandage **Drug name:** NR **Duration of treatment:** 25 days **Treatment Regime:** NR **Degree of supervision**: direct one-to-one **Treatment provider**: PT	**HRQL:** NR **Function:** NR **Pain:** NR **ROM:** • abduction • flexion • external rotation • abduction • extension • internal rotation **Strength:** NR **Other:** • number of pts with pain at endpoint • number of pts needing operation	Early functional physical therapy and active shoulder support resulted in pain relief and earlier usability of shoulder joint.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Severud EL, 2003 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 4*/8*	**Recruitment dates:** Sep 1992 to Aug 1998 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.7 yr (2–6.8 yr) **Inclusion criteria:** (1) FTT, (2) WCB cases **Exclusion criteria:** (1) other significant intra-articular pathology, (2) previous RC surgery, (3) mass RC tears, (4) neurological disorders	**Enrolled:** 75 (shld: 82) **Analyzed:** 58 (shld: 64) **Withdrawals:** 17 (shld: 18) **Duration since symptom onset, mean (range):** Group 1: 10.8 mo (NR); Group 2: 15.7 mo (NR) **Type of tear:** FTT (54); PTT (4) **Tendon(s) torn:** NR **GROUP 1** **N:** NR (shld: 29) **Age, mean±SD (range):** 63.3 yr (NR) **Males %:** 62.1 of shld **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** All groups: ruptured LHB (2); biceps tendon fraying (5) **GROUP 2** **N:** NR (shld: 35) **Age, mean±SD (range):** 58.7 yr (NR) **Males %:** 60 of shld **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** see group 1	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (up to wk 4); active-assisted stretching (≥wk 4); strengthening (3 mo) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (up to wk 4); active-assisted stretching (≥wk 4); strengthening (3 mo) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** NR **Function:** • ASES • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	All-arthroscopic RCR provides comparable outcomes and complication rates to arthroscopic decompression with mini-open RCR. The lower incidence of fibrous ankylosis favors the all-arthroscopic technique. Better early motion was obtained in the all-arthroscopic group.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Shibata Y, 2001 **Country:** Japan **Treatment category:** Nonoperative **Questions:** Q3, Q5, Q6 **Funding:** NR **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** RCT (parallel) **Enrolled consecutively:** NR **Followup duration (endpoint):** 24 wk **Inclusion criteria:** 1) FTT **Exclusion criteria:** 1) intra-articular injection of drugs; 2) abnormal hepatic/renal function; 3) pregnant; 4) severe osteoarthritic changes of affected shld; 5) symptoms resulting from surgical lesions	**Enrolled:** 78 **Analyzed:** 78 **Withdrawals:** 0 **Duration since symptom onset, mean±SD (range):** Group 1: 5.8±5.4 mo (NR) Group 2: 4.7±5.7 mo (NR) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 38 **Age, mean±SD (range):** 59.5±9.1 yr (NR) **Males %:** 71.1 **Cause of tear:** degenerative (19), traumatic (19) **Tear size:** NR **Dominant shoulder %:** 60.5 **Comorbidities:** NR **GROUP 2** **N:** 40 **Age, mean±SD (range):** 62.4±8.6 yr (NR) **Males %:** 70 **Cause of tear:** degenerative (17), traumatic (23) **Tear size:** NR **Dominant shoulder %:** 67.5 **Comorbidities:** NR	**GROUP 1** **Intervention (modality):** strengthening, sodium hyaluronate injection (25 mg + 3ml of 1% lidocaine), heat **Drug name**: loxoprofen (180mg/d) **Duration of treatment**: 5 wk **Treatment Regime:** Frequency–1/wk; Intensity–NR **Degree of supervision**: NR **Treatment provider**: NR **Additional comments**: If pts were unsatisfied with tx >4 wk., they were offered surgery. Pts who chose nonoperative tx were prescribed NSAIDS and physical therapy; examined 24 wk after last intra-articular injection. If shld disability resolved, injections were discontinued **GROUP 2** **Intervention (modality):** strengthening, corticosteroid injection (2mg dexamethasone + 3ml of 1% lidocaine), heat/cold **Drug name:** loxoprofen (180mg/d) **Duration of treatment:** 5 wk, **Treatment Regime:** Frequency–1/wk; Intensity–NR **Degree of supervision**: NR **Treatment provider**: NR **Additional comments**: see group 1	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** • abduction • external rotation • internal rotation **Strength:** NR **Other:** NR	Therapeutic efficacy in the sodium hyaluronate group was equivalent to that in the steroid group.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Sugaya H, 2007 **Country:** Japan **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: U Outcome assessment: U	**Recruitment dates:** Apr 2001 to May 2003 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.6 yr (2–4.1 yr) **Inclusion criteria:** (1) FTT, (2) arthroscopic double-row repair, (3) MRI of RC between 1–2 yr post operative, (4) final functional eval ≥2 yr postoperative **Exclusion criteria:** (1) PTT, (2) nonarthroscopic RCR because of mass irreparable tears with fatty degeneration and atrophy	**Enrolled:** 106 **Analyzed:** 86 **Withdrawals:** 20 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 106 **Age, mean±SD (range):** 60.5 yr (41–77 yr) **Males %:** 49.1 **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** 59.4 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 3–4 wk **Duration of rehab:** NR **Rehab components:** isometric exercises (day 1); active and passive stretching (after immobilization period ended); strengthening (wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • JOA • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Arthroscopic RCR has demonstrated improved repair integrity compared with tradditional open or mini-open RCR. Retear rate with large and massive tears was still higher than that for small tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Sugaya H, 2005 **Country:** Japan **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** Feb 1999 to Apr 2002 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.9 yr (2–5 yr) **Inclusion criteria:** (1) failed nonoperative tx, (2) FTT, (3) no major associated pathology (glenoid fracture or Bankart lesion) **Exclusion criteria:** PTT	**Enrolled:** 104 (Shld: 106) **Analyzed:** 80 (shld: 80) **Withdrawals:** 26 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** NR (shld: 55) **Age, mean±SD (range):** 58.1 yr (36–73 yr) **Males %:** 50.9 of shld **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** NR (shld: 51) **Age, mean±SD (range):** 57.7 yr (34–72 yr) **Males %:** 54.9 of shld **Cause of tear:** NR **Tear size:** all sizes **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Technique:** double-row mattress fashion sliding knot; side to side stitches if longitudinal/ U-shaped tears **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** isometric cuff exercise and relaxation of muscle (day 1–wk 3); active and active-assisted stretching (wk 3–6); strengthening (≥wk 6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Technique:** single-row metal suture self locking **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** isometric cuff exercise and relaxation of muscle (day 1–wk 3); active and active assisted stretching (wk 3–6); strengthening (≥wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Successful functional outcomes obtained by arthroscopic RCR, without significant difference between single and dual-row fixation technique. However, in structural outcomes dual-row excelled over single-row technique.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Tashjian RZ, 2006 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: N Outcome assessment: N	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, (endpoint):** 1 yr **Inclusion criteria:** (1) chronic FTT (symptoms ≥ 3 mo), (2) failure of nonoperative tx **Exclusion criteria:** glenohumeral arthritis, AC	**Enrolled:** 125 (shld: 125) **Analyzed:** 125 (shld: 125) **Withdrawals:** 0 **Duration since symptom onset, mean±SD (range):** 16±25.9 mo (3 mo–18 yr) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 125 (shld: 125) **Age, mean±SD (range):** 56 yr (32–80 yr) **Males %:** 57.6 **Cause of tear:** degenerative (46), traumatic (79) **Tear size:** mean: 2.2 cm, range:1–4cm **Dominant shoulder %:** NR **Comorbidities:** number of comorbidities: 1.9±1.5 / 0-6 (mean/range)	**GROUP 1** **Surgical approach:** open (26); mini-open (62); all-arthorscopic (37) **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection	**HRQL:** • SF-36 • VAS-QOL **Function:** • DASH • SST • VAS function **Pain:** • VAS pain **ROM:** NR **Strength:** NR **Other:** NR	Pts with more medical comorbidities have a worse general health status after RC repair; although they have greater improvement in overall shld pain, function and quality of life scores compared with pre-operative scores.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Tauro JC, 2006 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** NR **Study design:** Retrospective cohort treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2 yr (NR) **Inclusion criteria:** (1) FTT, (2) arthroscopic RCR **Exclusion criteria:** NR	**Enrolled:** 74 **Analyzed:** 72 **Withdrawals:** 2 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** Group 1 and 2: SS, IS, SC; Group 3: SS, IS **GROUP 1** **N:** 42 **Age, mean±SD (range):** 70 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** mean: 3.7 cm **Dominant shoulder %:** NR **Comorbidities:** (all groups): hypertension; heart disease; DM **GROUP 2** **N:** 24 **Age, mean±SD (range):** 70 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** mean: 7.7 cm **Dominant shoulder %:** NR **Comorbidities:** see group 1	**ALL GROUPS** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures:** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching and strengthening (up to wk 5/6); active stretching (≥wk 5/6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 4.4 mo (2–8 mo) **Type of treatment:** physical therapy NOS, cortisone injection	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • total ROM deficit	Pts who undergo RCR commonly have pre-operative stiffness. Routine therapy after surgery can resolve mild to moderate stiffness. Pts with total ROM deficit ≥70° may have adhesive capsulitis as well as a cuff tear and may not do well with RCR alone.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Tauro JC, 2006 (continued)		**GROUP 3** **N:** 6 **Age, mean±SD (range):** 70 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** mean: 12.3 cm **Dominant shoulder %:** NR **Comorbidities:** see group 1			

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Tauro JC, 2004 **Country:** USA **Treatment category:** Operative **Questions:** Q2, Q5, **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: N	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 2.7 yr (2–4 yr) **Inclusion criteria:** lg contracted tears, not adequately mobilized without a rotator interval release **Exclusion criteria:** significant SC tears requiring open RCR	**Enrolled:** 42 (shld: 43) **Analyzed:** 41 (shld: 42) **Withdrawals:** 1 **Duration since symptom onset, mean (range):** 12.4 mo (2–5 yr) **Type of tear:** NR **Tendon(s) torn:** SS, SS+IS **GROUP 1** **N:** 42 (shld: 43) **Age, mean±SD (range):** 70 yr (46–86 yr) **Males %:** NR **Cause of tear:** degenerative (24), traumatic (18) **Tear size:** mean (range): ant. To pos.: 3.4 cm (2.5–5 cm), medial to lateral: 3.1 cm (2.5–3.5 cm) **Dominant shoulder %:** 66.7 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); capsular release (all) **Duration of immobilization:** 1 day **Duration of rehab:** NR **Rehab components:** passive stretching and strengthening (day 3–4); active stretching (wk 5–6); active strengthening (wk 8–10) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • modified UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Interval slide technique improves SS mobility in large retracted tears.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Torrens C, 2003 **Country:** Spain **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **ROB:** High	**Recruitment dates:** NR **Study design (trial type):** CCT (NR) **Enrolled consecutively:** yes **Followup duration, mean (range):** 18 mo (NR) **Inclusion criteria:** (1) impingement symptoms, (2) failure of ≥3 mo conservative tx **Exclusion criteria:** NR	**Enrolled:** 42 **Analyzed:** 42 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 20 **Age, mean±SD (range):** 55.9 yr (NR) **Males %:** 20 **Cause of tear:** NR **Tear size:** sm, med, lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 22 **Age, mean±SD (range):** 63.8 yr (NR) **Males %:** 18.2 **Cause of tear:** NR **Tear size:** sm, med, lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 3 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Increasing the subacromial space, preserving the anatomy of subacromial arch, provides functional results in the modified acromioplasty that are as good as those obtained with classical open acromioplasty.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Trenerry K, 2005 **Country:** Australia **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** Jul 1996 to Mar 2001 **Study design:** case-control treated as before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 17.5 mo (15.6–19.3 mo) **Inclusion criteria:** (1) RCR, (2) pt with outcomes in the upper quartile of the total cohort for at least 3 out of 4 ROM measures and pts with outcomes in the lower quartile **Exclusion criteria:** (1) incomplete repair of RC tears, (2) previous RC repair of involved shld/ additional procedure at the time of symptoms	**Enrolled:** 75 **Analyzed:** 75 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** Group 1: 22 mo (13 mo–2.6 mo) Group 2: 13 mo (6–20 mo) **Type of tear:** FTT (67); PTT (8) **Tendon(s) torn:** NR **GROUP 1** **N:** 39 **Age, mean±SD (range):** 60 yr (56–64 yr) **Males %:** 69.2 **Cause of tear:** degenerative (18), traumatic (21) **Tear size:** mean: 4 cm², range: 2–6 cm² **Dominant shoulder %:** 66.7 **Comorbidities:** glenohumeral OA; AC joint arthritis; synovitis; bursitis; LHB tear **GROUP 2** **N:** 36 **Age, mean±SD (range):** 63 yr (60–66 yr) **Males %:** 52.8 **Cause of tear:** degenerative (15), traumatic (21) **Tear size:** mean: 5 cm², range:3-7 cm² **Dominant shoulder %:** 91.7 **Comorbidities:** glenohumeral OA; AC joint arthritis; synovitis; bursitis; LHB tear	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 2 days **Duration of rehab:** 3 mo **Rehab components:** home exercise regimen; Modalities–cold **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** 2 days **Duration of rehab:** 3 mo **Rehab components:** home exercise regimen; Modalities–cold **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** NR **Pain:** • frequency of activity pain **ROM:** • flexion (passive) • external rotation (passive) • abduction (passive) • hand behind back (passive) **Strength:** • isometric muscle force for internal/external rotation, and flexion **Other:** NR	Restriction of ROM, pre-operative hand behind back predicted shoulder stiffness at 6 wk. postoperative, findings affirm the potential for almost complete recovery of ROM and reduction of pain in pts who have shld stiffness after RC repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Vad VB, 2002 **Country:** USA **Treatment category:** Non-operative vs. operative **Questions:** Q2, Q4, Q6 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** 1990 to 1995 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 3.2 yr (2–7 yr) **Inclusion criteria:** (1) chronic atraumatic, FTT of ≥2 tendons, (2) mass tear **Exclusion criteria:** history of surgery on shld	**Enrolled:** 108 **Analyzed:** 108 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** 6.3 mo (1–17 mo) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1 and 2** **N:** 40 **Age, mean±SD (range):** 63.2 yr (46–85 yr) **Males %:** 46 (all) **Cause of tear:** degenerative (40) **Tear size:** mass **Dominant shoulder %:** 75 **Comorbidities:** NR **GROUP 3** **N:** 36 **Age, mean±SD (range):** 59.4 yr (46–85 yr) **Males %:** see group 1 **Cause of tear:** degenerative (36) **Tear size:** mass **Dominant shoulder %:** 86.1 **Comorbidities:** NR **GROUP 4** **N:** 32 **Age, mean±SD (range):** 62.9 yr (46–85 yr) **Males %:** see group 1 **Cause of tear:** degenerative (32) **Tear size:** mass **Dominant shoulder %:** 68.8 **Comorbidities:** NR	**GROUP 1** **Intervention:** PT NOS, NSAIDs **Drug name:** NR **Duration of treatment:** 8.2 wk (1–22 wk) **Treatment Regime:** Frequency–NR; Intensity– 1.6 (1–4) injections **Degree of supervision:** NR **Treatment provider:** PT **GROUP 2** **Intervention:** PT NOS, NSAIDs, corticosteroid injection **Drug name:** NR **Duration of treatment:** 10.3 wk (2–24 wk) **Treatment Regime:** NR **Degree of supervision:** NR **Treatment provider:** PT **GROUP 3** **Surgical approach:** NR **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **GROUP 4** **Surgical approach:** all-arthroscopic **Type of surgery:** debridement **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** NR	**HRQL:** NR **Function:** • Insalata **Pain:** NR **ROM:** • abduction • time to maximal ROM **Strength:** NR **Other:** NR	Poor outcomes in the tx of RC tears correlates with the presence of ≥3 of the following: positive prognostic factors: glenohumeral arthritis, decreased passive ROM, superior migration of humeral head, presence of atrophy, or strength <3.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Vaz S, 2000 **Country:** France **Treatment category:** Operative **Questions:** Q2, Q6 **Funding:** NR **BA Quality:** Consecutive: U Followup: Y Outcome assessment: Y	**Recruitment dates:** Mar 1994 to 1996 **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 3.1 yr (12 mo–4 yr) **Inclusion criteria:** sub-acromial impingment alone or impingement wtih PTT/FTT **Exclusion criteria:** NR	**Enrolled:** 14 **Analyzed:** 14 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT (8); PTT (6) **Tendon(s) torn:** NR **GROUP 1** **N:** 14 **Age, mean±SD (range):** NR **Males %:** NR **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** debridement **Additional procedures (N):** acromioplasty (all) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 mo (min) **Type of treatment:** physical therapy NOS	**HRQL:** NR **Function:** • CMS **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • return to work	The CMS was satisfactory in 86% of cases.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Verma NN, 2006 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** Jan 2000 to May 2002 **Study design:** retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.2 yr (2–8.1 yr) **Inclusion criteria:** (1) arthroscopic/ mini-open RCR, (2) followup >2 yr **Exclusion criteria:** (1) revision, (2) SC tear, (3) partial/ irreparable tears, (4) open RCR	**Enrolled:** 127 **Analyzed:** 71 **Withdrawals:** 56 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 58 **Age, mean±SD (range):** 60.7±10.4 yr (NR) **Males %:** 39.7 **Cause of tear:** NR **Tear size:** sm/med, lg/mass **Dominant shoulder %:** 39.7 **Comorbidities:** NR **GROUP 2** **N:** 69 **Age, mean±SD (range):** 59.5±8.6 yr (NR) **Males %:** 31.9 **Cause of tear:** NR **Tear size:** sm/med, lg/mass **Dominant shoulder %:** 33.3 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy (1)/tenodesis (2); clavicle excision (4); SLAP repair (9) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 6–12); active stretching and strengthening (≥wk 12) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair **Additional procedures (N):** acromioplasty (all); biceps tenotomy(3); clavicle excision (4); SLAP repair (6) **Duration of immobilization:** 6 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 6–12); active stretching and strengthening (≥wk 12) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • Insalata • SST **Pain:** • VAS **ROM:** • forward flexion • external rotation • internal rotation • abduction **Strength:** NR **Other:** • satisfaction • cuff integrity	No clinical differences were found in outcomes for mini-open RCR compared to arthroscopic RCR.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Vitale MA, 2007 **Country:** USA **Treatment category:** Operative **Questions:** Q2 **Funding:** Foundation **BA Quality:** Consecutive: U Followup: Y Outcome assessment: N	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** NR **Followup duration, mean (range):** 1 yr (NR) **Inclusion criteria:** (1) RC tear, (2) ≥12 mo of failed nonoperative tx, (3) 40–80 yr, (4) ability to communicate with investigators, (5) give informed consent **Exclusion criteria:** (1) concurrent humeral arthroplasty, (2) primary glenohumeral OA, RA, (3) fracture, (4) osteonecrosis	**Enrolled:** 87 **Analyzed:** 87 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 87 **Age, mean±SD (range):** 62.5±9.5 yr (40.4–83.3 yr) **Males %:** 54 **Cause of tear:** NR **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** NR **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 12 mo (min) **Type of treatment:** physical therapy NOS, cortisone injection, NSAID	**HRQL:** • Health Utility Index • EuroQOL • SF-36 **Function:** NR **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	Improvements were seen on the Health Utility Index, EuroQOL and SF-36 at 1 yr post-operative. An improvement in pain was seen in all measures.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Waibl B, 2005 **Country:** Switzerland **Treatment category:** Operative **Questions:** Q2, Q5 **Funding:** NR **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: U	**Recruitment dates:** May 2001 to Apr 2002 **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 16 mo (11–22 mo) **Inclusion criteria:** (1) partial articular-side SS tendon avulsions, (2) 30-70% of tendon cross section **Exclusion criteria:** (1) significant bursal side tendon lesion, (2) hidden FTT	**Enrolled:** 22 **Analyzed:** 22 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** PTT **Tendon(s) torn:** SS **GROUP 1** **N:** 22 **Age, mean±SD (range):** 45 yr (20–63 yr) **Males %:** 54.5 **Cause of tear:** degenerative (12), traumatic (10) **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (5); SC repair (1); acromial clavicular resection (4)	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (NR); SLAP repairs (5); SC repair (1); AC joint resection (4) **Duration of immobilization:** 6 wk. **Duration of rehab:** NR **Rehab components:** active-assisted stretching–immediately post operative **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** • VAS **ROM:** NR **Strength:** NR **Other:** NR	The transtendon suture technique for partial articular side SS tendon show promising results.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Walton JR, 2007 **Country:** Australia **Treatment category:** Operative augmentation **Questions:** Q2, Q5 **Funding:** No funding **NOS:** 6*/8*	**Recruitment dates:** Apr 2002 to Jan 2003 **Study design:** retrospective cohort **Enrolled consecutively:** no **Followup duration, mean (range):** 24 mo. **Inclusion criteria:** (1) poor tendon quality or large to massive FTT of a tendon that could be attached to the greater tuberosity after mobilization (2) intact SC tendon **Exclusion criteria:** NR	**Enrolled:** 31 (shld: 32) **Analyzed:** 31 (shld: 32) **Withdrawals:** 0 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 15 (shld: 16) **Age, mean±SE:** 60.2±3.5 **Males %:** 67 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 16 (shld: 16) **Age, mean±SE:** 59.6±3.1 **Males %:** 69 **Cause of tear:** NR **Tear size:** lg, mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty, augmentation **Technique:** side-to-side suture, tendon-to-bone reattachment & suture through graft in horizontal mattress configuration **Duration of immobilization:** 4 wks **Duration of rehab:** NR **Rehab components:** passive stretching– 1-4 wks; active stretching & strengthening exercises– >4 wks **Rehab regime:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty **Technique:** side-to-side suture & tendon-to-bone reattachment **Duration of immobilization:** 4 wks **Duration of rehab:** NR **Rehab components:** passive stretching– 1-4 wks; active stretching & strengthening exercises– >4 wks **Rehab regime:** NR **PRE-OPERATIVE TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** NR **Pain:** • Activity pain scores **ROM:** NR **Strength:** • ER • IR • ADD • Lift-off • SS **Other:** • Participation in sports • Cuff integrity	Two years after surgical repair of large RC defect supplemented with xenograft, patients had persisting deficits and no recognizable benefit compared with the results of patients with no augmentation. The use of the orthobiologic implant is not recommended.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Warner JJ, 2005 **Country:** USA **Treatment category:** Operative approach **Questions:** Q2, Q5 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** Jul 1999 to Jul 2000 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean±SD (range):** 4.2±0.3 yr (2.3–7.1 yr); Group 1: 3.7±1 yr; Group 2: 4.6±1.3 yr **Inclusion criteria:** (1) no previous surgery, (2) pain refractory >6 wk of physical therapy, (3) pain in overhead arm and impingement sign, (4) no superior translation of humeral head in AP radiograph, (5) no significant stiffness, (6) FTT limited to SS, no evidence of RC muscular atrophy **Exclusion criteria:** (1) prior surgery, (2) extention of tear to SC or IS, (3) concomitant stiffness	**Enrolled:** 21 **Analyzed:** 21 **Withdrawals:** 0 **Duration since symptom onset, mean±SD (range):** Group 1: 9±4 mo. (NR) Group 2: 12±4 mo. (NR) **Type of tear:** FTT **Tendon(s) torn:** SS **GROUP 1** **N:** 12 **Age, mean±SD (range):** 55±8 yr. (NR) **Males %:** 66.7 **Cause of tear:** degenerative (6), traumatic (6) **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (4); Bankart (0) **GROUP 2** **N:** 9 **Age, mean±SD (range):** 53±10 yr. (NR) **Males %:** 55.6 **Cause of tear:** degenerative (3), traumatic (6) **Tear size:** NR **Dominant shoulder %:** NR **Comorbidities:** SLAP lesion (2); Bankart (1)	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy (1); capsular release (1) **Duration of immobilization:** 4 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–4); active stretching (wk 5–11); strengthening (≥12) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all); biceps tenotomy (3) **Duration of immobilization:** 4 wk **Duration of rehab:** NR **Rehab components:** passive stretching (wk 1–4); active stretching (wk 5–11); strengthening (≥wk 12) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** 6 wk (min) **Type of treatment:** cortisone injection	**HRQL:** NR **Function:** NR **Pain:** • SST • VAS **ROM:** • flexion • external rotation **Strength:** • strengh (5 points) **Other:** NR	No difference was found in outcomes between arthorscopic RCR and mini-open RCR due to satisfaction of all pts with the procedure and no objective differences in outcome. The choice of approach is best based on surgeon or pt preference.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Wilson F, 2002 **Country:** USA **Treatment category:** Operative technique **Questions:** Q2, Q5 **Funding:** NR **NOS:** 5*/8*	**Recruitment dates:** Feb 1986 to May 1994 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 5 yr (2–14 yr) **Inclusion criteria:** (1) FTT, pain, failed nonoperative tx **Exclusion criteria:** (1) PTT >5 cm, (2) major organ system disease	**Enrolled:** 100 **Analyzed:** 100 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** Group 1: 11 mo (1 wk–6.0 yr) Group 2: 10.6 mo (2 wk–6.0 yr) **Type of tear:** FTT **Tendon(s) torn:** NR **GROUP 1** **N:** 35 **Age, mean±SD (range):** 52 yr (20–69 yr) **Males %:** 77.1 **Cause of tear:** degenerative (7), traumatic (28) **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 65 **Age, mean±SD (range):** 52 yr (32–70 yr) **Males %:** 58.5 **Cause of tear:** degenerative (19), traumatic (46) **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (26) **Technique:** staple fixation **Duration of immobilization:** 3 wk **Duration of rehab:** NR **Rehab components:** passive stretching and physical therapy NOS (wk 3 or 4); strengthening (wk 6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures:** acromioplasty (65); clavicle resection (58) **Technique:** side-to-side suture anchor **Duration of immobilization:** 0 **Duration of rehab:** NR **Rehab components:** passive stretching and physical therapy NOS (wk 3/4); strengthening (wk 6) **Rehab regime:** NR **PRE-OP TREATMENT:** yes **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** • cuff integrity	Satisfactory postoperative results and better overall functional results are obtained in patients with well healed RC tendons. The arthroscopic techniques have comparable results to the results of traditional open repair.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Yamada N, 2000 **Country:** Japan **Treatment category:** Nonoperative vs. operative **Questions:** Q4, Q6 **Funding:** NR **NOS:** 3*/8*	**Recruitment dates:** 1979 to 1999 **Study design:** retrospective cohort **Enrolled consecutively:** NR **Followup duration, mean (range):** 4 yr (12 mo–23 yr) **Inclusion criteria:** mass RC tears **Exclusion criteria:** NR	**Enrolled:** 40 **Analyzed:** 40 **Withdrawals:** 0 **Duration since symptom onset, mean (range):** Group 1: 44 mo (12 mo–11 yr); Group 2: 13 mo (1 mo–4.5 yr) **Type of tear:** FTT **Tendon(s) torn:** Group 1: SS, IS Group 2: NR **GROUP 1** **N:** 14 **Age, mean±SD (range):** 70 yr (55–81 yr) **Males %:** 64.3 **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 26 **Age, mean±SD (range):** 62 yr (47–82 yr) **Males %:** 92.3 **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Intervention (modality):** passive ROM, strengthening, corticosteroid injection, heat **Drug name:** lidocaine (4 ml); dexamethasone (2 mg) **Duration of treatment:** 15 injections (mean) **Treatment Regime:** Frequency–1-2 / wk; Intensity– NR **Degree of supervision:** NR **Treatment provider:** NR **GROUP 2** **Surgical approach:** open **Type of surgery:** unclear **Additional procedures (N):** acromioplasty (26); tenorrhaphy (12); muscle transfer (6); muscle transfer of TM (3); LHB (2) **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (day 3); active-assisted stretching (day 14–36); active stretching and strengthening (≥day 36) **Rehab regime:** NR	**HRQL:** NR **Function:** • JOA **Pain:** NR **ROM:** NR **Strength:** • flexion and extension • internal and external rotation **Other:** NR	The operative group experienced greater improvement in pain relief, muscle strength, and ROM than conservative group. Significantly better final result were seen in pts without rupture of the tendon of LHB.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Youm T, 2005 **Country:** USA **Treatment category:** Operative technique **Questions:** Q2, Q5, Q6 **Funding:** NR **NOS:** 6*/8*	**Recruitment dates:** Mar 1997 to Sep 2001 **Study design:** Retrospective cohort **Enrolled consecutively:** yes **Followup duration, mean (range):** 3.0 yr (2–5.8 yr) **Inclusion criteria:** (1) ≥2 yr. followup, (2) surgically confirmed and repaired RC tear **Exclusion criteria:** (1) previous RC surgery; (2) mass RC tear; (3) WCB; (4) loss of passive ROM, AC pint pathology; (5) intraarticular lesions; (6) GH arthritis; (7) SLAP lesion; (8) capsulolabral detachment	**Enrolled:** 95 **Analyzed:** 84 (shld: 84) **Withdrawals:** 11 **Duration since symptom onset, mean (range):** NR **Type of tear:** NR **Tendon(s) torn:** NR **GROUP 1** **N:** 42 **Age, mean±SD (range):** 60 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR **GROUP 2** **N:** 42 **Age, mean±SD (range):** 57.9 yr (NR) **Males %:** NR **Cause of tear:** NR **Tear size:** sm, med, lg **Dominant shoulder %:** NR **Comorbidities:** NR	**GROUP 1** **Surgical approach:** mini-open **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** margin convergence sutures and anchors or bone tunnels **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (immediately); active stretching (wk 4–6) **Rehab regime:** NR **GROUP 2** **Surgical approach:** all-arthroscopic **Type of surgery:** repair and debridement **Additional procedures (N):** acromioplasty (all) **Technique:** suture lassoes and suture punches; anchors **Duration of immobilization:** NR **Duration of rehab:** NR **Rehab components:** passive stretching (immediately); active stretching (wk 4–6) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • ASES • UCLA **Pain:** NR **ROM:** NR **Strength:** NR **Other:** NR	At 2 yr followup, arthroscopic and mini-open RCR produced similar results for small, medium and large RC tear with equivalent satisfaction rates.

Study	Study design	Participant characteristics	Treatment characteristics	Outcomes reported	Author conclusions
Zumstein MA, 2008 **Country:** Switzerland **Treatment category:** Operative **Questions:** Q2, Q5, Q6 **Funding:** No funding **BA Quality:** Consecutive: Y Followup: Y Outcome assessment: Y	**Recruitment dates:** NR **Study design:** before-and-after **Enrolled consecutively:** yes **Followup duration, mean (range):** 9.9 yr (6.7–12.8 yr) **Inclusion criteria:** (1) open RCR of mass RC tears, (2) availability for followup **Exclusion criteria:** unavailability for follow	**Enrolled:** 27 **Analyzed:** 23 **Withdrawals:** 4 **Duration since symptom onset, mean (range):** NR **Type of tear:** FTT **Tendon(s) torn:** SS+SC, SS+IS, SS+IS+SC **GROUP 1** **N:** 27 **Age, mean±SD (range):** 54 yr (42–67 yr) **Males %:** 55.6 **Cause of tear:** NR **Tear size:** mass **Dominant shoulder %:** 66.7 **Comorbidities:** NR	**GROUP 1** **Surgical approach:** open **Type of surgery:** repair **Additional procedures (N):** NR **Duration of immobilization:** 6 wk. **Duration of rehab:** NR **Rehab components:** passive stretching (day 1–wk 6); active stretching (≥wk 6); strengthening (wk 12) **Rehab regime:** NR **PRE-OP TREATMENT:** NR **Duration:** NR **Type of treatment:** NR	**HRQL:** NR **Function:** • CMS • subjective shld value **Pain:** NR **ROM:** • abduction • flexion • external rotation • internal rotation **Strength:** • abduction **Other:** • intramuscular fatty degeneration • fatty infiltration • cuff integrity	Clinically durable, excellent results with high pt satisfaction were achieved by open RCR of mass RC tears at a mean of almost 10 yrs postoperative. However, fatty infiltration of SS + IS progressed, and retear size increased overtime.

Alphabetical List of Included Studies

1. Audenaert E, Van NJ, Schepens A, et al. Reconstruction of massive rotator cuff lesions with a synthetic interposition graft: a prospective study of 41 patients. Knee Surg Sports Traumatol Arthrosc 2006;14(4):360-364.
2. Baker CL, Liu SH. Comparison of open and arthroscopically assisted rotator cuff repairs. Am J Sports Med 1995;23(1):99-104.
3. Baysal D, Balyk R, Otto D, et al. Functional outcome and health-related quality of life after surgical repair of full-thickness rotator cuff tear using a mini-open technique. Am J Sports Med 2005;33(9):1346-1355.
4. Bennett WF. Arthroscopic repair of massive rotator cuff tears: a prospective cohort with 2- to 4-year follow-up. Arthroscopy 2003;19(4):380-390.
5. Bennett WF. Arthroscopic repair of full-thickness supraspinatus tears (small-to-medium): a prospective study with 2- to 4-year follow-up. Arthroscopy 2003;19(3):249-256.
6. Bennett WF. Arthroscopic repair of anterosuperior (supraspinatus/subscapularis) rotator cuff tears: a prospective cohort with 2- to 4-year follow-up: classification of biceps subluxation/instability. Arthroscopy 2003;19(1):21-33.
7. Bigoni M, Gorla M, Guerrasio S, et al. Shoulder evaluation with isokinetic strength testing after arthroscopic rotator cuff repair. J Shoulder Elbow Surg 2009;18(2):178-183
8. Bishop J, Klepps S, Lo IK, et al. Cuff integrity after arthroscopic versus open rotator cuff repair: a prospective study. J Shoulder Elbow Surg 2006;15(3):290-299.
9. Boehm TD, Werner A, Radtke S, et al. The effect of suture materials and techniques on the outcome of repair of the rotator cuff: a prospective, randomised study. J Bone Joint Surg Br 2005;87(6):819-823.
10. Boileau P, Baque F, Valerio L, et al. Isolated arthroscopic biceps tenotomy or tenodesis improves symptoms in patients with massive irreparable rotator cuff tears. J Bone Joint Surg Am 2007;89(4):747-757.
11. Boileau P, Brassart N, Watkinson DJ, et al. Arthroscopic repair of full-thickness tears of the supraspinatus: does the tendon really heal? J Bone Joint Surg Am 2005;87(6):1229-1240.
12. Boissonnault WG, Badke MB, Wooden MJ, et al. Patient outcome following rehabilitation for rotator cuff repair surgery: the impact of selected medical comorbidities. J Orthop Sports Phys Ther 2007;37(6):312-319.
13. Boszotta H, Prunner K. Arthroscopically assisted rotator cuff repair. [review] Arthroscopy 2004;20(6):620-626.
14. Brady B, Redfern J, MacDougal G, et al. The addition of aquatic therapy to rehabilitation following surgical rotator cuff repair: a feasibility study. Physiother Res Int 2008;13(3):153-161.
15. Buess E, Steuber KU, Waibl B. Open versus arthroscopic rotator cuff repair: a comparative view of 96 cases. Arthroscopy 2005;21(5):597-604.
16. Burks RT, Crim J, Brown N, et al. A prospective randomized clinical trial comparing arthroscopic single- and double-row rotator cuff repair: magnetic resonance imaging and early clinical evaluation. Am J Sports Med 2009;37(4):674-682.
17. Caniggia M, Maniscalco P, Pagliantini L, et al. Titanium anchors for the repair of rotator cuff tears: preliminary report of a surgical technique. J Orthop Trauma 1995;9(4):312-317.
18. Charousset C, Grimberg J, Duranthon LD, et al. The time for functional recovery after arthroscopic rotator cuff repair: correlation with tendon healing controlled by computed tomography arthrography. Arthroscopy 2008;24(1):25-33.
19. Charousset C, Grimberg J, Duranthon LD, et al. Can a double-row anchorage technique improve tendon healing in arthroscopic rotator cuff repair?: a prospective, nonrandomized, comparative study of double-row and single-row anchorage techniques with computed tomographic arthrography tendon healing assessment. Am J Sports Med 2007;35(8):1247-1253.
20. Checchia SL, Doneux PS, Miyazaki AN, et al. Biceps tenodesis associated with arthroscopic repair of rotator cuff tears. J Shoulder Elbow Surg 2005;14(2):138-144.
21. Cofield RH, Parvizi J, Hoffmeyer PJ, et al. Surgical repair of chronic rotator cuff tears: a prospective long-term study. J Bone Joint Surg Am 2001;83(1):71-77.

22. Cole BJ, McCarty III LP, Kang RW, et al. Arthroscopic rotator cuff repair: prospective functional outcome and repair integrity at minimum 2-year follow-up. J Shoulder Elbow Surg 2007;16(5):579-585.
23. Colegate-Stone T, Allom R, Tavakkolizadeh A, et al. An analysis of outcome of arthroscopic versus mini-open rotator cuff repair using subjective and objective scoring tools. Knee Surg Sports Traumatol Arthrosc 2009;17(6):691-694.
24. Cools A, Declercq G, Sneyers C, et al. Isokinetic muscle strength and functional restoration following surgical repair of the rotator cuff: a prospective study. Isokinet Exerc Sci 2006;14(3):291-300.
25. Costouros JG, von Campe A, Gerber C. Arthroscopic rotator cuff repair leads to less postoperative fatty infiltration than open repair. Proceeding of the 20th Congress of the European Society for Surgery of the Shoulder and the Elbow; 2006 Sep 20-23; Athens (Greece), 2006.
26. Cummins CA, Strickland S, Appleyard RC, et al. Rotator cuff repair with bioabsorbable screws: an in vivo and ex vivo investigation. Arthroscopy 2003;19(3):239-248.
27. Davidson PA, Rivenburgh DW. Rotator cuff repair tension as a determinant of functional outcome. J Shoulder Elbow Surg 2000;9(6):502-506.
28. De Carli A, Vulpiani M, Russo A, et al. Reparable rotator cuff tears: surgery vs shock wave therapy. Proceeding of the 20th Congress of the European Society for Surgery of the Shoulder and the Elbow; 2006 Sep 20-23; Athens (Greece), 2006.
29. DeFranco MJ, Bershadsky B, Ciccone J, et al. Functional outcome of arthroscopic rotator cuff repairs: a correlation of anatomic and clinical results. J Shoulder Elbow Surg 2007;16(6):759-765.
30. Delbrouck C, Dauty M, Huguet D, et al. Reeducation des ruptures de coiffe de l'epaule operees: prise en charge en hospitalisation en internat ou en hospitalisation de jour (a propos de 76 observations). [Rehabilitation after shoulder rotator cuff surgery: in-patient or day-hospitalization (about 76 cases). Ann Readapt Med Phys 2003;46(4):207-213. (Fre.)
31. Deutsch A, Kroll DG, Hasapes J, et al. Repair integrity and clinical outcome after arthroscopic rotator cuff repair using single-row anchor fixation: a prospective study of single-tendon and two-tendon tears. J Shoulder Elbow Surg 2008;17(6):845-852.
32. Deutsch A. Arthroscopic repair of partial-thickness tears of the rotator cuff. J Shoulder Elbow Surg 2007;16(2):193-201.
33. Ellman H, Kay SP, Wirth M. Arthroscopic treatment of full-thickness rotator cuff tears: 2- to 7-year follow-up study. Arthroscopy 1993;9(2):195-200.
34. Favard L, Berhouet J, Colmar M, et al. Massive rotator cuff tears in patients younger than 65 years. What treatment options are available? Orthop Traumatol Surg Res 2009;95(4 Suppl):19-26.
35. Fenlin Jr JM, Chase JM, Rushton SA, et al. Tuberoplasty: creation of an acromiohumeral articulation-a treatment option for massive, irreparable rotator cuff tears. J Shoulder Elbow Surg 2002;11(2):136-142.
36. Franceschi F, Longo UG, Ruzzini L, et al. No advantages in repairing a type II superior labrum anterior and posterior (SLAP) lesion when associated with rotator cuff repair in patients over age 50: a randomized controlled trial. Am J Sports Med 2008;36(2):247-253.
37. Franceschi F, Longo UG, Ruzzini L, et al. To detach the long head of the biceps tendon after tenodesis or not: outcome analysis at the 4-year follow-up of two different techniques. Int Orthop 2007;31(4):537-545.
38. Franceschi F, Ruzzini L, Longo UG, et al. Equivalent clinical results of arthroscopic single-row and double-row suture anchor repair for rotator cuff tears: a randomized controlled trial. Am J Sports Med 2007;35(8):1254-1260.
39. Fuchs B, Gilbart MK, Hodler J, et al. Clinical and structural results of open repair of an isolated one-tendon tear of the rotator cuff. J Bone Joint Surg Am 2006;88(2):309-316.
40. Gartsman GM, O'Connor DP. Arthroscopic rotator cuff repair with and without arthroscopic subacromial decompression: a prospective, randomized study of one-year outcomes. J Shoulder Elbow Surg 2004;13(4):424-426.
41. Gartsman GM, Brinker MR, Khan M. Early effectiveness of arthroscopic repair for full-thickness tears of the rotator cuff: an outcome analysis. J Bone Joint Surg Am 1998;80(1):33-40.
42. Gartsman GM. Massive, irreparable tears of the rotator cuff: results of operative debridement and subacromial decompression. J Bone Joint Surg Am 1997;79(5):715-721.
43. Gazielly DF, Gleyze P, Montagnon C. Functional and anatomical results after rotator cuff repair. Clin Orthop Relat Res 1994;(304):43-53.

44. Ghroubi S, Chaari M, Elleuch H, et al. Le devenir fonctionnel et la qualite de vie des ruptures de la coiffe des rotateurs non operees. [Functional and quality of life outcome of none operated rotator cuff tears]. Ann Readapt Med Phys 2008;51(9):714-721. (Fre.)
45. Gladstone JN, Bishop JY, Lo IK, et al. Fatty infiltration and atrophy of the rotator cuff do not improve after rotator cuff repair and correlate with poor functional outcome. Am J Sports Med 2007;35(5):719-728.
46. Grasso A, Milano G, Salvatore M, et al. Single-row versus double-row arthroscopic rotator cuff repair: a prospective randomized clinical study. Arthroscopy 2009;25(1):4-12.
47. Hata Y, Saitoh S, Murakami N, et al. Atrophy of the deltoid muscle following rotator cuff surgery. J Bone Joint Surg Am 2004;86(7):1414-1419.
48. Hayes K, Ginn KA, Walton JR, et al. A randomised clinical trial evaluating the efficacy of physiotherapy after rotator cuff repair. Aust J Physiother 2004;50(2):77-83.
49. Hawkins RH, Dunlop R. Nonoperative treatment of rotator cuff tears. Clin Orthop Relat Res 1995;(321):178-188.
50. Heers G, Anders S, Werther M, et al. Effektivitat der physiotherapie in eigenregie bei rotatorenmanschettendefekten. [Efficacy of home exercises for symptomatic rotator cuff tears in correlation to the size of the defect]. Sportverletz Sportschaden 2005;19(1):22-27. (Ger.)
51. Henn III RF, Kang L, Tashjian RZ, et al. Patients with workers' compensation claims have worse outcomes after rotator cuff repair. J Bone Joint Surg Am 2008;90(10):2105-2113.
52. Hsu SL, Ko JY, Chen SH, et al. Surgical results in rotator cuff tears with shoulder stiffness. J Formos Med Assoc 2007;106(6):452-461.
53. Iannotti JP, Codsi MJ, Kwon YW, et al. Porcine small intestine submucosa augmentation of surgical repair of chronic two-tendon rotator cuff tears: a randomized, controlled trial. J Bone Joint Surg Am 2006;88(6):1238-1244.
54. Iannotti JP, Bernot MP, Kuhlman JR, et al. Postoperative assessment of shoulder function: a prospective study of full-thickness rotator cuff tears. J Shoulder Elbow Surg 1996;5(6):449-457. [10-year followup data: Galatz LM, Griggs S, Cameron BD, et al. Prospective longitudinal analysis of postoperative shoulder function : a ten-year follow-up study of full-thickness rotator cuff tears. J Bone Joint Surg Am 2001 Jul;83(7):1052-1056.]
55. Ide J, Tokiyoshi A, Hirose J, et al. Arthroscopic repair of traumatic combined rotator cuff tears involving the subscapularis tendon. J Bone Joint Surg Am 2007;89(11):2378-2388.
56. Ide J, Maeda S, Takagi K. Arthroscopic transtendon repair of partial-thickness articular-side tears of the rotator cuff: anatomical and clinical study. Am J Sports Med 2005;33(11):1672-1679.
57. Ide J, Maeda S, Takagi K. A comparison of arthroscopic and open rotator cuff repair. Arthroscopy 2005;21(9):1090-1098.
58. Ito J, Morioka T. Surgical treatment for large and massive tears of the rotator cuff. Int Orthop 2003;27(4):228-231.
59. Kane TP, Rogers P, Hazelgrove J, et al. Pulsed radiofrequency applied to the suprascapular nerve in painful cuff tear arthropathy. J Shoulder Elbow Surg 2008;17(3):436-440.
60. Kim SH, Ha KI, Park JH, et al. Arthroscopic versus mini-open salvage repair of the rotator cuff tear: outcome analysis at 2 to 6 years' follow-up. [review]. Arthroscopy 2003;19(7):746-754.
61. Kirschenbaum D, Coyle J, Leddy JP, et al. Shoulder strength with rotator cuff tears: pre- and postoperative analysis. Clin Orthop Relat Res 1993;(288):174-178.
62. Klinger HM, Spahn G, Baums MH, et al. Arthroscopic debridement of irreparable massive rotator cuff tears: a comparison of debridement alone and combined procedure with biceps tenotomy. Acta Chir Belg 2005;105(3):297-301.
63. Klinger HM, Steckel H, Ernstberger T, et al. Arthroscopic debridement of massive rotator cuff tears: negative prognostic factors. Arch Orthop Trauma Surg 2005;125(4):261-266.
64. Klintberg Hultenheim I, Gunnarsson A-C, et al. Early loading in physiotherapy treatment after full-thickness rotator cuff repair: a prospective randomized pilot-study with a two-year follow-up. Clin Rehabil 2009;23(7):622-638.
65. Klepps S, Bishop J, Lin J, et al. Prospective evaluation of the effect of rotator cuff integrity on the outcome of open rotator cuff repairs. Am J Sports Med 2004;32(7):1716-1722.
66. Ko S-H, Friedman D, Seo D-K, et al. A prospective therapeutic comparison of simple suture repairs to massive cuff stitch repairs for treatment of small- and medium-sized rotator cuff tears. Arthroscopy 2009;25(6):583-589.

67. Ko SH, Lee CC, Friedman D, et al. Arthroscopic single-row supraspinatus tendon repair with a modified mattress locking stitch: a prospective, randomized controlled comparison with a simple stitch. Arthroscopy 2008;24(9):1005-1012.
68. Kose KC, Tezen E, Cebesoy O, et al. Mini-open versus all-arthroscopic rotator cuff repair: comparison of the operative costs and the clinical outcomes. Adv Ther 2008;25(3):249-259.
69. Koubaa S, Ben Salah FZ, Lebib S, et al. Traitement conservateur des ruptures transfixiantes de la coiffe des rotateurs: etude prospective ouverte. A propos de 24 patients. [Conservative management of full-thickness rotator cuff tears: a prospective study of 24 patients]. Ann Readapt Med Phys 2006;49(2):62-67. (Fre.)
70. Kreuz PC, Remiger A, Lahm A, et al. Comparison of total and partial traumatic tears of the subscapularis tendon. J Bone Joint Surg Br 2005;87(3):348-351.
71. Lafosse L, Brozska R, Toussaint B, et al. The outcome and structural integrity of arthroscopic rotator cuff repair with use of the double-row suture anchor technique. J Bone Joint Surg Am 2007;89(7):1533-1541.
72. Lafosse L, Jost B, Reiland Y, et al. Structural integrity and clinical outcomes after arthroscopic repair of isolated subscapularis tears. J Bone Joint Surg Am 2007;89(6):1184-1193.
73. LaStayo PC, Wright T, Jaffe R, et al. Continuous passive motion after repair of the rotator cuff: a prospective outcome study. J Bone Joint Surg Am 1998;80(7):1002-1011.
74. Leroux JL, Thomas E, Azema MJ, et al. Functional pattern of 115 rotator cuff tears. Eur J Phys Rehabil Med 1993;3(6):242-247.
75. Levy O, Mullett H, Roberts S, et al. The role of anterior deltoid reeducation in patients with massive irreparable degenerative rotator cuff tears. J Shoulder Elbow Surg 2008;17(6):863-870.
76. Levy O, Venkateswaran B, Even T, et al. Mid-term clinical and sonographic outcome of arthroscopic repair of the rotator cuff. J Bone Joint Surg Br 2008;90(10):1341-1347.
77. Lichtenberg S, Liem D, Magosch P, et al. Influence of tendon healing after arthroscopic rotator cuff repair on clinical outcome using single-row Mason-Allen suture technique: a prospective, MRI controlled study. Knee Surg Sports Traumatol Arthrosc 2006;14(11):1200-1206.
78. Liem D, Bartl C, Lichtenberg S, et al. Clinical outcome and tendon integrity of arthroscopic versus mini-open supraspinatus tendon repair: a magnetic resonance imaging-controlled matched-pair analysis. Arthroscopy 2007;23(5):514-521.
79. Lim JTK, Acornley A, Dodenhoff RM. Recovery after arthroscopic subacromial decompression: prognostic value of the subacromial injection test. Arthroscopy 2005;21(6):680-683.
80. Lunn JV, Castellanos-Rosas J, Tavernier T, et al. A novel lesion of the infraspinatus characterized by musculotendinous disruption, edema, and late fatty infiltration. J Shoulder Elbow Surg 2008;17(4):546-553.
81. Maier D, Jaeger M, Suedkamp NP, et al. Stabilization of the long head of the biceps tendon in the context of early repair of traumatic subscapularis tendon tears. J Bone Joint Surg Am 2007;89(8):1763-1769.
82. Mallon WJ, Misamore G, Snead DS, et al. The impact of preoperative smoking habits on the results of rotator cuff repair. J Shoulder Elbow Surg 2004;13(2):129-132.
83. Marc T, Gaudin T, Teissier J. Rehabilitation after rotator cuff repairs: factors influencing functional outcome at two years. Kinesitherapie Revue 2009;(89):36-44. (Fre).
84. Matis N, Hubner C, Aschauer E, et al. Arthroscopic transosseous reinsertion of the rotator cuff. Oper Orthop Traumatol 2006;18(1):1-18.
85. McBirnie JM, Miniaci A, Miniaci SL. Arthroscopic repair of full-thickness rotator cuff tears using bioabsorbable tacks. Arthroscopy 2005;21(12):1421-1427.
86. McCallister WV, Parsons IM, Titelman RM, et al. Open rotator cuff repair without acromioplasty. J Bone Joint Surg Am 2005;87(6):1278-1283.
87. McIntyre LF, Norris M, Weber B. Comparison of suture welding and hand-tied knots in mini-open rotator cuff repair. Arthroscopy 2006;22(8):833-836.
88. Michael JWP, Konig DP, Imhoff AB, et al. Effektivitat der postoperativen behandlung mittels motorisierter bewegungsschienen (CPM) bei patienten mit ruptur der rotatorenmanschette. [Efficiency of a postoperative treatment after rotator cuff repair with a continuous passive motion device (CPM)]. Z Orthop Ihre Grenzgeb 2005;143(4):438-445. (Ger.)
89. Milano G, Grasso A, Salvatore M, et al. Arthroscopic rotator cuff repair with and without subacromial decompression: a prospective randomized study. Arthroscopy 2007;23(1):81-88.

90. Millar NL, Wu X, Tantau R, et al. Open versus two forms of arthroscopic rotator cuff repair. Clin Orthop Related Res 2009;467(4):966-978.
91. Milroy DR, Marland JD, Parent EC, et al. Rotator cuff repair: the effect of a standardized post-operative physical therapy protocol versus a non-standardized post-operative protocol. 2008 Combined Sections Meeting. Nashville, Tennessee, February 6-9, 2008. J Orthop Sports Phys Ther 2008;38(1):A17-A18.
92. Misamore GW, Ziegler DW, Rushton JL. Repair of the rotator cuff: a comparison of results in two populations of patients. J Bone Joint Surg Am 1995;77(9):1335-1339.
93. Mohtadi NG, Hollinshead RM, Sasyniuk TM, et al. A randomized clinical trial comparing open to arthroscopic acromioplasty with mini-open rotator cuff repair for full-thickness rotator cuff tears: disease-specific quality of life outcome at an average 2-year follow-up. Am J Sports Med 2008;36(6):1043-1051.
94. Montgomery T, Yerger B. Management of rotator cuff tears: a comparison of arthroscopic debridement and surgical repair. J Shoulder Elbow Surg 1994;3(2):70-78.
95. Moosmayer S, Lund G., Seljom U, et al. Comparison between surgery and physiotherapy in the treatment of small and medium-sized tears of the rotator cuff: a randomized controlled study of 103 patients with one-year followup. J Bone Joint Surg Am 2010; 92B(1):83-91.
96. Moser M, Jablonski MV, Horodyski M, et al. Functional outcome of surgically treated massive rotator cuff tears: a comparison of complete repair, partial repair, and debridement. Orthopedics 2007;30(6):479-482.
97. Motycka T, Lehner A, Landsiedl F. Comparison of debridement versus suture in large rotator cuff tears: long-term study of 64 shoulders. Arch Orthop Trauma Surg 2004;124(10):654-658.
98. Mullett H, Venkat V, Massoud S, et al. Small & Medium Rotator Cuff Tears: Comparison of Arthroscopic Rotator Cuff Repair vs Arthroscopic Subacromial Decompression. Proceeding of the 20th Congress of the European Society for Surgery of the Shoulder and the Elbow; 2006 Sep 20-23; Athens (Greece), 2006.
99. Nam SC, Yong GR. Functional outcome of arthroscopic repair with concomitant manipulation in rotator cuff tears with stiff shoulder. Am J Sports Med 2008;36(7):1323-1329.
100. Nho SJ, Brown BS, Lyman S, et al. Prospective analysis of arthroscopic rotator cuff repair: prognostic factors affecting clinical and ultrasound outcome. J Shoulder Elbow Surg 2009;18(1):13-20.
101. Ogilvie-Harris DJ, Demaziere A. Arthroscopic debridement versus open repair for rotator cuff tears: a prospective cohort study. J Bone Joint Surg Br 1993;75(3):416-420.
102. Oh JH, Kim SH, Lee HK, et al. Moderate preoperative shoulder stiffness does not alter the clinical outcome of rotator cuff repair with arthroscopic release and manipulation. Arthroscopy 2008;24(9):983-991.
103. Pai VS, Lawson DA. Rotator cuff repair in a district hospital setting: outcomes and analysis of prognostic factors. J Shoulder Elbow Surg 2001;10(3):236-241.
104. Park JY, Lhee SH, Choi JH, et al. Comparison of the clinical outcomes of single- and double-row repairs in rotator cuff tears. Am J Sports Med 2008;36(7):1310-1316.
105. Pearsall AW, Ibrahim KA, Madanagopal SG. The results of arthroscopic versus mini-open repair for rotator cuff tears at mid-term follow-up. J Orthop Surg 2007;2:24.
106. Park JY, Chung KT, Yoo MJ. A serial comparison of arthroscopic repairs for partial- and full-thickness rotator cuff tears. Arthroscopy 2004;20(7):705-711.
107. Pillay R. Arthroscopic subacromial decompression for chronic shoulder impingement. J Orthop Surg 1994;2(1):67-70.
108. Porcellini G, Paladini P, Campi F, et al. Shoulder instability and related rotator cuff tears: arthroscopic findings and treatment in patients aged 40 to 60 years. Arthroscopy 2006;22(3):270-276.
109. Prasad N, Odumala A, Elias F, et al. Outcome of open rotator cuff repair: an analysis of risk factors. Acta Orthop Belg 2005;71(6):662-666.
110. Raab MG, Rzeszutko D, O'Connor W, et al. Early results of continuous passive motion after rotator cuff repair: a prospective, randomized, blinded, controlled study. Am J Orthop 1996;25(3):214-220.
111. Randelli PS, Arrigoni P, Cabitza P, et al. Autologous platelet rich plasma for arthroscopic rotator cuff repair: a pilot study. Disabil Rehabil 2008;30(20):1584-1589.
112. Roddey TS, Olson SL, Gartsman GM, et al. A randomized controlled trial comparing 2 instructional approaches to home exercise instruction following arthroscopic full-thickness rotator cuff repair surgery. J Orthop Sports Phys Ther 2002;32(11):548-559.

113. Rokito AS, Cuomo F, Gallagher MA, et al. Long-term functional outcome of repair of large and massive chronic tears of the rotator cuff. J Bone Joint Surg Am 1999;81(7):991-997.
114. Sauerbrey AM, Getz CL, Piancastelli M, et al. Arthroscopic versus mini-open rotator cuff repair: a comparison of clinical outcome. Arthroscopy 2005;21(12):1415-1420.
115. Scheibel M, Brown A, Woertler K, et al. Preliminary results after rotator cuff reconstruction augmented with an autologous periosteal flap. Knee Surg Sports Traumatol Arthrosc 2007;15(3):305-314.
116. Scheibel M, Lichtenberg S, Habermeyer P. Reversed arthroscopic subacromial decompression for massive rotator cuff tears. J Shoulder Elbow Surg 2004;13(3):272-278.
117. Scheuermann R, Behrens P, Egbers HJ, et al. [The early functional physiotherapy of the shoulder backed up by an active shoulder support]. Aktuelle Traumatol 1991;21(2):58-63. (Ger.)
118. Severud EL, Ruotolo C, Abbott DD, et al. All-arthroscopic versus mini-open rotator cuff repair: a long-term retrospective outcome comparison. [review] Arthroscopy 2003;19(3):234-238.
119. Shibata Y, Midorikawa K, Emoto G, et al. Clinical evaluation of sodium hyaluronate for the treatment of patients with rotator cuff tear. J Shoulder Elbow Surg 2001;10(3):209-216.
120. Sugaya H, Maeda K, Matsuki K, et al. Repair integrity and functional outcome after arthroscopic double-row rotator cuff repair: a prospective outcome study. J Bone Joint Surg Am 2007;89(5):953-960.
121. Sugaya H, Maeda K, Matsuki K, et al. Functional and structural outcome after arthroscopic full-thickness rotator cuff repair: single-row versus dual-row fixation. Arthroscopy 2005;21(11):1307-1316.
122. Tashjian RZ, Henn RF, Kang L, et al. Effect of medical comorbidity on self-assessed pain, function, and general health status after rotator cuff repair. J Bone Joint Surg Am 2006;88(3):536-540.
123. Tauro JC. Stiffness and rotator cuff tears: incidence, arthroscopic findings, and treatment results. Arthroscopy 2006;22(6):581-586.
124. Tauro JC. Arthroscopic repair of large rotator cuff tears using the interval slide technique. Arthroscopy 2004;20(1):13-21.
125. Torrens C, Lopez JM, Verdier E, et al. Open anterior acromioplasty with preservation of the coracoacromial ligament: a modified surgical technique. J Shoulder Elbow Surg 2003;12(1):9-14.
126. Trenerry K, Walton JR, Murrell GA. Prevention of shoulder stiffness after rotator cuff repair. Clin Orthop Relat Res 2005;(430):94-99.
127. Vad VB, Warren RF, Altchek DW, et al. Negative prognostic factors in managing massive rotator cuff tears. Clin J Sport Med 2002;12(3):151-157.
128. Vaz S.Pries. [Bursectomy and acromial resection in arthroscopic treatment of sub-acromial impingement]. Orthop traumatol 2000;10(1):13-19. (Fre.)
129. Verma NN, Dunn W, Adler RS, et al. All-arthroscopic versus mini-open rotator cuff repair: a retrospective review with minimum 2-year follow-up. Arthroscopy 2006;22(6):587-594.
130. Vitale MA, Vitale MG, Zivin JG, et al. Rotator cuff repair: an analysis of utility scores and cost-effectiveness. J Shoulder Elbow Surg 2007;16(2):181-187.
131. Waibl B, Buess E. Partial-thickness articular surface supraspinatus tears: a new transtendon suture technique. Arthroscopy 2005;21(3):376-381.
132. Walton JR, Bowman NK, Khatib Y, et al. Restore orthobiotic implant: not recommended for augmentation of rotator cuff repairs. J Bone Joint Surg Am 2007;89:786-791.
133. Warren RF, Tetreault P, Lehtinen J, et al. Arthroscopic versus mini-open rotator cuff repair: a cohort comparison study. Arthroscopy 2005;21(3):328-332.
134. Wilson F, Hinov V, Adams G. Arthroscopic repair of full-thickness tears of the rotator cuff: 2- to 14-year follow-up. Arthroscopy 2002;18(2):136-144.
135. Yamada N, Hamada K, Nakajima T, et al. Comparison of conservative and operative treatments of massive rotator cuff tears. Tokai J Exp Clin Med 2000;25(4-6):151-163.
136. Youm T, Murray DH, Kubiak EN, et al. Arthroscopic versus mini-open rotator cuff repair: a comparison of clinical outcomes and patient satisfaction. J Shoulder Elbow Surg 2005;14(5):455-459.
137. Zumstein MA, Jost B. The clinical and structural long-term results of open repair of massive tears of the rotator cuff. J Bone Joint Surg Am 2008;90(11):2423-2431.

Appendix F. List of Excluded Studies and Unobtained Studies

Eight hundred and forty-four studies were excluded. The reasons for exclusion are as follows: (1) the study was not primary research (n=153), (2) the study was published before 1990 (n=4), (3) the study enrolled 10 or fewer participants (n=34), (4) no baseline data was provided (n=89), (5) inappropriate study design (n=182), (6) the study population did not meet our criteria (n=15), (7) rotator cuff (RC) tears were not confirmed using diagnostic imaging (n=107), (8) the primary intention of the study was not the treatment of RC tears (n=59), (9) the study intervention did not meet our criteria (n=47), (10) there were no numeric outcome of interest reported (n=39), (11) the followup duration was less than 12 months in operative studies (n=23), (12) the study was not published in English (n=79), (13) the article was a multiple publication of an included study (n=13). In addition, 29 studies could not be retrieved through the univeristy interlibrary loan service.

Excluded – Not Primary Research (N = 153)

The following studies were excluded because they were not primary research.

1. Ahmad CS, Levine W. Arthroscopic rotator cuff repair. Orthopedics 2004;27(6):570-574.
2. Altchek D. Arthroscopy of the shoulder. Scand J Med Sci Sports 1995;5(2):71-75.
3. Anderl W. Neuentwicklungen in der orthopadischchirurgischen therapie der schulter: schulterdiagnostik. Radiologe 2004;44(6):613-619. (Fre).
4. Andrews JR. Diagnosis and treatment of chronic painful shoulder: review of nonsurgical interventions. Arthroscopy 2005;21(3):333-347.
5. Augereau B. [Surgical treatment of rotator cuff ruptures. Shoulder surgery in the adult: A collection of SOFCOT lectures] 1993;137-154. (Fre).
6. Augereau B. Indications therapeutiques [Full-thickness tears of the rotator cuff, including subscapularis: conclusions and therapeutic indications]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):136-138. (Fre).
7. Augustine SJ, McCluskey GM. Mini-open rotator cuff repair. Sports Med Arthrosc 2000 Jul;8(3):229-238.
8. Azorin M, Cordesse G. Reeducation des ruptures des muscles de la coiffe operees. Kinesither Sci 1993;(327):34-40. (Fre).
9. Banner I, Peyre M. Place du traitement medicamenteux et des infiltrations dans la prise en charge medicale des lesions de la coiffe des rotateurs. J Traumatol Sport 2007;24(2):93-98. (Fre).
10. Bauer C, Gesslein M. Rotatorenmanschetten-Ruptur [Rupture of the rotator cuff]. MMW Fortschr Med 2008 Feb 7;150(6):41. (Ger).
11. Bauer GJ, Kniesel B. Arthroscopic reconstruction of the rotor cuff. Unfallchirurg 2006;109(8):619-627.
12. Beaudreuil J, Revel M. Physiopathologie et reeducation des lesions de la coiffe des rotateurs. Actual Rheumatol 1998;422-435.
13. Bigliani LU. Die beziehung von akromialarchitektur zu erkrankungen der rotatorenmanschette. Orthopade 1991;20(5):302-309. (Ger).
14. Bleton R. Les ruptures des tendons des muscles de la coiffe des rotateurs de l' epaule. Kinesither Sci 1993;(327):27-33. (Fre).
15. Blevins FT, Warren RF. Diagnostic arthroscopy and arthroscopic management of rotator cuff tears. Master Techniques in Orthopaedic Surgery; The Shoulder. New York, New York: Raven Press; 1995. p. 399-416.
16. Blevins FT. Rotator cuff pathology in athletes. Sports Med 1997;24(3):205-220.

17. Bøhmer AS, Staff PH, Brox JI. Supervised exercises in relation to rotator cuff disease (impingement syndrome stages II and III): a treatment regimen and its rationale. Physiother Theory Pract 1998;14(2):93-105.
18. Bohsali KI. Current concepts review: complications of total shoulder arthroplasty. J Bone Joint Surg Am 2006;88(10):2279-2292.
19. Bover T, Frank A, Societe francaise de rhumatologie Fp. L' arthroscopie dans la pathologie de la coiffe des rotateurs de l' epaule. Seizieme journee de Bichat «Appareil locomoteur» - 29 mars 2003. Seance pleniere (1ere partie). Rhumatologie 2003;55(2):22-30. (Fre).
20. Breazeale N, Craig E. Partial-thickness rotator cuff tears: pathogenesis and treatment. The rotator cuff, Part II. Orthop Clin North Am 1997;28(2):145-155.
21. Brems JJ. Repair of massive rotator cuff tears: method of mobilization and tissue coverage. In Craig EV (ed) The Shoulder. New York, Raven Press 1995:35-54.
22. Brewster C, Moynes DR. Rehabilitation of the shoulder following rotator cuff injury or surgery. J Orthop Sports Phys Ther 1993;18(2):422-426.
23. Brislin K, Rubenstein D, Wetzler M, et al. Operative repair of anterior instability and rotator cuff tears in athletes. Oper Tech Sports Med 2002 Apr;10(2):64-68.
24. Browning DG, Desai MM. Rotator cuff injuries and treatment. Prim Care 2004;31(4):807.
25. Buchbinder R, Green S, Youd JM. Corticosteroid injections for shoulder pain. Cochrane Database Syst Rev CD004016. 2003;(1).
26. Buckley P, Grana WA. How to treat rotator cuff injuries. Phys Sportsmed 1993 May;21(5):144t.
27. Budoff JE. The etiology of rotator cuff disease and treatment of partial-thickness pathology. J Hand Surg Am 2005;5(3):139-152.
28. Burkhart SS. Arthroscopic treatment of massive rotator cuff tears. Clin Orthop Relat Res 2001;(390):107-118.
29. Burkhart SS, Klein JR. Arthroscopic treatment of full-thickness rotator cuff tears in the athlete. Oper Tech Sports Med 2004 Apr;12(2):122-125.
30. Burns JP, Snyder SJ, Albritton M. Arthroscopic rotator cuff repair using triple-loaded anchors, suture shuttles, and suture savers. J Am Acad Orthop Surg 2007;15(7):432-444.
31. Centre for Reviews and Dissemination. Arthroscopic versus open acromioplasty: a systematic review [structured abstract]. 2008.
32. Checroun AJ, Dennis MG, Zuckerman JD. Open versus arthroscopic decompression for subacromial impingement: a comprehensive review of the literature from the last 25 years. [Review] [41 refs]. Bull Hosp Joint Dis 1998;57(3):145-151.
33. Christel P, Parier J, Djian P, et al. Les ruptures isolees du tendon du muscle sous scapulaire chez le sportif [Isolated lesion of subscapularis]. Rhumatologie 1992;44(9/10):225-228. (Fre).
34. Codman EA. Rupture of the supraspinatus tendon. Clin Orthop Relat Res 1990;(254):3-26.
35. Coiffe des rotateurs et masso-kinesitherapie. Kinesither Sci 2002;(424):28-31. (Fre).
36. Colne P. Bilan kinesitherapique des lesions de la coiffe des rotateurs: quelques aspects particuliers de la prise en charge kinesitherapique a travers une analyse de la litterature recente [Physical therapy for rotator cuff tears: specific management techniques reported in the literature]. Kinesitherapie 2001 Nov;34-37. (Fre).
37. Colne P. Mobilisations de l' epaule et techniques de renforcement. Kinesitherapie 2002;(4):35-37. (Fre).
38. Conway JE, Romeo A. Arthroscopic repair of partial-thickness rotator cuff tears and slap lesions in professional baseball players: repair of athletic shoulder Injuries. Orthop Clin North Am 2001;32(3):viii, 443-viii, 456.
39. Cordasco FA, Bigliani LU. Large and massive tears: technique of open repair. The rotator cuff, Part II. Orthop Clin North Am 1997;28(2):179-193.
40. Craig EV. Open anterior acromioplasty for full-thickness rotator cuff tears. Master techniques in orthopaedic surgery: The shoulder 1995;3-33.
41. Cross T, Crichton K. Rotator cuff problems in sport. Med Today 2006;7(11):75-79.
42. Dalton SE. The conservative management of rotator cuff disorders. Br J Rheumatol 1994;33(7):663-667.

43. Darnault A, Heuleu J, Daniel F, et al. Les lésions dégénératives de la coiffe: stratégies thérapeutiques. [Therapeutic strategies for degenerative rotator cuff lesions]. Rhumatologie 2001;53(4):17-19. (Fre).
44. Darnault A, Heuleu J. Les lesions degeneratives de la coiffe: strategies therapeutiques? Rhumatologie 2001;53(4):17-19. (Fre).
45. De Lecluse J, Peyre M, Societe francaise de rhumatologie Fp. Les tendinopathies non rompues de la coiffe: place de la reeducation. Seizieme journee de Bichat «Appareil locomoteur» - 29 mars 2003. Seance pleniere (1ere partie). Rhumatologie 2003;55(2):15-19. (Fre).
46. Dermid JC, Holtby R. All-arthroscopic versus mini-open repair of small or moderate-sized rotator cuff tears: a protocol for a randomized trial [NCT00128076]. BMC Musculoskelet Disord 2006;7(25):25.
47. Dietz SO, Habermeyer P, Magosch P. Current concepts in treatment of rotator cuff tears. Zentralbl Chir 2002;127(3):194-202.
48. Digiovanni J, Marra G. Hemiarthroplasty for glenohumeral arthritis with massive rotator cuff tears: total shoulder arthroplasty. Orthop Clin North Am 1998;29(3):477-489, ix.
49. Dines DM, Moynihan DP, Dines JS, et al. Irreparable rotator cuff tears: what to do and when to do it; The surgeon's dilemma. J Bone Joint Surg Am 2006;88(10):2294-2302.
50. Douoguih WA, Shaffer BS. Avoiding complications in arthroscopic subacromial space and instability surgery. Oper Tech Sports Med 2004;12(2):91-98.
51. Dumontier C, Roukoz S. Tendinites et petites ruptures des muscles de la coiffe: traitement chirurgical. Cah Kinésithér 1993;162(4):29-35. (Fre).
52. Ehrler S, Chapron J. Place de l' ergotherapie dans la reeducation et la readaptation apres lesion de la coiffe des rotateurs. Journal d'ergotherapie 1993;15(1):26-27. (Fre).
53. Esch JC. Arthroscopic subacromial decompression and postoperative management. Orthop Clin North Am 1993;24(1):161-171.
54. Favard L, Bacle G, Berhouet J, et al. La chirurgie reparatrice de la coiffe des rotateurs. 20e Congres francais de rhumatologie, Paris, 2-5 decembre 2007. Rev Rhum Ed Fr 2007;74(10-11):954-960. (Fre).
55. Favard L, Bacle G, Berhouet J. Rotator cuff repair. Joint Bone Spine 2007;74(6):551-557.
56. Fichez O. Pathologie de la coiffe des rotateurs et conflit sous-acromial de l' epaule du lanceur. J Traumatol Sport 1999;16(4):240-243.
57. Finnish Office for Healthcare Technology Assessment (FinOHTA). Shoulder impingement syndrome (project) (brief record). 2008.
58. Flurin PH, Guillo S. Reparation arthroscopique des ruptures transfixiantes de la coiffe: chirurgie arthroscopique du membre superieur. Chir Main 2006;25(Suppl 1):S60-S69. (Fre).
59. Fongemie AE, Buss DD, Rolnick SJ. Management of shoulder impingement syndrome and rotator cuff tears. Am Fam Physician 1998;57(4):667-674.
60. Fouse M, Nottage WM. All-arthroscopic rotator cuff repair. Sports Med Arthrosc 2007;15(4):208-215.
61. Gachter A. Stellenwert der arthroskopie in der diagnose und therapie von schultergelenksverletzungen [Value of arthroscopy in the diagnosis and therapy of shoulder joint injuries]. Der Chirurg 1993;64(3):157-162. (Ger).
62. Gartsman GM. Arthroscopic rotator cuff repair. Clinical orthopaedics and related research 2001;390:95-106.
63. Gartsman GM. Combined arthroscopic and open treatment of tears of the rotator cuff. J Bone Joint Surg Am 1997;79(5):776-783.
64. Gartsman GM, Hammerman SM. Full-thickness tears: arthroscopic repair. Orthop Clin North Am 1997;28(1):83-98.
65. Gartsman GM. Rotator cuff repair: why I prefer arthroscopy. Sports Med Arthrosc 1999 Apr;7(2):85-92.
66. Gazielly D. Les ruptures transfixiantes de la coiffe des rotateurs: caractéristiques d'une bonne réparation à ciel ouvert [Full-thickness tears of the rotator cuff, including subscapularis: characteristics of open surgical repair]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):139. (Fre).
67. Gazielly DF. Rupture de la coiffe des rotateurs de l' epaule. Cahiers d'enseignement de la SOFCOT 1997;62:165-185. (Fre).
68. Gerber C. Epaule: la reinsertion de la coiffe quelques details techniques. Ann Orthop Ouest 2001;(33):25-26. (Fre).

69. Gohlke F, Rolf O, Bohm D. Open reconstruction of the rotator cuff. Orthopade 2007;36(9):834.
70. Gortner U. Schmerzbehandlung mit komplexer reflexzonentherapie mach jost thomas am beispiel von insertionstendopathien oder artropathien an der schulter. Krankengymnastik 1999;51(7):8. (Ger)
71. Goutallier D, Postel J. Traitement chirurgical des larges ruptures de la coiffe des rotateurs. Actual Rheumatol 1994;398-407.
72. Goutallier D, Postel JM. Faut-il reparer les ruptures de la coiffe de l' epaule? Actual Rheumatol 2002;438-449.
73. Goutallier D, Postel JM. A propos de l' article "Etude par arthroscanner de la cicatrisation tendineuse apres reparation arthroscopique de la coiffe des rotateurs: analyse des facteurs predictifs a propos d' une serie consecutive de 167 reparations ". Rev Chir Orthop Reparatrice Appar Mot 2007;93(8):863-864. (Fre).
74. Green S, Buchbinder R, Hetrick S. Acupuncture for shoulder pain. [Review] [40 refs]. Cochrane Database Syst Rev CD005319. 2005;(2).
75. Gudmestad J. Arm yourself against injury: a torn rotator cuff can mean searing pain, slow healing, and even surgery. But yoga can strengthen your shoulders and help prevent problems. Yoga J 2003 Dec;(178):129-131.
76. Gupta R, Leggin BG, Iannotti JP. Results of surgical repair of full-thickness tears of the rotator cuff. Orthop Clin North Am 1997 Apr;28(2):241-248.
77. Haas M. Verletzungen im bereich des schultergelenks und ihre krankengymnastiche behandlung. Krankengymnastik 1992;44(9):1106-1124. (Ger).
78. Handelberg FWJ, Societe francaise de chirurgie orthopedique et traumatologique. Protheses d' epaule et rupture de coiffe. Conferences d' enseignement 2002. Cahiers d'enseignement de la SOFCOT 2002;79:21-31. (Fre).
79. Hardy P. Indication de l' arthroscopie dans les lesions de la coiffe des rotateurs. XVIIe Journees de reeducation de la main et du membre superieur, Paris, 18-19 janvier 2002. Kinesither Sci 2001;(415):43-45. (Fre).
80. Hardy P, Societe francaise de rhumatologie Fp. Tendinopathie non rompue de la coiffe des rotateurs. Seizieme journee de Bichat "Appareil locomoteur". 29 mars 2003. Seance pleniere (1ere partie). Rhumatologie 2003;55(2):20-21. (Fre).
81. Haye M, Institut national de la kinesitherapie PFo. Proposition therapeutique. Confrontations en kinesitherapie, Paris, 6-7 octobre 2006. Kinesither Sci 2006;(470):25-26. (Fre).
82. Jensen KL, Williams GR, Jr., Russell IJ, et al. Rotator cuff tear arthropathy. J Bone Joint Surg Am 1999 Sep;81(9):1312-1324.
83. Jokiranta J, Vastamaki M. Massive rotator cuff tears. Ann Chir Gynaecol 1996;85(2):128-131.
84. Joncour V, Jully J. Coussin d' abduction et ajustement postural apres refection de coiffe. Kinesither Sci 1991;302:15-18. (Fre).
85. Karas EH, Iannotti JP. Failed repair of the rotator cuff: evaluation and treatment of complications. J Bone Joint Surg Am 1997;79(5):784-793.
86. Kasten P, Loew M. How to treat massive rotator cuff tears. Orthopade 2007;36(9):855-861.
87. Kempf JF, Bonnomet F. Place tu traitement chirurgical dans la pathologie de la coiffe des rotateurs. J Med Strasb 1995;26(1-2):15-19. (Fre).
88. Kerkour K, Meier JL, Mansuy J. Reeducation apres lesion degenerative de la coiffe des rotateurs. Schweiz Z Sportmed Sporttraumatol 2000;48(1):28-36. (Fre).
89. Kozak TK, Cofield RH. Surgery for rotator cuff tears. In: Morrey BF, editor. Reconstructive surgery of the joints. Vols 1 and 2. 2nd ed. New York: Churchill Livingstone Inc; 1996. p. 835-849.
90. Krabak BJ, Sugar R, McFarland EG. Practical nonoperative management of rotator cuff injuries. Clin J Sport Med 2003;13(2):102-105.
91. Lafosse L, Brzoska R, Toussaint B, et al. The outcome and structural integrity of arthroscopic rotator cuff repair with use of the double-row suture anchor technique. J Bone Joint Surg Am 2008;90(Suppl 10):275-286.
92. Lampert C, Gaechter A. Arthroskopie von schulter und ellbogen [Arthroscopy of shoulder and elbow. Basel Contributions to Surgery; Models for interdisciplinary management: 25th anniversary of the Department of Surgery in Basel] 1993;90-95. (Ger).

93. Le Corroller T, Cohen M. L' intervalle des rotateurs: des lesions cachees? J Radiol 2007;88(11):1669-1677. (Fre).
94. Liebenson C. Self-management of shoulder disorders - Part 3: Treatment. J Bodyw Mov Ther 2006 Jan;10(1):65-70.
95. Lilleby H. Indikationen zur operativen schulterarthroskopie [Indications for surgical shoulder arthroscopy]. In: Hempfling H, editor. Arthroskopie: Indikation, Bedeutung, Begutachtung. Stuttgart, Germany: Gustav Fischer Verlag; 1990. p. 143-144. (Ger).
96. Lohr JF, Uhthoff HK. Epidemiologie und pathophysiologie der rotatorenmanschettenruptures [Epidemiology and pathophysiology of rotator cuff tears]. Orthopade 2007;36(9):788. (Ger).
97. Ludolph E, Schroter F, Besig K. Die begutachtung der rotatorenmanschettenveranderung. Aktuelle Traumatol 1997;27(1):31-34. (Ger).
98. Ludolph E. Der rotatorenmanschettenschaden: gutachtliche gesichtspunkte. Aktuelle Traumatol 1992;22(2):82-83. (Ger).
99. Meister K, Andrews JR. Classification and treatment of rotator cuff injuries in the overhand athlete. J Orthop Sports Phys Ther 1993;18(2):413-421.
100. Mestdagh H, Urvoy P. A surgical approach for the repair of large tears of the rotator cuff. Acta Orthop Belg 1992;58(3):359-361.
101. Millstein ES, Snyder SJ. Arthroscopic management of partial, full-thickness, and complex rotator cuff tears: Indications, techniques, and complications. Arthroscopy 2003;19(10):189-199.
102. Mole D, Sirveaux F. Traitements, résultants fonctionnel et anatomique de la série [Full-thickness tears of the rotator cuff, including subscapularis: principles of surgical technique]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):100-104. (Fre).
103. Monet J, Dauzac C. Principes de reeducation apres reparation chirurgicale des lesions degeneratives de la coiffe (lambeau deltoidien). Cah Kinésithér 1993;162(4):66-72. (Fre).
104. National Coordinating Centre for Health Technology Assessment (NCCHTA). The clinical and cost-effectiveness of surgical (arthroscopic or open) versus rest then exercise management for tears of the rotator cuff (UKUFF trial), HTA ref 05/47/02, primary research (project) (brief record). 2008;ST.
105. Neviaser RJF. Evaluation and management of failed rotator cuff repairs. The rotator cuff, Part II. Orthop Clin North Am 1997;28(2):215-224.
106. Nho SJ, Shindle M, American Academy of Orthopaedic Surgeons RIUSS. Systematic review of arthroscopic rotator cuff repair and mini-open rotator cuff repair. Selected scientific exhibits: the annual meeting of the American Academy of Orthopaedic Surgeons, San Diego, CA, February 14-18, 2007. J Bone Joint Surg Am 2007;89(Suppl 3):127-136.
107. Noel E. Evolution naturelle des lesions de la coiffe des rotateurs. Lyon Mediterr Med Med Sud Est 1997;33(6-7):2390-2393. (Fre).
108. Noel E. Les ruptures de la coiffe des rotateurs. Concours medical Paris 2005;127(15):823-827. (Fre).
109. Nottage WM. Rotator cuff repair with or without acromioplasty. Arthroscopy 2003;19(10 Suppl 1):229-232.
110. Nove-Josserand L. Arthroscopie de l' epaule. Rupture partielle de la coiffe des rotateurs: chirurgie arthroscopique du membre superieur. Chir Main 2006;25(Suppl 1):S50-S59. (Fre).
111. Ozbaydar M, Chung S, Diller D, et al. Arthroscopic reconstruction of the rotator cuff. Orthopade 2007;36(9):825.
112. Paulos LE, Franklin JL, Beck CL, Jr. Arthroscopic management of rotator cuff tears. In: Mcginty, JB, editor. Operative Arthroscopy. New York: Raven Press; 1991. p. 529-542.
113. Pearce C, Ricketts D, Wall S, et al. Open repair of massive rotator cuff tears in patients aged sixty-five years or over: is it worthwhile? [comment]. J Shoulder Elbow Surg 2005;14(6):657.
114. Peterson CA, Altchek DW. Arthroscopic treatment of rotator cuff disorders. Clin Sports Med 1996 Oct;15(4):715-736.
115. Piasecki DP, Nicholson GP. Tears of the subscapularis tendon in athletes-diagnosis and repair techniques. Clin Sports Med 2008;27(4):731.
116. Pisan M, Gerber C. Clinical examination of the rotator cuff. Curr Orthop 2000;14(3):155-160.
117. Pocholle M. Reeducation apres reparation de la coiffe des rotateurs de l' epaule. Ann Kinésithér 1997;24(8):353-361. (Fre).
118. Pollock RGF. Full-thickness tears: mini-open repair. The rotator cuff, Part II. Orthop Clin North Am 1997;28(2):169-177.

119. Povacz P, Resch H. Die rotatorenmanschettenruptur [Rupture of the rotator cuff]. Wien Med Wochenschr 1996;146(6-7):135-138. (Ger).
120. Reardon DJ, Maffulli N. Clinical evidence shows no difference between single- and double-row repair for rotator cuff tears. Arthroscopy 2007;23(6):670-673.
121. Reilly P, Emery R. Full thickness rotator cuff tears. Curr Orthop 2000;14(3):173-181.
122. Resch H. Primar schliessbare rotatorenmanschettenrupturen. Aktuelle Traumatol 1999;29(1):A1-A6. (Ger).
123. Richards DP, Burkhart SS. Subscapularis tears: arthroscopic repair techniques: advanced shouler arthroscopy. Orthop Clin North Am 2003;34(4):485-498.
124. Rockwood CAW. Protheses d' epaule et deficience de la coiffe des rotateurs: protheses d' epaule. Cahiers d'enseignement de la SOFCOT 1999;68:219-225. (Fre).
125. Rodriguez-Pinero Duran M, Rodriguez-Burgos C, Cardenas-Clemente J, et al. Arthroplasty of the shoulder. Rehabil 2007;41(6):248-257.
126. Rudzki JR, Shaffer B. New approaches to diagnosis and arthroscopic management of partial-thickness cuff tears. Clin Sports Med 2008;27(4):691.
127. Ruotolo C, Nottage WM. Surgical and nonsurgical management of rotator cuff tears. Arthroscopy 2002;18(5):527-531.
128. Ruotolo C, Nottage WM, Flatow EL, et al. Controversial topics in shoulder arthroscopy. Arthroscopy 2002 Feb;18(2 Suppl 1):65-75.
129. Ryu RK, Burkhart SS, Parten PM, et al. Complex topics in arthroscopic subacromial space and rotator cuff surgery. Arthroscopy 2002;18(2 Suppl 1):51-64.
130. Scheib JS. Diagnosis and rehabilitation of the shoulder impingement syndrome in the overhand and throwing athlete. Rheum Dis Clin North Am 1990;16(4):971-988.
131. Schoene ML. New questions about rotator cuff surgery: should acromioplasty always accompany rotator cuff repair? Sports Med Dig 2000 May;22(5):49-56.
132. Sklaar J. Test to predict treatment outcome: determining the potential success of conservative treatment of rotator cuff imoingement. S Afr J Physiother 1995;51(1):13.
133. Speed CA. Fortnightly review: corticosteroid injections in tendon lesions. Br Med J 2001;323(7309):382-386.
134. Sperner G, Resch H, Golser K. Klinisches management bei läison der rotatorenmanschette [Clinical management in lesions of the rotator cuff]. Unfallchirurg 1990;93(7):309-314. (Ger).
135. Stetson WB, Ryu RKN. Evaluation and arthroscopic treatment of partial rotator cuff tears. Sports Med Arthrosc 2004;12(2):114-126.
136. Stetson WB, Ryu RKN, Bittar ES. Arthroscopic treatment of partial rotator cuff tears. Oper Tech Sports Med 2004;12(2):135-148.
137. Sudkamp NP. Die rotatorenmanschettenruptur [Rotator cuff rupture]. Zentralbl Chir 2001 Mar;126(3):177-183. (Ger).
138. Terrade P, Gallois D. Ruptures de coiffes operees: implications pratiques en reeducation. Surgical treatment of rotator cuff tears: practical implications for rehabilitation. Sports Med 2006 Apr;(181):25-26.
139. Terrade P, Gallois D. Ruptures de coiffes operees: implications pratiques en reeducation. Surgical treatment of rotator cuff tears: practical implications for rehabilitation. Sports Med 2006 May;(182):15-16.
140. Thelen P, Societe francaise de rhumatologie Fp. Les calcifications rebelles de la coiffe : ponction-aspiration-infiltration. Seizieme journee de Bichat "Appareil locomoteur" - 29 mars 2003. Seance pleniere (1ere partie). Rhumatologie 2003;55(2):12-14.
141. Thierry M. Criteres de suivi en reeducation et d'orientation en ambulatoire ou en SSR apres chirurgie des ruptures de coiffe ou arthroplasties d'epaule: Syntheses des recommandations professionnelles. La reeducation de l' epaule prend son envol. Kinesitherapie scientifique 2008;489:27-29.
142. Thomazeau H. Shoulder arthroscopy and rotator cuff tears repair. Rev Chir Orthop Reparatrice Appar Mot 2008;94(8 Suppl):394-397.
143. Tonino PM, Gerber C, Itoi E, et al. Complex shoulder disorders: evaluation and treatment. J Am Acad Orthop Surg 2009;17(3):125-136.
144. Travis RD, Burkhead WZ. Technique for repair of the subscapularis tendon: repair of athletic Shoulder Injuries. Orthop Clin North Am 2001;32(3):495-500.

145. Trojian T, Stevenson JH, Agrawal N. What can we expect from nonoperative treatment options for shoulder pain? J Fam Pract 2005;54(3):216-223.
146. Walch G, Riand N. Ruptures aigues de la coiffe des rotateurs: traumatismes recents de l' epaule. Cahiers d'enseignement de la SOFCOT 1996;56:255-260. (Fre).
147. Walch G, Calderone S. Les lesions de la coiffe des rotateurs liees au sport. Rev Chir Orthop Reparatrice Appar Mot 1998;84(Suppl 1):29. (Fre).
148. Warner JJP, Warren RF. Consideration and management of rotator cuff tears in athletes. Ann Chir Gynaecol 1991;80(2):160-167.
149. Warner JJP. The treatment of stiffness of the shoulder after repair of the rotator cuff. J Bone Joint Surg Am 1997;79(8):1260-1269.
150. Wolff AB, Magit DP, Miller SR, et al. Arthroscopic fixation of bursal-sided rotator cuff tears. Arthroscopy 2006;22(11):1247.e1.
151. Yamaguchi K, Flatow EL. Arthroscopic evaluation and treatment of the rotator cuff: arthroscopy of the upper extremity. Orthop Clin North Am 1995;26(4):643-659.
152. Yamaguchi K. Mini-open rotator cuff repair: an updated perspective. J Bone Joint Surg Am 2001;83(5):764-772.
153. Zhao H, Wu HS. Evolution of arthroscopy: from a technique to a subspecialty. Chin Med J 2008;121(15):1462-1468.

Excluded – Published Before 1990 (N = 4)

The following studies were excluded because they were published before 1990.

1. Biedert R, Kentsch A. [Arthroscopic subacromial decompression in chronic impingement syndrome]. Unfallchirurg 1989;92(10):500-504. (Ger).
2. Neer CS. Anterior acromioplasty for the chronic impingement syndrome in the shoulder: a preliminary report. J Bone Joint Surg Am 1972;54(1):41-50.
3. Saragaglia D, Bellon P, Plawecki S, et al. [The impingement syndrome 50 cases operated on by Neer's anterior acromioplasty]. Rhumatologie 1989;41(8):235-239. (Fre).
4. Takagishi N. Conservative treatment of the ruptures of the rotator cuff. Orthopaedic Survey 1978;2(3):186-187.

Excluded – Enrolled ≤10 Participants (N = 34)

The following studies were excluded because 10 or fewer participants were enrolled.

1. Abrahams S. Acupuncture treatment for a rotator cuff tear, and avoidance of surgery. AACP Journal 2005;(2):38-42.
2. Ainsworth R. Physiotherapy rehabilitation in patients with massive, irreparable rotator cuff tears. Musculoskeletal Care 2006 Sep;4(3):140-151.
3. Auethavekiat P, Michet J. Rotator-cuff tear. New Egypt J Med 2006;354(19):e20.
4. Badhe SP, Lawrence TM, Smith FD, et al. An assessment of porcine dermal xenograft as an augmentation graft in the treatment of extensive rotator cuff tears. J Shoulder Elbow Surg 2008 Jan;17(1 Suppl 35):35S-39S.
5. Beauchamp M, Roy JD. Arthroscopic repair of large and massive rotator cuff tears performed under local anaesthesia and sedation. J Shoulder Elbow Surg 2009;18(5):e18-e20.
6. Bennett WF. Arthroscopic repair of isolated subscapularis tears: a prospective cohort with 2- to 4-year follow-up. Arthroscopy 2003 Feb;19(2):131-143.
7. Boyles RE, Flynn TW, Whitman JM. Manipulation following regional interscalene anesthetic block for shoulder adhesive capsulitis: a case series. Man Ther 2005;10(1):80-87.
8. Deberardino TM, Owens BD. All-inside arthroscopic repair of partial-thickness supraspinatus tendon tear. Tech Shoulder Elbow Surg 2007;8(3):117-119.
9. Harryman DT. Management of stiffness after rotator cuff tears and repairs. Sports Med Arthrosc 1999 Jul;7(3):174-187.
10. Hartsell HD. Postsurgical shoulder strength in the older patient. J Orthop Sports Phys Ther 1993 Dec;18(6):667-672.
11. Hepp P, Engel T, Osterhoff G, et al. Knotless anatomic double-layer double-row rotator cuff repair: a novel technique re-establishing footprint and shape of full-thickness tears. Arch Orthop Trauma Surg 2009;129(8):1031-1036.
12. Herrera MF, Bauer G, Reynolds F, et al. Infection after mini-open rotator cuff repair. J Shoulder Elbow Surg 2002 Nov;11(6):605-608.
13. Hoellrich RG, Gasser SI, Morrison DS, et al. Electromyographic evaluation after primary repair of massive rotator cuff tears. J Shoulder Elbow Surg 2005 May;14(3):269-272.
14. Holmes TT, Buzzell JE, Dunn WR, et al. Intra-articular pain pump catheter breakage after arthroscopic shoulder surgery: a case series. J Shoulder Elbow Surg 2007;16(6):e6-e9.
15. Itoi E, Tabata S. Rotator cuff tears in the adolescent. Orthopedics 1993;16(1):78-81.
16. Jully JL, Scheffer JC, Katz D. Place du traitement fonctionnel dans les ruptures de coiffe des rotateurs. J Réadapt Méd 1991;11(4):227-230. (Fre).
17. Kilinc AS, Ebrahimzadeh MH, Lafosse L. Subacromial internal spacer for rotator cuff tendon repair: “the balloon technique.” Arthroscopy: The Journal of Arthroscopy & Related Surgery 2009;25(8):921-924.
18. Kim KC, Rhee KJ, Shin HD, et al. Arthroscopic footprint reconstruction of bursal-side delaminated rotator cuff tears using the suture-bridge technique. Knee Surg Sports Traumatol Arthrosc 2009;17(7):840-843.
19. Kirkley A, Griffin S, McLintock H, et al. The development and evaluation of a disease-specific quality of life measurement tool for shoulder instability. The Western Ontario Shoulder Instability Index (WOSI). Am J Sports Med 1998;26(6):764-772.
20. Leonhardt G, Ferbert A. Atemsynchrone muskelaktivitat in proximalen arm-und schultermuskeln nach traumatischer plexus und wurzellasion. Nervenarzt 1991;62(4):252-255. (Ger).
21. Lo IKY, Burkhart SS. Arthroscopic repair of massive, contracted, immobile rotator cuff tears using single and double interval slides: technique and preliminary results. Arthroscopy 2004 Jan;20(1):22-33.
22. Matsen FA III. Clinical practice. Rotator-cuff failure. N Engl J Med 2008;358(20):2138-2147.
23. McCreesh K. Evidence based prognosis setting in the case of a conservatively managed rotator cuff tear. Physiother Irel 2007;28(1):31-35.
24. Melillo AS, Savoie III FH, Field LD. Massive rotator cuff tears: debridement versus repair. Orthop Clin North Am 1997 Jan;28(1):117-124.

25. Nord KD, Gothelf T. Rotator Cuff Repair Utilizing the Anterolateral Portal: The 3D Repair. 24th Annual Meeting of the Mid-America Orthopaedic Association, San Antonio, Texas, April 19-23, 2006.
26. Norwood LA, Fowler HL. Rotator cuff tears a shoulder arthroscopy complication. Am J Sports Med 1989;17(6):837-841.
27. Oh JH, Kim SH, Lee HK, et al. Trans-rotator cuff portal is safe for arthroscopic superior labral anterior and posterior lesion repair: clinical and radiological analysis of 58 SLAP lesions. Am J Sports Med 2008;36(10):1913-1921.
28. Ostrander III RV, Andrews J. Arthroscopic triple-row rotator cuff repair: a modified suture-bridge technique. Orthopedics 2009;32(8):566.
29. Richards AM, Curtis MJ. Fracture of an os acromiale with associated rupture of the coracoclavicular ligaments. J Shoulder Elbow Surg 2008;17(6):e8-e11.
30. Richman N, Curtis A, Hayman M. Acromion-splitting approach through an os acromiale for repair of a massive rotator cuff tear. Arthroscopy 1997 Oct;13(5):652-655.
31. Soyer J, Vaz S, Pries P, et al. The relationship between clinical outcomes and the amount of arthroscopic acromial resection. Arthroscopy 2003 Jan;19(1):34-39.
32. Steenbrink F, de Groot JH, Veeger HE, et al. Pathological muscle activation patterns in patients with massive rotator cuff tears, with and without subacromial anaesthetics. Man Ther 2006 Aug;11(3):231-237.
33. Sundberg G. [Patients' experiences of the rehabilitation period and long-term effects of rehabilitation after rotator cuff repair]. Nord Fysio 2004;8(4):183-189. (Swe).
34. Wilcox RB, Harris BA, Arslanian LE, et al. Functional outcomes following rotator cuff repair based on tissue quality: a pilot study. (abstract). J Orthop Sporsts Phys Ther 2006 Jan;36(1):a9-a10.

Excluded – No Baseline Data (N = 89)

The following uncontrolled studies were excluded because no baseline data was reported.

1. Abrams JS. Arthroscopic techniques for massive rotator cuff repairs. Tech Shoulder Elbow Surg 2007;8(3):126-134.
2. Altchek DW, Warren RF, Wickiewicz TL, et al. Arthroscopic acromioplasty: technique and results. J Bone Joint Surg Am 1990 Sep;72(8):1198-1207.
3. Behrens P, Egbers HJ. Die fruhfunktionelle behandlung der verletzten schulter unterstutzt durch eine aktive schulterbandage. Aktuelle Traumatol 1991;21(2):58-63.
4. Bittar ES. Arthroscopic management of massive rotator cuff tears. Arthroscopy 2002 Nov;18(9 Suppl 2):104-106.
5. Bonutti PM, Cremens MJ, Lee FS, et al. Use of an allograft bone button for rotator cuff repair. Orthopedics 2002 Feb;25(2):149-151.
6. Braune C, von Eisenhart-Rothe R, Welsch F, et al. Mid-term results and quantitative comparison of postoperative shoulder function in traumatic and non-traumatic rotator cuff tears. Arch Orthop Trauma Surg 2003 Oct;123(8):419-424.
7. Budoff JE, Rodin D, Ochiai D, et al. Arthroscopic rotator cuff debridement without decompression for the treatment of tendinosis. Arthroscopy 2005 Sep;21(9):1081-1089.
8. Chin PY, Sperling JW, Cofield RH, et al. Anterior acromioplasty for the shoulder impingement syndrome: long-term outcome. J Shoulder Elbow Surg 2007 Nov;16(6):697-700.
9. Cordasco FA, Backer M, Craig EV, et al. The partial-thickness rotator cuff tear: is acromioplasty without repair sufficient? Am J Sports Med 2002 Mar;30(2):257-260.
10. Costouros JG, Porramatikul M, Lie DT, et al. Reversal of suprascapular neuropathy following arthroscopic repair of massive supraspinatus and infraspinatus rotator cuff tears. Arthroscopy 2007 Nov;23(11):1152-1161.
11. Dawson J, Hill G, Fitzpatrick R, et al. Comparison of clinical and patient-based measures to assess medium-term outcomes following shoulder surgery for disorders of the rotator cuff. Arthritis Rheum 2002 Oct 15;47(5):513-519.
12. Ellman H. Diagnosis and treatment of incomplete rotator cuff tears. Clin Orthop Relat Res 1990;(254):64-74.
13. Essman JA, Bell RH, Askew M. Full-thickness rotator-cuff tear: an analysis of results. Clin Orthop Relat Res 1991 Apr;(265):170-177.
14. Fealy S, Kingham TP, Altchek DW. Arthroscopically assisted (mini-open) rotator cuff repair. Sports Med Arthrosc 1999;7(2):76-84.
15. Fealy S, Kingham TP, Altchek DW. Mini-open rotator cuff repair using a two-row fixation technique: outcomes analysis in patients with small, moderate, and large rotator cuff tears. Arthroscopy 2002 Jul;18(6):665-670.
16. Fealy S, Adler RS, Drakos MC, et al. Patterns of vascular and anatomical response after rotator cuff repair. Am J Sports Med 2006 Jan;34(1):120-127.
17. Feng S, Guo S, Nobuhara K, et al. Prognostic indicators for outcome following rotator cuff tear repair. J Orthop Surg 2003 Dec;11(2):110-116.
18. Flynn LM. Shoulder impingement syndrome in recreational athletes. J Neurol Orthop Med Surg 1990;11(2):111-114.
19. Fokter SK, Cicak N, Skorja J. Functional and electromyographic results after open rotator cuff repair. Clin Orthop Relat Res 2003 Oct;(415):121-130.
20. Franceschi JP, Curvale G, Acquaviva P, et al. Traitement chirurgical des ruptures de la coiffe des rotateurs [Surgical treatment of ruptures of the rotator cuff]. Rev Rhum Mal Osteoartic 1991 Jun;58(6):415-418. (Fre).
21. Gerber C, Krushell RJ. Isolated rupture of the tendon of the subscapularis muscle: clinical features in 16 cases. J Bone Joint Surg Br 1991 May;73(3):389-394.
22. Getahun TY, MacDermid JC, Patterson SD. Concurrent validity of patient rating scales in assessment of outcome after rotator cuff repair. J Musculoskelet Res 2000;4(2):119-127.
23. Gleyze P, Kempf JF, Orthopaedica Belgica B. Resultats cliniques et anatomiques d' une serie de 20 ruptures de la coiffe des rotateurs reparees par agrafage endoscopique. Acta Orthop Belg 1995;61(Suppl 1):32-36. (Fre).

24. Goto M, Suzuki K, Shimada T. Relationship between lifestyle and shoulder motor function after reconstruction of rotator cuff tear. J Phys Ther 2007;19(4):243-249.
25. Goutallier D, Postel JM. Influence de la degenerescence musculaire du supra-et de l' infra-spinatus sur le pronostic des reparations chirurgicales de la coiffe des rotateurs. Acta Orthop Belg 1998;64(Suppl 2):42-45. (Fre).
26. Gualtieri G, Gualtieri I, Gagliardi S, et al. The results of the surgical treatment of breakage of the rotator cuff. Chir Organi Mov 1991 Oct;76(4):335-339.
27. Habernek H, Schmid L, Frauenschuh E. Five year results of rotator cuff repair. Br J Sports Med 1999 Dec;33(6):430-433.
28. Hambly N, Fitzpatrick P, MacMahon P, et al. Rotator cuff impingement: correlation between findings on MRI and outcome after fluoroscopically guided subacromial bursography and steroid injection. Am J Roentgenol 2007 Nov;189(5):1179-1184.
29. Harryman DT, Mack LA, Wang KY, et al. Repairs of the rotator cuff: correlation of functional results with integrity of the cuff. J Bone Joint Surg Am 1991 Aug;73(7):982-989.
30. Harryman DT, Hettrich CM, Smith KL, et al. A prospective multipractice investigation of patients with full-thickness rotator cuff tears: the importance of comorbidities, practice, and other covariables on self-assessed shoulder function and health status. J Bone Joint Surg Am 2003 Apr;85(4):690-696.
31. Hoe-Hansen CE, Palm L, Norlin R. The influence of cuff pathology on shoulder function after arthroscopic subacromial decompression: a 3- and 6-year follow-up study. J Shoulder Elbow Surg 1999 Nov;8(6):585-589.
32. Holibka R, Kalina R, Pach M, et al. Arthroscopic treatment of ruptures of the rotator cuff. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub 2005 Dec;149(2):277-280.
33. Hollinshead RM, Mohtadi NG, Vande Guchte RA, et al. Two 6-year follow-up studies of large and massive rotator cuff tears: comparison of outcome measures. J Shoulder Elbow Surg 2000 Sep;9(5):373-381.
34. Huber H. Debridement arthroscopique d' une rupture degenerative massive de la coiffe des rotateurs. Rev Med Suisse Romande 2004;124(5):261-263. (Fre).
35. Jacobs S, Williams H, Moir J, et al. Full thickness rotator cuff tears long-term follow-up. Eur J Orthop Surg Traumatol 2000;10(1):61-64.
36. Jully JL, Autivy J, Joncour V. Objectifs hebdomadiares et surveillance de la rééducation des ruptures de coiffe opérées [Weekly objectives and monitoring rehabilitation of operated rotator cuff tears]. Ann Kinésithér 1990;17(3):107-111. (Fre).
37. Kartus J, Kartus C, Rostgard-Christensen L, et al. Long-term clinical and ultrasound evaluation after arthroscopic acromioplasty in patients with partial rotator cuff tears. Arthroscopy 2006;22(1):44-49.
38. Kempf JF, Mole D, Gleyze P, et al. Resultats du traitement endoscopique des tendinopathies de la coiffe des rotateurs (ruptures completes exclues). 1ere partie: Les tendinopathies non calcifiees [Results of endoscopic treatment of tendinopathies of the rotator cuff (excluding total ruptures). 1: non-calcifying tendinopathies]. Rev Chir Orthop Reparatrice Appar Mot 1993;79(7):519-531. (Fre).
39. Kessler KJ, Bullens-Borrow AE, Zisholtz J. LactoSorb plates for rotator cuff repair. Arthroscopy 2002 Mar;18(3):279-283.
40. Kilian O, Balser G, Heiss C, et al. Subjektives und klinisches outcome nach rekonstruktion der rotatorenmanschette im hoheren lebensalter [Subjective and clinical outcome after rotator cuff repair in elderly patients]. Z Orthop Unfallchir 2008 Jul;146(4):471-477. (Ger).
41. 41. Kim KC, Rhee KJ, Shin HD. Deformities associated with the suture-bridge technique for full-thickness rotator cuff tears. Arthroscopy 2008;24(11):1251-7.
42. Kim KC, Rhee KJ, Shin HD, et al. Arthroscopic transosseous rotator cuff repair. Orthopedics 2008 Apr;31(4):327-330.
43. Kulenkampff HA, Reichelt A. Der klinische verlauf der rotatorenmanschettenruptur nach konservativer therapie [Clinical course of ruptures of the rotator cuff after conservative therapy]. Orthop Prax 1990;26(8):493-496. (Ger).
44. Kwon YW, Kalainov DM, Rose HA, et al. Management of early deep infection after rotator cuff repair surgery. J Shoulder Elbow Surg 2005 Jan;14(1):1-5.
45. Kyrola K, Niemitukia L, Jaroma H, et al. Long-term MRI findings in operated rotator cuff tear. Acta radiol 2004 Aug;45(5):526-533.

46. Lam F, Mok D. Open repair of massive rotator cuff tears in patients aged sixty-five years or over: is it worthwhile? J Shoulder Elbow Surg 2004 Sep;13(5):517-521.
47. Leroux JL, Hebert P, Mouilleron P, et al. Postoperative Shoulder Rotators Strength in Stage-Ii and Stage-Iii Impingement Syndrome. Clin Orthop Relat Res 1995;(320):46-54.
48. Lupo R, Benazzo F, Finardi E, et al. Surgery in massive ruptures of the rotator cuff: results as related to prognosis. Chir Organi Mov 2000 Oct;85(4):389-394.
49. Lupo R, Rapisarda S, Bottinelli O, et al. Ultrasound and MRI for the long-term evaluation of surgical repair of the rotator cuffs. Chir Organi Mov 2001 Jan;86(1):21-27.
50. 50. Mansat P, Cofield RH, Kersten TE, et al. Complications of rotator cuff repair. Orthop Clin North Am 1997 Apr;28(2):205-213.
51. Marcon D, Paysant J. Place de la medecine physique et de readaptation avant et apres chirurgie reparatrice de la coiffe des rotateurs de l' epaule : a propos d' une revision a deux ans d' une serie de 42 operes. Medecine physique et readaptation. Ann Med Nancy 1997;36(5-6):299-305.
52. McFarland EG, Neira CA, Gutierrez MI, et al. Clinical significance of the arthroscopic drive-through sign in shoulder surgery. Arthroscopy 2001 Jan;17(1):38-43.
53. McFarland EG, Park HB, Kim TK, et al. Limited lateral acromioplasty for rotator cuff surgery. Orthopedics 2005;28(3):256-259.
54. Miller SL, Hazrati Y, Cornwall R, et al. Failed surgical management of partial thickness rotator cuff tears. Orthopedics 2002 Nov;25(11):1255-1257.
55. Motycka T, Kriegleder B, Landsiedl F. Results of open repair of the rotator cuff: a long-term review of 79 shoulders. Arch Orthop Trauma Surg 2001;121(3):148-151.
56. Neviaser RJ, Neviaser TJ, Neviaser JS. Anterior dislocation of the shoulder and rotator cuff rupture. Clin Orthop Relat Res 1993;291(291):103-106.
57. Nobuhara K, Hata Y, Komai M. Surgical procedure and results of repair of massive tears of the rotator cuff. Clin Orthop Relat Res 1994 Jul;(304):54-59.
58. Norlin R, Adolfsson L. Small full-thickness tears do well ten to thirteen years after arthroscopic subacromial decompression. J Shoulder Elbow Surg 2008 Jan;17(1 Suppl):12S-16S.
59. Owens BD, Nelson BJ, Taylor DC. Acute brachial plexus compression after pectoralis major transfer for subscapularis insufficiency. Am J Sports Med 2008;36(1):173-175.
60. Payne LZ, Altchek DW, Craig EV, et al. Arthroscopic treatment of partial rotator cuff tears in young athletes: a preliminary report. Am J Sports Med 1997 May;25(3):299-305.
61. Petruccelli E, Cominetti G, Masse A. La riparazione della cuffia dei rotatori a cielo aperto: risultati a medio termine [Open repair of the rotator cuff tear: results at mean follow-up]. Minerva Ortop Traumatol 2001;52(4-5):217-224. (Ita, Eng)
62. Plafki C, Hedtmann A, Fett H, et al. Ergebnisse der operativen therapie von rupturen der rotatorenmanschette der schulter [Results of surgical therapy of ruptures of the rotator cuff of the shoulder]. Z Orthop Ihre Grenzgeb 1997 Jul;135(4):360-367. (Ger).
63. Porcellini G, Baccarani G, Campi F, et al. Isokinetic testing to evaluate patients submitted to surgery for the treatment of surgical lesion of the rotator cuff. Chir Organi Mov 1996 Jul;81(3):295-302.
64. Razmjou H, Lincoln S, Axelrod T, et al. Factors contributing to failure of rotator cuff surgery in persons with work-related injuries. Physiother Can 2008;60(2):125-133.
65. Reynolds SB, Dugas JR, Cain EL, et al. Debridement of small partial-thickness rotator cuff tears in elite overhead throwers. Clin Orthop Relat Res 2008 Mar;466(3):614-621.
66. Riand N, Boulahia A, Walch G. Conflit postero-superieur de l'epaule chez le sportif: resultats du debridement arthroscopique [Posterosuperior impingement of the shoulder in the athlete: results of arthroscopic debridement in 75 patients]. Rev Chir Orthop Reparatrice Appar Mot 2002 Feb;88(1):19-27. (Fre).
67. Rockwood CA, Lyons FR. Shoulder impingement syndrome: diagnosis, radiographic evaluation, and treatment with a modified neer acromioplasty. J Bone Joint Surg Am 1993;75(3):409-424.

68. Romeo AA, Hang DW, Bach BR, Jr., et al. Repair of full thickness rotator cuff tears: gender, age, and other factors affecting outcome. Clin Orthop Relat Res 1999 Oct;(367):243-255.
69. Romeo AA, Cohen, Carreira DS. Traumatic anterior shoulder instability. Orthop Clin North Am 2001;32(3):399-409.
70. Savoie FH. Costs analysis of successful rotator cuff repair surgery: an outcome study. Comparison of Gatekeeper system in surgical patients. Arthroscopy 1995;11(6):672-676.
71. Schiepers P, Pauwels P, Penders W, et al. La place de l'arthroscopie dans la pathologie sous-acromiale: etude retrospective d'une serie d'acromioplasties arthroscopiques [The role of arthroscopy in subacromial pathology: retrospective study of a series of arthroscopic acromioplasties]. Acta Orthop Belg 2000 Dec;66(5):438-448. (Fre).
72. Selvanetti A, Giombini A, Caruso I. Nonoperative treatment of partial-thickness rotator cuff tears in overhead athletes. Med Sci Sports Exerc 1998;30(5 Suppl):S260.
73. Shen PH, Lien SB, Shen HC, et al. Long-term functional outcomes after repair of rotator cuff tears correlated with atrophy of the supraspinatus muscles on magnetic resonance images. J Shoulder Elbow Surg 2008 Jan;17(1 Suppl):1S-7S.
74. Smith KL, Harryman DT, Antoniou J, et al. A prospective, multipractice study of shoulder function and health status in patients with documented rotator cuff tears. J Shoulder Elbow Surg 2000 Sep;9(5):395-402.
75. Snyder S, Foos G. Arthroscopic treatment of bursal side and full thickness rotator cuff tears. Ann Chir Gynaecol 1996;85(2):117-125.
76. Snyder SJ, Pachelli AF, Del PW, et al. Partial thickness rotator cuff tears: results of arthroscopic treatment. Arthroscopy 1991;7(1):1-7.
77. Solomon DJ, Provencher MT, Bell SJ, et al. Arthroscopic rotator cuff repair in active duty military personnel: a young cohort of patients with rotator cuff tears. Oper Tech Sports Med 2005;13(3):136-142.
78. Sonnery-Cottet B, Edwards TB, Noel E, et al. Rotator cuff tears in middle-aged tennis players: results of surgical treatment. Am J Sports Med 2002 Jul;30(4):558-564.
79. Suenaga N, Minami A, Kaneda K. Postoperative subcoracoid impingement syndrome in patients with rotator cuff tear. J Shoulder Elbow Surg 2000 Jul;9(4):275-278.
80. Theermann R, Refior HJ. Welche faktoren beeinflussen das ergebnis der rotatormanschetten-rekonstruktion [Factors influencing the result of reconstructions of the rotator cuff]. Orthop Prax 1991;27(1):9-14. (Ger).
81. Walmsley RP, Hartsell H. Shoulder strength following surgical rotator cuff repair: a comparative analysis using Isokinetic testing. J Orthop Sporsts Phys Ther 1992;15(5):215-222.
82. Warner JJP, Goitz RJ, Irrgang JJ, et al. Arthroscopic-assisted rotator cuff repair: patient selection and treatment outcome. J Shoulder Elbow Surg 1997 Sep;6(5):463-472.
83. Weber SC. Arthroscopic debridement and acromioplasty versus mini-open repair in the management of significant partial-thickness tears of the rotator cuff. Orthop Clin North Am 1997 Jan;28(1):79-82.
84. Weber SC. Arthroscopic debridement and acromioplasty versus mini-open repair in the treatment of significant partial-thickness rotator cuff tears. Arthroscopy 1999 Mar;15(2):126-131.
85. Wolf EM, Pennington WT, Agrawal V. Arthroscopic rotator cuff repair: 4- to 10-year results. Arthroscopy 2004 Jan;20(1):5-12.
86. Wolf EM, Pennington WT, Agrawal V. Arthroscopic side-to-side rotator cuff repair. Arthroscopy 2005;21(7):881-887.
87. Worland RL. Treatment of rotator cuff impingement. Orthop Rev 1993;22(1):76-79.
88. Wulker N, Melzer C, Wirth CJ. Shoulder surgery for rotator cuff tears: ultrasonographic 3-year follow-up of 97 cases. Acta Orthop Scand 1991 Apr;62(2):142-147.
89. Zandi H, Coghlan JA, Bell SN. Mini-incision rotator cuff repair: a longitudinal assessment with no deterioration of result up to nine years. J Shoulder Elbow Surg 2006 Mar;15(2):135-139.

Excluded – Ineligible Study Design (N = 182)

The following studies were excluded because the study design did not meet the eligibility criteria. For the original review, these included before-and-after studies in which the data collection was either retrospective or unclear (n=142). For the review update, all uncontrolled studies were excluded, regardless of the direction of data collection (n=40).

1. Abbot AE, Li X, Busconi BD. Arthroscopic treatment of concomitant superior labral anterior posterior (SLAP) lesions and rotator cuff tears in patients over the age of 45 years. Am J Sports Med 2009;37(7):1358-1362.
2. Adams CR, Schoolfield JD, Burkhart SS. The results of arthroscopic subscapularis tendon repairs. Arthroscopy 2008;24(12):1381-1389.
3. Anderson K, Boothby M, Aschenbrener D, et al. Outcome and structural integrity after arthroscopic rotator cuff repair using 2 rows of fixation: minimum 2-year follow-up. Am J Sports Med 2006;34(12):1899-1905.
4. Atkinson RN, Comley AS, Van EJ, et al. Successful early mobilization of major cuff repair using a suture post. J Shoulder Elbow Surg 2006 Mar;15(2):183-187.
5. Auplish S, Funk L. Rotator cuff tears in athletes. Br J Hosp Med 2009;70(5):271-275.
6. Balestro JC, Jacquot N. Resultats des tenotomies et des tenodeses du long biceps dans les lesions irreparables de la coiffe des rotateurs. Rev Chir Orthop Reparatrice Appar Mot 2007;93(8):5S42-5S48. (Fre).
7. Baudet B, Boussaton M. Resultats a long terme de la decompression sous-acromiale par arthroscopie, dans les larges ruptures de coiffe. J Traumatol Sport 1997;14(4):212-216. (Fre).
8. Baydar M, Akalin E, El O, et al. The efficacy of conservative treatment in patients with full-thickness rotator cuff tears. Rheumatol Int 2009;29(6):623-628.
9. Bellumore Y, Mansat M, Assoun J. Resultats de la chirurgie reparatrice de la coiffe des rotateurs: correlation radio-clinique [Results of the surgical repair of the rotator cuff: radio-clinical correlation]. Rev Chir Orthop Reparatrice Appar Mot 1994;80(7):582-594. (Fre).
10. Berhouet J, Collin P, Benkalfate T, et al. Massive rotator cuff tears in patients younger than 65 years. Epidemiology and characteristics. Orthop Traumatol Surg Res 2009;95(4 Suppl):13-18.
11. Bezer M, Kocaoglu B, Erol B, et al. Rotator kilif yirtiklarinda acik cerrahi onarimin uzun donem sonuclari [Long-term results of open surgical repair of rotator cuff tears]. Acta Orthop Traumatol Turc 2004;38(2):110-114. (Tur).
12. Bigiliani LU, Kimmel J, McCann PD, et al. Repair of rotator cuff tears in tennis players. Am J Sports Med 1992;20(2):112-117.
13. Bigliani LU, Cordasco FA, Mcllveen SJ, et al. Operative repair of massive rotator cuff tears. J Shoulder Elbow Surg 1992;1:120-130.
14. Blevins FT, Warren RF, Cavo C, et al. Arthroscopic assisted rotator cuff repair: results using a mini-open deltoid splitting approach. Arthroscopy 1996;12(1):50-59.
15. Bokor DJ, Hawkins RJ, Huckell GH, et al. Results of nonoperative management of full-thickness tears of the rotator cuff. Clin Orthop Relat Res 1993;(294):103-110.
16. Bond JL, Dopirak RM, Higgins J, et al. Arthroscopic replacement of massive, irreparable rotator cuff tears using a GraftJacket allograft: technique and preliminary results. Arthroscopy 2008;24(4):403-409.
17. Boyle O, Glasson JM, Pollock RG, et al. Arthroscopically assisted rotator cuff repair with a limited portal-extension approach. Man Ther 1999;4(1):44-48.
18. Brown TD, Newton PM, Steinmann SP, et al. Rotator cuff tears and associated nerve injuries. Orthopedics 2000;23(4):329-332.
19. Bruns J, Henning R, Behrens P. Arthrolysis of the shoulder for ruptures of the rotator cuff. Int Orthop 1997;21(3):157-160.
20. Burkhart SS. Arthroscopic debridement and decompression for selected rotator cuff tears: clinical results, pathomechanics, and patient selection based on biomechanical parameters. [Review]. Orthop Clin North Am 1993;24(1):111-123.
21. Burkhart SS, Nottage WM, Ogilvie-Harris DJ, et al. Partial repair of irreparable rotator cuff tears. Arthroscopy 1994;10(4):363-370.

22. Burkhart SS, Danaceau SM, Pearce CE. Arthroscopic rotator cuff repair: Analysis of results by tear size and by repair technique. Margin convergence versus direct tendon-to-bone repair. Arthroscopy 2001;17(9):905-912.
23. Burkhart SS, Barth JR, Richards DP, et al. Arthroscopic repair of massive rotator cuff tears with stage 3 and 4 fatty degeneration. Arthroscopy 2007;23(4):347-354.
24. Burns JP, Snyder SJ. Arthroscopic rotator cuff repair in patients younger than fifty years of age. J Shoulder Elbow Surg 2008;17(1):90-66.
25. Calmet J, Esteve C, Mellado JM, et al. Rotura masiva del manguito de los rotadores: resultados del tratamiento quirurgico [Massive rupture of the rotator cuff: results of surgical treatment]. Rev Ortop Traumatol 2002;46(4):294-299. (Spa).
26. Calmet J, Mellado JM, Garcia-Forcada IL, et al. MR Assessment of the Repaired Rotator Cuff in Patients Older than 65. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.
27. Castagna A, Conti M, Markopoulos N, et al. Arthroscopic repair of rotator cuff tear with a modified Mason-Allen stitch: mid-term clinical and ultrasound outcomes. Knee Surg Sports Traumatol Arthrosc 2008 May;16(5):497-503.
28. Castagna A, le Rose G, Conti M, et al. Predictive factors of subtle residual shoulder symptoms after transtendinous arthroscopic cuff repair a clinical study. Am J Sports Med 2009;37(1):103-108.
29. Castanga A, Markopoulos N, Conti M, et al. Arthroscopic repair of full thickness rotator cuff tears using a modified Mason Allen stitch: clinical and sonographic results at two years follow up. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.
30. 30. Castricini R, Panfoli N, Nittoli R, et al. Transtendon arthroscopic repair of partial-thickness, articular surface tears of the supraspinatus: results at 2 years. Musculoskelet Surg 2009;93 Suppl 1:S49-S54.
31. Chun JM, Kim SY, Kim JH. Arthroscopically assisted mini-deltopectoral rotator cuff repair. Orthopedics 2008;31(1):74.
32. Ciampi P, Vitali M, Fraschini GF. Repair of massive rotator cuff tears in patients older than 65 years. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.
33. Cicak N. [The results of the surgical treatment of rotator cuff tears]. Lijec Vjesn 1998;120(12):365-369.
34. Clayton RA, Court-Brown CM. The epidemiology of musculoskeletal tendinous and ligamentous injuries. Injury 2008;39(12):1338-1344.
35. Cole BJ, Alford W, Pylawka T, et al. Arthroscopic rotator cuff repair: prospective evaluation at minimum 2-year follow-up. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, Mar 22-26, 2006.
36. Conti M, Garofalo R, Delle RG, et al. Post-operative rehabilitation after surgical repair of the rotator cuff. Musculoskelet Surg 2009;93 Suppl 1:S55-S63.
37. Costouros JG, Porramatikul M, Lie DT, et al. Suprascapular neuropathy associated with massive rotator cuff tears: a rationale for arthroscopic rotator cuff repair. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.
38. Cruz Lopez F, Gomez Espindola JC, Mazan Diaz A, et al. [Clinical-ultrasonographic assessment in arthroscopic rotator cuff repair after 1-year follow-up]. Acta Ortop Mex 2009;23(1):9-14.
39. De BT, Dubuc JE, Joris D, et al. Results of arthroscopic acromioplasty for chronic rotator cuff lesion. Acta Orthop Belg 2004;70(6):520-524.
40. Duralde XA, Bair B. Massive rotator cuff tears: the result of partial rotator cuff repair. J Shoulder Elbow Surg 2005;14(2):121-127.
41. Duralde XA, Greene RT. Mini-open rotator cuff repair via an anterosuperior approach. J Shoulder Elbow Surg 2008;17(5):715-721.
42. Edwards TB, Walch G, Sirveaux F, et al. Repair of tears of the subscapularis. J Bone Joint Surg Am 2005 Apr;87(4):725-730.
43. Edwards TB, Walch G, Nove-Josserand L, et al. Arthroscopic debridement in the treatment of patients with isolated tears of the subscapularis. Arthroscopy 2006;22(9):941-946.

44. Edwards TB, Walch G, Sirveaux F, et al. Repair of tears of the subscapularis: surgical technique. [Review]. J Bone Joint Surg Am 2006;88(Suppl 1):1-10.
45. El-Zahaar MS, Bebars M. The value of the continuous passive motion after repair of the rotator cuff tear in athletes (an arthroscopic study). J Neurol Orthop Med Surg 1995;16(4):246-252.
46. Erol O, Ozcakar L, Celiker R. Shoulder rotator strength in patients with stage I-II subacromial impingement: relationship to pain, disability, and quality of life. J Shoulder Elbow Surg 2008;17(6):893-897.
47. Farron A, De RB. Chirurgie de la coiffe des rotateurs: indications et resultats [Surgery of the rotator cuff: indications and results]. Rev Med Suisse Romande 1992 Aug;112(8):691-694. (Fre).
48. Flurin PH, Landreau P, Societe francaise d'artroscopie. Reparation arthroscopique des lesions transfixiantes de la coiffe: etude retrospective multicentrique de 576 cas. Congres: Dix-huitieme journee de Bichat, "appareil locomoteur". 28 janvier 2005. Seance pleniere. Rhumatologie 2005;57(1):19-25.
49. Flurin PH, Landreau P, Boileau P, et al. Arthroscopic rotator cuff repair. Correlations of clinical results with integrity of the tendon. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, Mar 22-26, 2006.
50. Flurin PH, Landreau P, Gregory T, et al. Cuff integrity after arthroscopic rotator cuff repair: correlation with clinical results in 576 cases. Arthroscopy 2007;23(4):340-346.
51. Flury MP, John M, Goldhahn J, et al. Rupture of the subscapularis tendon (isolated or in combination with supraspinatus tear): when is a repair indicated? J Shoulder Elbow Surg 2006;15(6):659-664.
52. Frank A. Ruptures transfixiantes de la coiffe des rotateurs: décompression sous-acromiale sans réparation: Quelles coiffes faut-il réparer et comment? [Transfixing ruptures of the rotator cuff: subacromial decompression without repair: cuff selection and repair techniques]. Rhumatologie 2002;54(2):16-24. (Fre).
53. Frank JB, ElAttrache NS, Dines JS, et al. Repair site integrity after arthroscopic transosseous-equivalent suture-bridge rotator cuff repair. Am J Sports Med 2008;36(8):1496-1503.
54. Galatz LM, Ball CM, Teefey SA, et al. The outcome and repair integrity of completely arthroscopically repaired large and massive rotator cuff tears. J Bone Joint Surg Am 2004;86(2):219-224.
55. Gartsman GM. Arthroscopic acromioplasty for lesions of the rotator cuff. J Bone Joint Surg Am 1990;72(2):169-180.
56. Gartsman GM, Milne JC. Articular surface partial-thickness rotator cuff tears. J Shoulder Elbow Surg 1995;4(6):409-415.
57. Gartsman GM, Khan M, Hammerman SM. Arthroscopic repair of full-thickness tears of the rotator cuff. J Bone Joint Surg Am 1998;80(6):832-840.
58. Gazielly DF, Gleyze P, Montagnon C, et al. Resultats fonctionnels et anatomiques apres traitement chirurgical des ruptures de la coiffe des rotateurs. 2eme partie: evaluation fonctionnelle et anatomique postoperatoire des ruptures de la coiffe des rotateurs [Functional and anatomical results after surgical treatment of ruptures of the rotator cuff. 2: postoperative functional and anatomical evaluation of ruptures of the rotator cuff]. Rev Chir Orthop Reparatrice Appar Mot 1995;81(1):17-26. (Fre).
59. Gerber C, Hersche O, Farron A. Isolated rupture of the subscapularis tendon. J Bone Joint Surg Am 1996;78(7):1015-1023.
60. Gerber C, Fuchs B, Hodler J. The results of repair of massive tears of the rotator cuff. J Bone Joint Surg Am 2000;82(4):505-515.
61. Gleyze P, Otero F, Kempf JF. Ruptures de la coiffe des rotateurs de l'epaule: traitement symptomatique par acromioplastie sous arthroscopie: resultats et analyse des 31 premiers cas [Rotator cuff tears: symptomatic treatment by arthroscopic subacromal decompression: results and analysis of the 31 first cases]. Rhumatologie 1995;47(2):37-46. (Fre).
62. Gleyze P, Thomazeau H, Flurin PH, et al. Reparation endoscopique des ruptures de la coiffe des rotateurs [Arthroscopic rotator cuff repair: a multicentric retrospective study of 87 cases with anatomical assessment]. Rev Chir Orthop Reparatrice Appar Mot 2000;86(6):566-574. (Fre).
63. Goldberg BA, Nowinski RJ, Matsen III FA. Outcome of nonoperative management of full-thickness rotator cuff tears. Clin Orthop Relat Res 2001;(382):99-107.

64. Goldberg BA, Lippitt SB, Matsen III FA. Improvement in comfort and function after cuff repair without acromioplasty. Clin Orthop Relat Res 2001;(390):142-150.
65. Goutallier D, Postel JM, Lavau L, et al. Influence de la degenerescence graisseuse des muscles supraepineux et infraepineux sur le pronostic des reparations chirurgicales de la coiffe des rotateurs [Impact of fatty degeneration of the suparspinatus and infraspinatus msucles on the prognosis of surgical repair of the rotator cuff]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(7):668-676. (Fre).
66. Goutallier D, Postel JM, Gleyze P, et al. Influence of cuff muscle fatty degeneration on anatomic and functional outcomes after simple suture of full-thickness tears. J Shoulder Elbow Surg 2003;12(6):550-554.
67. Grondel RJ, Savoie III FH, Field LD. Rotator cuff repairs in patients 62 years of age or older. J Shoulder Elbow Surg 2001;10(2):97-99.
68. Goutallier D, Postel JM, Radier C, et al. Long-term functional and structural outcome in patients with intact repairs 1 year after open transosseous rotator cuff repair. J Shoulder Elbow Surg 2009;18(4):521-528.
69. Green A, Bradley MP, Tocci SL, et al. Patient satisfaction after rotator cuff repair. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, Mar 22-26, 2006.
70. Habernek H, Weinstabl R, Schabus R, et al. A new approach to the subacromial space: technique and 2-year results in 28 rotator-cuff repair cases. Acta Orthop Scand 1993;64(1):92-94.
71. Hanusch BC, Goodchild L, Finn P, et al. Large and massive tears of the rotator cuff: functional outcome and integrity of the repair after a mini-open procedure. J Bone Joint Surg Br 2009;91(2):201-205.
72. Hardy P, Duparc J. Chirurgie arthroscopique reparatrice de la coiffe des rotateurs (sous-scapulaire exclu). Conferences d'enseignement 2006. Cahiers d'enseignement de la SOFCOT 2006;91:1-23. (Fre).
73. Hata Y, Saitoh S, Murakami N, et al. Volume changes of supraspinatus and infraspinatus muscles after supraspinatus tendon repair: a magnetic resonance imaging study. J Shoulder Elbow Surg 2005;14(6):631-635.
74. Hattrup SJ. Rotator cuff repair: relevance of patient age. J Shoulder Elbow Surg 1995;4(2):95-100.
75. Hawkins RJ, Morin WD, Bonutti PM. Surgical treatment of full-thickness rotator cuff tears in patients 40 years of age or younger. J Shoulder Elbow Surg 1999;8(3):259-265.
76. Henn III RF, Kang L, Tashjian RZ, et al. Patients' preoperative expectations predict the outcome of rotator cuff repair. J Bone Joint Surg Am 2007;89(9):1913-1919.
77. Hersch JC, Sgaglione NA. Arthroscopically assisted mini-open rotator cuff repairs: functional outcome at 2- to 7-year follow-up. Am J Sports Med 2000;28(3):301-311.
78. Hirooka A, Yoneda M, Wakaitani S, et al. Augmentation with a Gore-Tex patch for repair of large rotator cuff tears that cannot be sutured. J Orthop Sci 2002;7(4):451-456.
79. Huberty DP, Schoolfield JD, Brady PC, et al. Incidence and treatment of postoperative stiffness following arthroscopic rotator cuff repair. Arthroscopy 2009;25(8):880-890.
80. Huijsmans PE, Pritchard MP, Berghs BM, et al. Arthroscopic rotator cuff repair with double-row fixation. J Bone Joint Surg Am 2007;89(6):1248-1257.
81. Iossifidis A, Gill I. Results of arthroscopic rotator cuff repair. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.
82. Ito Y, Nakao Y, Tomo H, et al. Significance of the muscular power evaluation with isokinetic dynamometer in shoulders with rotator cuff tears. 52nd Annual Meeting of the Orthopaedic Research Society, Chicago, IL, Mar 19-22, 2006.
83. Itoi E, Tabata S. Conservative treatment of rotator cuff tears. Clin Orthop Relat Res 1992;(275):165-173.
84. Itoi E, Tabata S. Rotator cuff tears in anterior dislocation of the shoulder. Int Orthop 1992;16(3):240-244.
85. Itoi E, Tabata S. Incomplete rotator cuff tears: results of operative treatment. Clin Orthop Relat Res 1992;(284):128-135.
86. Jaffe M, Frank A, Beaufils P. L'acromioplastie endoscopique dans les ruptures completes de la coiffe des rotateurs [Endoscopic acromioplasty in total rupture of the rotator cuff]. Rev Chir Orthop Reparatrice Appar Mot 1994;80(5):369-738. (Fre).

87. Jiang CY, Feng H, Hong L, et al. [Arthroscopic rotator cuff repair for the treatment of rotator cuff tear]. Zhonghua Wai Ke Za Zhi 2006;44(4):249-253. (Chi).
88. Jones CK, Savoie FH. Arthroscopic repair of large and massive rotator cuff tears. Arthroscopy 2003;19(6):564-571.
89. Juvenspan M, Conso C, Gaudin P, et al. Rupture isolee du tendon du muscle subscapularis: resultats des reparations a ciel ouvert [Isolated tear of the subscapularis tendon: results of open repair]. J Traumatol Sport 2005;22(1):5-12. (Fre).
90. Kamath G, Galatz LM, Keener JD, et al. Tendon integrity and functional outcome after arthroscopic repair of high-grade partial-thickness supraspinatus tears. J Bone Joint Surg Am 2009;91(5):1055-1062.
91. Kempf JF, Gleyze P, Bonnomet F, et al. A multicenter study of 210 rotator cuff tears treated by arthroscopic acromioplasty. Arthroscopy 1999;15(1):56-66.
92. Kim SH, Oh I, Park JS, et al. Intra-articular repair of an isolated partial articular-surface tear of the subscapularis tendon. Am J Sports Med 2005;33(12):1825-1830.
93. Kim SJ, Lee JW, Kim BS. Arthroscopic decompression for subacromial impingement syndrome. J Korean Med Sci 1997;12(2):123-127.
94. Kreuz PC, Remiger A, Erggelet C, et al. Isolated and combined tears of the subscapularis tendon. Am J Sports Med 2005;33(12):1831-1837.
95. Krishnan SG, Harkins DC, Schiffern SC, et al. Arthroscopic repair of full-thickness tears of the rotator cuff in patients younger than 40 years. Arthroscopy 2008;24(3):324-328.
96. Kronberg M, Wahlstrom P, Brostrom LA. Shoulder function after surgical repair of rotator cuff tears. J Shoulder Elbow Surg 1997;6(2):125-130.
97. Lahteenmaki HE, Virolainen P, Hiltunen A, et al. Results of early operative treatment of rotator cuff tears with acute symptoms. J Shoulder Elbow Surg 2006;15(2):148-153.
98. Lahteenmaki HE, Hiltunen A, Virolainen P, et al. Repair of full-thickness rotator cuff tears is recommended regardless of tear size and age: a retrospective study of 218 patients. J Shoulder Elbow Surg 2007;16(5):586-590.
99. Lee E, Bishop JY, Braman JP, et al. Outcomes after arthroscopic rotator cuff repairs. J Shoulder Elbow Surg 2007;16(1):1-5.
100. Levy HJ, Uribe JW, Delaney LG. Arthroscopic assisted rotator cuff repair: preliminary results. Arthroscopy 1990;6(1):55-60.
101. Levy HJ, Gardner RD, Lemak LJ. Arthroscopic subacromial decompression in the treatment of full-thickness rotator cuff tears. Arthroscopy 1991;7(1):8-13.
102. Lichtenberg S, Liem D, Magosch P, et al. Influence of tendon healing after arthroscopic rotator cuff repair on clinical outcome using single row Mason-Allen suture technique - a prospective, MRI controlled study. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.
103. Liem D, Alci S, Dedy N, et al. Clinical and structural results of partial supraspinatus tears treated by subacromial decompression without repair. Knee Surg Sports Traumatol Arthrosc 2008;16(10):967-972.
104. Liem D, Lengers N, Dedy N, et al. Arthroscopic debridement of massive irreparable rotator cuff tears. Arthroscopy 2008;24(7):743-748.
105. Liu SH, Baker CL. Arthroscopically assisted rotator cuff repair: correlation of functional results with integrity of the cuff. Arthroscopy 1994;10(1):54-60.
106. Liu SH. Arthroscopically-assisted rotator-cuff repair. J Bone Joint Surg Br 1994;76(4):592-595.
107. Lo I, Burkhart SS. Arthroscopic revision of rotator cuff repairs of failed repairs of the rotator cuff. Arthroscopy Association of North America 22nd Annual Meeting, Phoenix, AZ, Apr 24-28, 2003.
108. Maman E, Harris C, White L, et al. Outcome of nonoperative treatment of symptomatic rotator cuff tears monitored by magnetic resonance imaging. J Bone Joint Surg Am 2009;91(8):1898-1906.
109. Mansat P, Frankle M, Cofield RH. Les lesions du tendon du subscapulaire: etude descriptive et resultats des reparations chirurgicales. Rev Rhum Ed Fr 2003;70(9):720-726. (Fre).
110. Mansat P, Frankle MA, Cofield RH. Tears in the subscapularis tendon: descriptive analysis and results of surgical repair. Joint Bone Spine 2003;70(5):342-347.

111. Marc T. Le traitement fonctionnel des ruptures de coiffe: protocole et resultats chez un groupe de 21 patients. XVIIe Journees de reeducation de la main et du membre superieur, Paris, 18-19 janvier 2002. Kinesither Sci 2001;(415):46-48. (Fre).

112. Massoud SN, Levy O, Copeland SA. Subacromial decompression: treatment for small- and medium-sized tears of the rotator cuff. J Bone Joint Surg Br 2002;84(7):955-960.

113. Maynou C, Mehdi N, Cassagnaud X, et al. Resultats de la tenotomie arthroscopique du chef long du biceps brachial dans les ruptures transfixiantes de la coiffe des rotateurs non reparees: a propos de 40 cas [Clinical results of arthroscopic tenotomy of the long head of the biceps brachii in full thickness tears of the rotator cuff without repair: 40 cases]. Rev Chir Orthop Reparatrice Appar Mot 2005;91(4):300-306. (Fre).

114. McIntyre LF, Norris M, Weber B. Comparison of suture welding and hand-tied knots in mini-open rotator cuff repair. Arthroscopy 2006;22(8):833-836.

115. Melis B, Nemoz C, Walch G. Muscle fatty infiltration in rotator cuff tears: Descriptive analysis of 1688 cases. Orthop Traumatol Surg Res 2009;95(5):319-324.

116. Mellado JM, Calmet J, Olona M, et al. Surgically repaired massive rotator cuff tears: MRI of tendon integrity, muscle fatty degeneration, and muscle atrophy correlated with intraoperative and clinical findings. Am J Roentgenol 2005;184(5):1456-1463.

117. Millar AL, Lasheway PA, Eaton W, et al. A retrospective, descriptive study of shoulder outcomes in outpatient physical therapy. J Orthop Sports Phys Ther 2006;36(6):403-414.

118. Moore DR, Cain EL, Schwartz ML, et al. Allograft reconstruction for massive, irreparable rotator cuff tears. Am J Sports Med 2006;34(3):392-396.

119. Moulinoux P, Clavert P, Dagher E, et al. Arthroscopic repair of rotator cuff tears. Oper Orthop Traumatol 2007;19(3):231-254.

120. Murray Jr TF, Lajtai G, Mileski RM, et al. Arthroscopic repair of medium to large full-thickness rotator cuff tears: outcome at 2- to 6-year follow-up. J Shoulder Elbow Surg 2002;11(1):19-24.

121. Musil D, Sadovsky P, Stehlik J. Masivni ruptura rotatorove manzety: srovnani mini-open a artroskopicke rekonstrukce. Cast 1. Mini-open technika [Massive tears of rotator cuff: comparison of mini-open and arthroscopic techniques. Part 1. Mini-open technique]. Acta Chir Orthop Traumatol Cech 2006;73(6):387-393. (Cze).

122. Nakamura N, Ito Y, Tomo H, et al. Second look arthroscopic evaluation for mini-open rotator cuff repair. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.

123. Namdari S, Henn III RF, Green A. Traumatic anterosuperior rotator cuff tears: the outcome of open surgical repair. J Bone Joint Surg Am 2008;90(9):1906-1913.

124. Neri BR, Vollmer EA, Kvitne RS. Isolated type II superior labral anterior posterior lesions: age-related outcome of arthroscopic fixation. Am J Sports Med 2009;37(5):937-942.

125. Nho SJ, Shindle MK, Adler RS, et al. Prospective analysis of arthroscopic rotator cuff repair: subgroup analysis. J Shoulder Elbow Surg 2009;18(5):697-704.

126. Oh JH, Kim SH, Ji HM, et al. Prognostic factors affecting anatomic outcome of rotator cuff repair and correlation with functional outcome. Arthroscopy 2009;25(1):30-39.

127. Oizumi N, Suenaga N, Fukuda K, et al. Massive rotator cuff tears repaired on top of humeral head by McLaughlin's procedure. J Shoulder Elbow Surg 2007;16(3):321-326.

128. Olsewski JM, Depew AD. Arthroscopic subacromial decompression and rotator cuff debridement for stage II and stage III impingement. Arthroscopy 1994;10(1):61-68.

129. Orthopaedic residents & fellows' conference. South Med J 1994;87(9):S76.

130. Ozbaydar MU, Tonbul M, Yalaman O. Rotator mansetin tam kat yirtiklarinda artroskopik tamir sonuclari [The results of arthroscopic repair of full-thickness tears of the rotator cuff]. Acta Orthop Traumatol Turc 2005;39(2):114-120. (Tur).

131. Ozbaydar MU, Tonbul M, Yurdoglu C, et al. Rotator manset yirtiklarinin artroskopik yardimli mini-acik yontemle tamiri [Arthroscopic-assisted mini-open repair of rotator cuff tears]. Acta Orthop Traumatol Turc 2005;39(2):121-127. (Tur).

132. Ozbaydar MU, Tonbul M, Tekin AC, et al. Artroskopik rotator manset onarimi: sonuclar ve belirleyici faktorlerin analizi [Arthroscopic rotator cuff repair: evaluation of outcomes and analysis of prognostic factors]. Acta Orthop Traumatol Turc 2007;41(3):169-174. (Tur).

133. Papacharalampous X, Maris JS, Ferousis J, Primetis H, et al. Magnetic resonance imaging for the evaluation of rotator cuff lesions. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sept 20-23, 2006.

134. Park TS, Kim TS. Comparative study of arthroscopic treatment of full thickness rotator cuff tear with or without frozen shoulder. Arthroscopy Association of North America 23rd Annual Meeting, Orlando, FL, Apr 22-25, 2004.

135. Park JY, Levine WN, Marra G, et al. Portal-extension approach for the repair of small and medium rotator cuff tears. Am J Sports Med 2000;28(3):312-316.

136. 136. Park JY, Yoo MJ, Kim MH. Comparison of surgical outcome between bursal and articular partial thickness rotator cuff tears. Orthopedics 2003;26(4):387-90.

137. Paulos LE, Meislin RJ, Drawbert J. The acromion-splitting approach for large and massive rotator cuff tears. Am J Sports Med 1994;22(3):306-312.

138. Paulos LE, Kody MH. Arthroscopically enhanced “miniapproach” to rotator cuff repair. Am J Sports Med 1994;22(1):19-25.

139. Pfahler M, Branner S, Refior HJ. Die komplette rotatorenmanschettenruptur: differenzierte op-techniken und mittelfristige ergebnisse [Complete rotator cuff rupture: differential surgical techniques and intermediate-term results]. Z Orthop Ihre Grenzgeb 1999;137(4):295-300. (Ger).

140. PL-RR-268-SA. Phys Ther 1998;78(5):S88.

141. Porat S, Nottage WM, Fouse MN. Repair of partial thickness rotator cuff tears: a retrospective review with minimum two-year follow-up. J Shoulder Elbow Surg 2008;17(5):729-731.

142. Posada A, Uribe JW, Hechtman KS, et al. Mini-deltoid splitting rotator cuff repair: do results deteriorate with time? Arthroscopy 2000;16(2):137-141.

143. Postel JM, Goutallier D, Baldoncini J. Traitement des ruptures associees des supra-epineux et infra-epineux par suture apres avancement tendino-musculaire [Treatment of associated ruptures of supraspinatus and infraspinatus by suture with musculo tendinous advancement]. Rev Chir Orthop Reparatrice Appar Mot 2004;90(5 Suppl):1S162-1S166. (Fre).

144. Ratti C, Murena L, Surace MF, et al. Clinical and ultrasound results after arthroscopic repair of the rotator cuff. Chir Organi Mov 2005;90(2):95-104.

145. Rebuzzi E, Coletti N, Schiavetti S, et al. Arthroscopic rotator cuff repair in patients older than 60 years. Arthroscopy 2005;21(1):48-54.

146. Roye RP, Grana WA, Yates CK. Arthroscopic subacromial decompression: two- to seven-year follow-up. Arthroscopy 1995;11(3):301-306.

147. Ryu RK. Arthroscopic subacromial decompression: a clinical review. Arthroscopy 1992;8(2):141-147.

148. Saragaglia D, Montbarbon E, Picard F, et al. Les ruptures isolees du tendon du muscle supra-epineux: resultats de 49 reparations chirurgicales [Isolated rupture of the tendon of the supra spinatus muscle: results of 49 surgical repair]. Rev Chir Orthop Reparatrice Appar Mot 1995;81(7):575-580. (Fre).

149. Saragaglia D, Montbarbon E, Picard F, et al. Les ruptures isolees du tendon du muscle supra-epineux: isolated teas of supra-spinatus. Rhumatologie 1995;47(6):213-217. (Fre).

150. Shinners TJ, Noordsij PG, Orwin JF. Arthroscopically assisted mini-open rotator cuff repair. Arthroscopy 2002;18(1):21-26.

151. Sperling JW, Cofield RH, Schleck C. Rotator cuff repair in patients fifty years of age and younger. J Bone Joint Surg Am 2004;86(10):2212-2215.

152. Suenaga N, Minami A. Coracoacromial arch decompression in rotator cuff surgery. Int Orthop 2000;24(4):212-216.

153. Sugaya H, Maeda K, Moriishi J et al. Repair integrity and functional outcome after arthroscopic double-row rotator cuff repair. J Bone Joint Surg 2007;89(5):953-960.

154. Sukthankar A, Nyffeler RW, Werner CML, Gerber C. Lateral Extension of the Acromion and Rotator Cuff Tears. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow, Athens, Sep 20-23, 2006.

155. Tauber M, Koller H, Resch H. Transosseous arthroscopic repair of partial articular-surface supraspinatus tendon tears. Knee Surg Sports Traumatol Arthrosc 2008;16(6):608-613.

156. Tauro JC. Arthroscopic rotator cuff repair: analysis of technique and results at 2- and 3-year follow-up. Arthroscopy 1998;14(1):45-51.

157. Tauro JC. Long term results of arthroscopic rotator cuff repair. Arthroscopy Association of North America 23rd Annual Meeting, Orlando, FL, Apr 22-25, 2004.

158. Thomazeau H, Gleyze P, Frank A, et al. Le debridement endoscopique des ruptures transfixiantes de la coiffe des rotateurs: etude retrospective multicentrique de 283 cas a plus de 3 ans de recul [Arthroscopic debridement of full-thickness tears of the rotator cuff: a retrospective multicenter study of 283 cases with 3-year follow-up]. Rev Chir Orthop Reparatrice Appar Mot 2000;86(2):136-142. (Fre).

159. Thomazeau H, Gleyze P. Le traitement par deridement arthroscopique des ruptures associes des supra et infraspinatus non rearables par suture directe [Treatment by arthroscopic debridement of the associated ruptures of supraspinatus and infraspinatus unrepairable by direct suture]. Rev Chir Orthop Reparatrice Appar Mot 2004;90(5 Suppl):1S166-168. (Fre).

160. Van Linthoudt D, Deforge J, Malterre L, et al. Suture de la coiffe des rotateurs: resultats a long terme. Rev Rhum Ed Fr 2003;70(7):582-587. (Fre).

161. Van Linthoudt D, Deforge J, Malterre L, et al. Rotator cuff repair: long-term results. Joint Bone Spine 2003;70(4):271-275.

162. Van Riet RP, O'Leary ST, Hooper A, et al. Rotator cuff strength following open subscapularis tendon repair. Acta Orthop Belg 2008;74(2):173-179.

163. Visuri T, Kiviluoto O, Eskelin M. Carbon fiber for repair of the rotator cuff: a 4-year follow-up of 14 cases. Acta Orthop Scand 1991;62(4):356-359.

164. Vives MJ, Miller LS, Rubenstein DL, et al. Repair of rotator cuff tears in golfers. Arthroscopy 2001;17(2):165-172.

165. Voos JE, Pearle AD, Mattern CJ, et al. Outcomes of combined arthroscopic rotator cuff and labral repair. Am J Sports Med 2007;35(7):1174-1179.

166. Walch G, Marechal E, Maupas J, et al. Traitement chirurgical des ruptures de la coiffe des rotateurs: facteurs de pronostic [Surgical treatment of rotator cuff rupture: prognostic factors]. Rev Chir Orthop Reparatrice Appar Mot 1992;78(6):379-388. (Fre).

167. Walch G, Marechal E. Traitement chirurgical des ruptures de la coiffe des rotateurs: facteurs de pronostic [Surgical treatment of rotator cuff tears]. Rev Chir Orthop Reparatrice Appar Mot 1992;78(6):379-388. (Fre).

168. Walch G, Edwards TB, Boulahia A, et al. Arthroscopic tenotomy of the long head of the biceps in the treatment of rotator cuff tears: clinical and radiographic results of 307 cases. J Shoulder Elbow Surg 2005;14(3):238-246.

169. Wasilewski SA, Frankl U. Rotator cuff pathology: arthroscopic assessment and treatment. Clin Orthop Relat Res 1991;(267):65-70.

170. Watson EM, Sonnabend DH. Outcome of rotator cuff repair. J Shoulder Elbow Surg 2002;11(3):201-211.

171. Wessel RN, Rasenberg EJJ, Guldemond NA, et al. Arthroscopic Rotator Cuff Repair: Clinical Results. 53rd Congress of the Nordic Orthopaedic Federation, Oslo (Norway), May 31-Jun 2, 2006.

172. Wirth MA, Basamania C, Rockwood CA Jr. Nonoperative management of full-thickness tears of the rotator cuff. Orthop Clin North Am 1997;28(1):59-67.

173. Wirth MA. Nonoperative management of full-thickness tears of the rotator cuff. The rotator cuff, Part I. Orthop Clin North Am 1997;28(1):59-67.

174. Worland RL, Arredondo J, Angles F, et al. Repair of massive rotator cuff tears in patients older than 70 years. J Shoulder Elbow Surg 1999 Jan;8(1):26-30.

175. Wright SA, Cofield RH. Management of partial-thickness rotator cuff tears. J Shoulder Elbow Surg 1996 Nov;5(6):458-466.

176. Yamanaka K, Matsumoto T. The joint side tear of the rotator cuff: a follow up study by arthrography. Clin Orthop Relat Res 1994 Jul;(304):68-73.

177. Yel M, Shankwiler JA, Noonan Jr JE, et al. Results of decompression and rotator cuff repair in patients 65 years old and older: 6- to 14-year follow-up. Am J Orthop 2001 Apr;30(4):347-352.

178. Yoo JC, Ahn JH, Yang JH, et al. Correlation of Arthroscopic Repairability of Large to Massive Rotator Cuff Tears With Preoperative Magnetic Resonance Imaging Scans. Arthroscopy - Journal of Arthroscopic and Related Surgery 2009;25(6):573-582.

179. Yoo JC, Kim JH, Lee YS, et al. Arthroscopic double mattress repair in incomplete subscapularis tears. Orthopedics 2008;31(9):851-854.

180. Zanchi A, Minati S, Boi M, et al. La ricostruzione a cielo aperto nelle rotture massive inveterate della cuffia dei rotatori [The opened reconstruction in the inveterate massive tears of the rotator cuff: our experience]. Minerva Ortop Traumatol 2008;59(5):275-281. (Ita).

181. Zingg PO, Jost B, Sukthankar A, et al. Clinical and structural outcomes of nonoperative management of massive rotator cuff tears. J Bone Joint Surg Am 2007 Sep;89(9):1928-1934.

182. Zvijac JE, Levy HJ, Lemak LJ. Arthroscopic subacromial decompression in the treatment of full thickness rotator cuff tears: a 3- to 6-year follow-up. Arthroscopy 1994 Oct;10(5):518-523.

Excluded – Not Population of Interest (N = 15)

The following studies were excluded because they failed to meet our population inclusion criteria.

1. Brooks A, Domb B, ElAttrache N, et al. High-tension double-row footprint repair versus reduced-tension single-row repair in massive rotator cuff tears. J Investig Med 2008;56(1):209.
2. Deutsch A. Arthroscopic rotator cuff repair: The effect of depth of suture passage on three-dimensional repair site surface area and load to failure using single-row anchor fixation. J Shoulder Elbow Surg 16(2):e41.
3. Domb BG, Gloustrian RE, Brooks A, et al. High-tension double-row footprint repair compared with reduced-tension single-row repair for massive rotator cuff tears. J Bone Joint Surg Am 2008;90(Suppl 4):35-39.
4. Ecklund KJ, Chu EH, McGarry MH, et al. Reverse Shoulder Arthroplasty Restores Abductor Muscle Efficiency in Massive Rotator Cuff Tears.Journal of the American Academy of Orthopaedic Surgeons 2007; 15(6):340-349.
5. Jia XL, Fan RF, Li HQ, et al. Diagnosis and treatment of traumatic subscapularis tendon ruptur. Zhongguo Gu Shang 2009;22(2):118-119.
6. Koh JL, Szomor Z, Murrell GA, et al. Supplementation of rotator cuff repair with a bioresorbable scaffold. Am J Sports Med 2002 May;30(3):410.
7. Lopez-Vidriero E, Costic R, Lara J, et al. Biomechanical properties of different placement of achors for rotator cuff repair. 53rd Annual Meeting of the Orthopaedic Research Society, San Diego, CA, Feb 11-14, 2007.
8. Magermans DJ, Chadwick EKJ, Veeger HEJ, et al. Biomechanical analysis of tendon transfers for massive rotator cuff tears. Clin Biomech 2004;19(4):350-357.
9. Manigrasso MB, Meier SW. Rotator Cuff Repair: The effect of dual-row fixation on tendon-bone motion at the repair interface. 52nd Annual Meeting of the Orthopaedic Research Society, Chicago, IL, Mar 19-22, 2006.
10. Meier SW, Meier JD, Levy AS. Rotator cuff repair: The effect of double-row fixation vs. single-row fixation on three-dimensional repair site. Arthroscopy Association of North America 23rd Annual Meeting, Orlando, FL, Apr 22-25, 2004.
11. Min K, Siskosky M, Lee T. Transosseous equivalent arthroscopic rotator cuff repair using push lock versus conventional double-row fixation. J Investig Med 2007;55(1 Suppl S):S134.
12. Park MC, Pirolo JM, Park CJ, et al. The effect of abduction and rotation on footprint contact for single-row, double-row, and modified double-row rotator cuff repair techniques. Am J Sports Med 2009;37(8):1599-1608.
13. Park MC, Pirolo JM, Park CJ, et al. The effect of internal and external rotation on footprint contact comparing double-row and transosseous-equivalent rotator cuff repair techniques. 54th Annual Meeting of the Orthopaedic Research Society, San Francisco, CA, Mar 2-5, 2008.
14. Steenbrink F, de Groot JH, Veeger HE, et al. Glenohumeral stability in simulated rotator cuff tears. J Biomech 2009;42(11):1740-1745.
15. Tamborlane J, Oka R, Mahar A, Pedowitz R. Strength of double row arthroscopic rotator cuff repair.52nd Annual Meeting of the Orthopaedic Research Society, Chicago, IL, Mar 19-22, 2006.

Excluded – Not Confirmed Rotator Cuff Tear (N = 107)

The following studies were excluded because RC tears were not confirmed using diagnostic imaging or intraoperative findings.

1. Abboud JA, Silverberg D, Pepe M, et al. Surgical treatment of os acromiale with and without associated rotator cuff tears. J Shoulder Elbow Surg 2006 May;15(3):265-270.
2. Adamietz B, Sauer R, Keilholz L. Bestrahlung beim impingementsyndrom des schultergelenks [Radiotherapy for shoulder impingement]. Strahlenther Onkol 2008 May;184(5):245-250. (Ger).
3. Adebajo AO, Nash P, Hazleman BL. A prospective double blind dummy placebo controlled study comparing triamcinolone hexacetonide injection with oral diclofenac 50 mg TDS in patients with rotator cuff tendinitis. J Rheumatol 1990 Sep;17(9):1207-1210.
4. Adolfsson L, Lysholm J. Results of arthroscopic acromioplasty related to rotator cuff lesions. Int Orthop 1993;17(4):228-231.
5. Akpinar S, Hersekli MA, Ozalay M, et al. [Arthroscopic acromioplasty in the treatment of subacromial impingement syndrome]. Artroplasti Artroskopik Cerrahi 2003;14(2):94-97.
6. Alfredson H, Harstad H, Haugen S, et al. Sclerosing polidocanol injections to treat chronic painful shoulder impingement syndrome: results of a two-centre collaborative pilot study. Knee Surg Sports Traumatol Arthrosc 2006;14(12):1321-1326.
7. Alvarez CM, Litchfield R, Jackowski D, et al. A prospective, double-blind, randomized clinical trial comparing subacromial injection of betamethasone and xylocaine to xylocaine alone in chronic rotator cuff tendinosis. Am J Sports Med 2005;33(2):255-262.
8. Andersen NH, Sojbjerg JO, Johannsen HV, et al. Self-training versus physiotherapist-supervised rehabilitation of the shoulder in patients treated with arthroscopic subacromial decompression: a clinical randomized study. J Shoulder Elbow Surg 1999 Mar;8(2):99-101.
9. Baltaci G, Bayrakci T, V, Binnet M, et al. Rehabilitation in arthroscopic subacromial decompression: six-year follow-up. Fizyoterapi Rehabilitasyon 2007;18(3):201-208.
10. Bartolozzi A, Andreychik D, Ahmad S. Determinants of outcome in the treatment of rotator cuff disease. Clin Orthop Relat Res 1994 Nov;(308):90-97.
11. Bengtsson M, Lunsjo K, Hermodsson Y, et al. High patient satisfaction after arthroscopic subacromial decompression for shoulder impingement: a prospective study of 50 patients. Acta Orthop 2006 Feb;77(1):138-142.
12. Bennell K, Coburn S, Wee E, et al. Efficacy and cost-effectiveness of a physiotherapy program for chronic rotator cuff pathology: a protocol for a randomised, double-blind, placebo-controlled trial. BMC Musculoskelet Disord 2007;8:86.
13. Bezer M, Aydin N, Erol B, et al. Artroskopik ve acik anterior akromiyoplasti: gec donem sonuclar [Late results of arthroscopic and open anterior acromioplasty]. Acta Orthop Traumatol Turc 2004;38(2):115-119. (Tur).
14. Bingol U, Altan L, Yurtkuran M. Low-power laser treatment for shoulder pain. Photomed Laser Surg 2005;23(5):459-464.
15. Blaine T, Moskowitz R, Udell J, et al. Treatment of persistent shoulder pain with sodium hyaluronate: a randomized, controlled trial. A multicenter study. J Bone Joint Surg Am 2008 May;90(5):970-979.
16. Boileau P. Arthroscopic bristow procedure for anterior instability in shoulders with a stretched or deficient capsule: the “belt-and-suspenders” operative technique and preliminary results. Arthroscopy 2007;23(6):593-601.
17. Boileau P, Parratte S, Chuinard C, et al. Arthroscopic treatment of isolated type II SLAP lesions: biceps tenodesis as an alternative to reinsertion. Am J Sports Med 2009;37(5):929-936.
18. Brox JI, Staff PH, Ljunggren AE, et al. Arthroscopic surgery compared with supervised exercises in patients with rotator cuff disease (stage II impingement syndrome)[erratum appears in BMJ 1993 Nov 13;307(6914):1269]. Br Med J 1993 Oct 9;307(6909):899-903.

19. Budoff JE, Nirschl RP, Guidi EJ. Debridement of partial-thickness tears of the rotator cuff without acromioplasty: long-term follow-up and review of the literature. [Review] [58 refs]. J Bone Joint Surg Am 1998 May;80(5):733-748.
20. Burns TP, Turba JE. Arthroscopic treatment of shoulder impingement in athletes. Am J Sports Med 1992;20(1):13-16.
21. Cabot A, Cabot JC. Minimal incision acromioplasty. Orthopedics 2002;25(12):1347-1350.
22. Carreira DS, Mazzocca A. A prospective outcome evaluation of arthroscopic bankart repairs : minimum 2-year follow-up. Am J Sports Med 2006;34(5):771-777.
23. Cheng AS, Hung LK. Randomized controlled trial of workplace-based rehabilitation for work-related rotator cuff disorder. J Occup Rehabil 2007 Sep;17(3):487-503.
24. Dayican A, Ozturk C, Portakal S, et al. [The results of anterior acromioplasty for the treatment of the impingement syndrome in the shoulder]. Artroplasti Artroskopik Cerrahi 2002;13(2):73-77. (Tur).
25. Di Fabio RP, Boissonnault W. Physical therapy and health-related outcomes for patients with common orthopaedic diagnoses. J Orthop Sports Phys Ther 1998 Mar;27(3):219-230.
26. Di Lorenzo L, Pappagallo M, Gimigliano R, et al. Pain relief in early rehabilitation of rotator cuff tendinitis: any role for indirect suprascapular nerve block? Eura Medicophys 2006 Sep;42(3):195-204.
27. Dickens VA, Williams JL, Bhamra MS. Role of physiotherapy in the treatment of subacromial impingement syndrome: a prospective study. Physiotherapy 2005;91(3):159-164.
28. Doneux PS, Miyazaki AN, Pinheiro Jr JA, et al. Incidencia de dor acromioclavicular apos descompressao subacromial artroscopica [Incidence of acromioclavicular pain after arthroscopic subacromial decompression]. Rev Bras Ortop 1998;33(5):329-332. (Por).
29. Doneux PS, Miyazaki AN, Pinheiro Jr JA, et al. Tratamento da sindrome do impacto em tenistas [Treatment of impingement syndrome in tennis players]. Rev Bras Ortop 1998;33(12):939-944. (Por).
30. Ellman H, Kay SP. Arthroscopic subacromial decompression for chronic impingement: two- to five-year results. J Bone Joint Surg Br 1991 May;73(3):395-398.
31. Ferreiro Marzoa I, Veiga Suarez M, Guerra Pena JL, et al. Rehabilitating treatment of painful shoulder. Rehabil 2005;39(3):113-120.
32. Frieman BG, Fenlin JM, Jr. Anterior acromioplasty: effect of litigation and workers' compensation. J Shoulder Elbow Surg 1995 May;4(3):175-181.
33. Friis J, Jarner D, Toft B, et al. Comparison of two ibuprofen formulations in the treatment of shoulder tendonitis. Clin Rheumatol 1992 Mar;11(1):105-108.
34. Garcia Diaz MF, Medina SM. Evolucion y caracteristicas de los pacientes con hombro doloroso en atencion primaria [Evolution and characteristics of primary care patients with painful shoulder]. Aten Primaria 2005;35(4):192-197. (Spa).
35. Garmann S, Dilmac N, Marquardt B, et al. Endergebnis nach operativer behandlung von schultergelenksinfekten [Final results after operative treatment of shoulder joint infections]. Z Orthop Ihre Grenzgeb 2003 Nov;141(6):643-649. (Ger).
36. Genc A, Ozcan A, Gelecek N. Evre II Rotator Manset Yaylanmalarinin Teadavysynde Pyroksykam Fonoforez Uygulamasinin Etkynlydy [The effectiveness of piroxicam phonophoresis for treatment of stage II rotator cuff injuries]. Artroplasti Artroskopik Cerrahi 2002;13(1):23-26. (Tur).
37. Ginsberg F, Famaey JP. Double-blind, randomized crossover study of the percutaneous efficacy and tolerability of a topical indomethacin spray versus placebo in the treatment of tendinitis. J Int Med Res 1991 Mar;19(2):131-136.
38. Giombini A, Di CA, Safran MR, et al. Short-term effectiveness of hyperthermia for supraspinatus tendinopathy in athletes: a short-term randomized controlled study. Am J Sports Med 2006 Aug;34(8):1247-1253.
39. Godges JJ, Mattson-Bell M, Thorpe D, et al. The immediate effects of soft tissue mobilization with proprioceptive neuromuscular facilitation on glenohumeral external rotation and overhead reach. J Orthop Sports Phys Ther 2003;33(12):713-718.

40. Gosse F, Ruhmann O, Wirth CJ. Arthrodesis of the glenohumeral joint using a 4.5-mm reconstruction plate. Oper Orthop Traumatol 2003;15(2):170-187. (Ger, Eng).
41. Greve JM, Rossi JD, Cossermelli W, et al. Reabilitacao funcional das lesoes tendinosas degenerativas do ombro [Functional rehabilitation of degenerative tendinous injuries of the shoulder]. Rev Hosp Clin Fac Med Sao Paulo 1991 Mar;46(2):78-81. (Spa).
42. Grymel-Kulesza E, Polak A. Wplyw kompleksowej terapii obejmujacej cwiczenia czynne, masaz[dot] klasyczny, krioterapie oraz laczne dzialanie ultradzwiekow i pradu elektrycznego w leczeniu uszkodzen pierscienia rotatorow [The effect of a multi-modality therapy including active exercises, classic massage, cryotherapy and a combination of ultrasound and electrical stimulation on rotator cuff injuries]. Fizjoterapia Polska 2007;7(2):107-123. (Pol).
43. 43. Haahr JP, Andersen JH. Exercises may be as efficient as subacromial decompression in patients with subacromial stage II impingement: 4-8-years' follow-up in a prospective, randomized study. Scand J Rheumatol 2006;35(3):224-8.
44. Hartwig CH, Burkhard R. Operative release of the impingement syndrome. Indication, technique, results. Arch Orthop Trauma Surg 1996;115(5):249-254.
45. Hsieh KH, Lee PY, Lee TS, et al. Functional assessment for shoulder impingement syndrome after anterior acromioplasty. Chin Med J 1997 Jun;59(6):354-358.
46. Huang G, Xue Q, Sun C. [Impingement syndrome of the subacromial area: analysis of 42 cases]. Zhonghua Wai Ke Za Zhi 1997 Jan;35(1):35-37. (Chi).
47. Hyvonen P, Lohi S, Jalovaara P. Open acromioplasty does not prevent the progression of an impingement syndrome to a tear. Nine-year follow-up of 96 cases. J Bone Joint Surg Br 1998 Sep;80(5):813-816.
48. Imhoff A, Ledermann T. Arthroscopic subacromial decompression with and without the Holmium:YAG-laser: a prospective comparative study. Arthroscopy 1995 Oct;11(5):549-556.
49. Innocenti M, Muncibi F, Coppacchioli D, et al. Arthroscopic treatment of non-calcific rotator cuff tendinitis. Journal of Sports Traumatology and Related Research 1999;21(3):140-144.
50. Itzkowitch D, Ginsberg F, Leon M, et al. Peri-articular injection of tenoxicam for painful shoulders: a double-blind, placebo controlled trial. Clin Rheumatol 1996 Nov;15(6):604-609.
51. Jerosch J, Strauss JM, Schneider T. Die arthroskopische subacromiale dekompression: 1-3 Jahresergebnisse. [Arthroscopic subacromial decompression: 1-3 year results]. Z Orthop Ihre Grenzgeb 1992 Sep;130(5):406-412. (Ger).
52. Jully JL, Scheffer JC, Katz D. Coiffes non operees. Kinesither Sci 1995;(344):7-10. (Fre).
53. Katz D, V. Luxations et fractures luxations inveterees de l' epaule traitees par arthroplastie: a propos de 14 cas. Ann Orthop Ouest 2005;(37):93-96. (Fre).
54. Kleinhenz J, Streitberger K, Windeler J, et al. Randomised clinical trial comparing the effects of acupuncture and a newly designed placebo needle in rotator cuff tendinitis. Pain 1999 Nov;83(2):235-241.
55. Lathia AT, Jung SM, Chen LX. Efficacy of acupuncture as a treatment for chronic shoulder pain. J Altern Complement Med 2009;15(6):613-618.
56. Lewis JS, Wright C, Green A. Subacromial impingement syndrome: the effect of changing posture on shoulder range of movement. J Orthop Sports Phys Ther 2005;35(2):72-87.
57. Lill H, Korner J, Hepp P, et al. Age-dependent prognosis following conservative treatment of traumatic anterior shoulder dislocation. Eur J Trauma 2001;27(1):29-33.
58. MacDermid JC, Ramos J, Drosdowech D, et al. The impact of rotator cuff pathology on isometric and isokinetic strength, function, and quality of life. J Shoulder Elbow Surg 2004;13(6):593-598.
59. Marc T, Societe francaise des masseurs kinesitherapeutes du sport SFMKS Fp. Protocole et resultats de la reeducation des tendinopathies de la coiffe des rotateurs: sport, sante et prevention. Kinesither Sci 2003;(437):25-30. (Fre).
60. Mayerhoefer ME, Breitenseher MJ, Wurnig C, et al. Shoulder impingement: relationship of clinical symptoms and imaging criteria. Clin J Sport Med 2009;19(2):83-89.

61. Mole D, Kempf JF, Gleyze P, et al. Resultats du traitement arthroscipique des tendinopathies non rompues de la coiffe des rotateurs. 2e partie: les calcifications de la coiffe des rotateurs [Results of endoscopic treatment of non-broken tendinopathies of the rotator cuff. 2: calcifications of the rotator cuff]. Rev Chir Orthop Reparatrice Appar Mot 1993;79(7):532-541. (Fre).
62. Morrison DS, Frogameni AD, Woodworth P. Nonoperative treatment of subacromial impingement syndrome. J Bone Joint Surg Am 1997 May;79(5):732-737.
63. Naredo E, Cabero F, Beneyto P, et al. A randomized comparative study of short term response to blind injection versus sonographic-guided injection of local corticosteroids in patients with painful shoulder. J Rheumatol 2004;31(2):308-314.
64. Nicoletti SJ, Carrera EF, Neto NA, et al. Tratamento artroscopico da sindrome do pincamento subacromial, come e sem acromioplastia: resultados apos seguimento medio de 45 meses [Arthroscopic subacromial bursectomy with and without acromioplasty for treatment of impingement syndrome: functional results after a 45 month follow-up]. Rev Bras Ortop 1998;33(5):333-337. (Por).
65. Nobuhara K, Sugiyama D, Ikeda H, et al. Contracture of the shoulder. Clin Orthop Relat Res 1990 May;(254):105-110.
66. Odenbring S, Wagner P, Atroshi I. Long-term outcomes of arthroscopic acromioplasty for chronic shoulder impingement syndrome: a prospective cohort study with a minimum of 12 years' follow-up. Arthroscopy 2008;24(10):1092-1098.
67. Ogilvie-Harris DJ, Boynton E. Arthroscopic acromioplasty: extravasation of fluid into the deltoid muscle. Arthroscopy 1990;6(1):52-54.
68. Pagan Conesa JA, Mas MJ, Sanchez MA, et al. Analisis prospectivo de una serie de artroscopias de hombro en el tratamiento de la patologia del manguito rotador. [Prospective analysis of a series of shoulder arthroscopies in the treatment of rotator cuff tears]. Rev Ortop Traumatol 2003;47(1):16-25. (Spa).
69. Paoloni JA, Appleyard RC, Nelson J, et al. Topical glyceryl trinitrate application in the treatment of chronic supraspinatus tendinopathy: a randomized, double-blinded, placebo-controlled clinical trial. Am J Sports Med 2005 Jun;33(6):806-813.
70. Patel VR, Singh D, Calvert PT, et al. Arthroscopic subacromial decompression: results and factors affecting outcome. J Shoulder Elbow Surg 1999 May;8(3):231-237.
71. Paulos LE, Franklin JL. Arthroscopic shoulder decompression development and application: a five year experience. Am J Sports Med 1990 May;18(3):235-244.
72. Pigozzi F, Giombini A, Parisi A, et al. The application of shock-waves therapy in the treatment of resistant chronic painful shoulder: a clinical experience. J Sports Med Phys Fitness 2000 Dec;40(4):356-361.
73. Pogliaghi S, Malgrati D. A new taping technique for shoulder impingement. Eura Medicophys 1998;34(3):137-144.
74. Rabin SI, Post M. A comparative study of clinical muscle testing and Cybex evaluation after shoulder operations. Clin Orthop Relat Res 1990 Sep;(258):147-156.
75. Rahme H, Solem-Bertoft E, Westerberg CE, et al. The subacromial impingement syndrome: a study of results of treatment with special emphasis on predictive factors and pain-generating mechanisms. Scand J Rehabil Med 1998 Dec;30(4):253-262.
76. Rao SE, Muzammil S, Hobbs NJ. Subacromial decompression for shoulder impingement syndrome. J Coll Physicians Surg Pak 2006 Mar;16(3):208-211.
77. Razmjou H, Holtby R, Myhr T. Gender differences in quality of life and extent of rotator cuff pathology. Arthroscopy 2006;22(1):57-62.
78. Rockwood CA, Jr., Williams GR, Jr., Burkhead WZ, Jr. Debridement of degenerative, irreparable lesions of the rotator cuff. J Bone Joint Surg Am 1995 Jun;77(6):857-866.
79. Russell AL. Piroxicam 0.5% topical gel compared to placebo in the treatment of acute soft tissue injuries: a double-blind study comparing efficacy and safety. Clin Invest Med 1991 Feb;14(1):35-43.
80. Saab M, Randall PE. Treatment of acute supraspinatus tendinitis: physiotherapy or steroid injection? Eur J Emerg Med 1997 Sep;4(3):176.
81. Sachs RA, Stone ML, Devine S. Open vs. arthroscopic acromioplasty: a prospective, randomized study. Arthroscopy 1994 Jun;10(3):248-254.

82. San Segundo RM, Valdes JM, Fernandez TR. Conservative treatment in shoulder pain: ultrasounds respect sham insonation: a clinical trial. Rehabil 2008;42(2):61-66.
83. Schneider T, Strauss JM, Hoffstetter I, et al. Shoulder joint stability after arthroscopic subacromial decompression. Arch Orthop Trauma Surg 1994;113(3):129-133.
84. Schneider T, Straus JM, Fink B, et al. Influence de la stabilite articulaire sur les resultats de la decompression sous-acromiale par voie arthroscopique. Acta Orthop Belg 1996;62(2):94-99.
85. Schroder J, V. Open versus arthroscopic treatment of chronic rotator cuff impingement. Arch Orthop Trauma Surg 2001;121(5):241-244.
86. Shi Y. Experience of comprehensive rehabilitation treatment on 60 cases of muscle strain at neck and shoulder. Chin J Clin Rehab 2003;7(2):313.
87. Smith AM, Mardones RM, Sperling JW, et al. Early complications of operatively treated proximal humeral fractures. J Shoulder Elbow Surg 2007;16(1):14-24.
88. Sonnabend DH. Treatment of primary anterior shoulder dislocation in patients older than 40 years of age: conservative versus operative. Clin Orthop Relat Res 1994 Jul;(304):74-77.
89. Spangehl MJ, Hawkins RH, McCormack RG, et al. Arthroscopic versus open acromioplasty: a prospective, randomized, blinded study. J Shoulder Elbow Surg 2002 Mar;11(2):101-107.
90. Speer KP, Lohnes J, Garrett Jr WE. Arthroscopic subacromial decompression: results in advanced impingement syndrome. Arthroscopy 1991;7(3):291-296.
91. Stephens SR, Warren RF, Payne LZ, et al. Arthroscopic acromioplasty: a 6- to 10-year follow-up. Arthroscopy 1998 May;14(4):382-388.
92. Strobel G. Therapeutischelangzeitwirkung unterschiedlicher intraartikularer injektionsbehandlung der schmerzhaften schulter: auswirkung auf Schmerz, Beweglichkeit und Arbeitsfahigkeit [Long-term therapeutic effect of different intra-articular injection treatments of the painful shoulder: effect on pain, mobility and work capacity]. Rehabilitation (Stuttg) 1996 Aug;35(3):176-178. (Ger).
93. Stuart MJ, Azevedo AJ, Cofield RH. Anterior acromioplasty for treatment of the shoulder impingement syndrome. Clin Orthop Relat Res 1990 Nov;(260):195-200.
94. Tasto JP, Cummings J, Medlock V, et al. The tendon treatment center: new horizons in the treatment of tendinosis. Arthroscopy 2003 Dec;19(Suppl 1):213-223.
95. Thelen MD, Dauber JA, Stoneman PD. The clinical efficacy of Kinesio Tape for shoulder pain: a randomized, double-blinded, clinical trial. J Orthop Sports Phys Ther 2008;38(7):389-395.
96. Thomas M, Grunert J, Standtke S, et al. Seilzugisokinetik in der schulterrehabilitation: erste ergebnisse. [Isokinetic pulley-system in shoulder rehabilitation: first results]. Z Orthop Ihre Grenzgeb 2001;139(1):80-86. (Ger).
97. Van Holsbeeck E., DeRycke J, Declercq G, et al. Subacromial impingement: open versus arthroscopic decompression. Arthroscopy 1992;8(2):173-178.
98. Vecchio P, Cave M, King V, et al. A double-blind study of the effectiveness of low level laser treatment of rotator cuff tendinitis. Br J Rheumatol 1993 Aug;32(8):740-742.
99. Vecchio PC, Hazleman BL, King RH. A double-blind trial comparing subacromial methylprednisolone and lignocaine in acute rotator cuff tendinitis. Br J Rheumatol 1993 Aug;32(8):743-745.
100. Volpon JB, Muniz AAS. Resultado do tratamento cirurgico do pincamento do manguito rotador do ombro pela descompressao subacromial [Results of the surgical treatment of the shoulder rotator cuff impingement by subacromial decompression]. Rev Bras Ortop 1997;32(1):65-69. (Por).
101. Watson J, Helliwell P, Morton V, et al. Shoulder acute pain in primary healthcare: is retraining effective for GP principals? SAPPHIRE: a randomized controlled trial. Rheumatology 2008;47(12):1795-1802.
102. Wiley P. Low-energy extracorporeal shock-wave treatment for tendinitis of the supraspinatus. Clin J Sport Med 2002;12(4):262.
103. Wittenberg RH, Rubenthaler F, Wolk T, et al. Surgical or conservative treatment for chronic rotator cuff calcifying tendinitis: a matched-pair analysis of 100 patients. Arch Orthop Trauma Surg 2001;121(1-2):56-59.

104. Wright RW, Heller MA, Quick DC, et al. Arthroscopic decompression for impingement syndrome secondary to an unstable os acromiale. Arthroscopy 2000 Sep;16(6):595-599.

105. Yamaguchi K, Buchbinder R, Green S, et al. Arthrographic distension with saline and steroid reduced pain and disability and improved range of motion in the short term in patients with painful stiff shoulder. J Bone Joint Surg Am 2004;86(8):1837.

106. Yu CM, Chen CH, Liu HT, et al. Subacromial injections of corticosteroids and xylocaine for painful subacromial impingement syndrome. Chang Gung Med J 2006 Sep;29(5):474-479.

107. Zuinen C. Diclofenac/misoprostol vs diclofenac/placebo in treating acute episodes of tendinitis/bursitis of the shoulder. Drugs 1993;45(Suppl 1):17-23.

Excluded – Primary Intention Was Not Treatment of RC Tears (N = 59)

The following studies were excluded because their primary intention was not the treatment of RC tears.

1. Allom R, Colegate-Stone T, Gee M, et al. Outcome analysis of surgery for disorders of the rotator cuff: a comparison of subjective and objective scoring tools. J Bone Joint Surg Br 2009;91(3):367-373.
2. Arcand MA, O'Rourke P, Zeman CA, et al. Revision surgery after failed subacromial decompression. Int Orthop 2000;24(2):61-64.
3. Arntz CT, Matsen FA, III, Jackins S. Surgical management of complex irreparable rotator cuff deficiency. J Arthroplasty 1991 Dec;6(4):363-370.
4. Barbier C, Caillat-Miousse JL. Etude radiologique preliminaire de l' influence de " l' abaissement actif " de la tete humerale, sur la variation de l' espace sous-acromial: la recherche en Kinesitherapie. Ann Kinésithér 2000;27(1):12-20. (Fre).
5. Baumann B, Genning K, Bohm D, et al. Arthroscopic prevalence of pulley lesions in 1007 consecutive patients. J Shoulder Elbow Surg 2008 Jan;17(1):14-20.
6. Bigliani LU, Cordasco FA, McIlveen SJ, et al. Operative treatment of failed repairs of the rotator cuff. J Bone Joint Surg Am 1992 Dec;74(10):1505-1515.
7. Blauth W, Gartner J. Ergebnisse postoperativer arthrographien nach Naht rupturierter rotatorenmanschetten [Postoperative results of arthrography following suturing of ruptured rotator cuff]. Orthopade 1991 Sep;20(4):262-265. (Ger).
8. Boileau P, Krishnan SG, Coste JS, et al. Arthroscopic biceps tenodesis: a new technique using bioabsorbable interference screw fixation. Arthroscopy 2002 Nov;18(9):1002-1012.
9. Braune C, Gramlich H. Der makroskopische aspekt der rotatorenmanschettenruptur bei traumatischen und atraumatischen rupturformen. Unfallchirurg 2000;103(6):462-467. (Ger).
10. Burkhead J, Schiffern SC, Krishnan SG. Use of Graft Jacket as an augmentation for massive rotator cuff tears. Semin Arthroplasty 2007;18(1):11-18.
11. Camos P, Ceriani A, Gnemmi GC, et al. Il conflitto subacromiale [Shoulder impingement syndrome]. Minerva Ortop Traumatol 1996;47(12):677-681. (Ita).
12. Chen AL, Shapiro JA, Ahn AK, et al. Rotator cuff repair in patients with type I diabetes mellitus. J Shoulder Elbow Surg 2003 Sep;12(5):416-421.
13. Chui CH, Lee C, Seow KH. The results of open acromioplasty in impingement syndrome—a retrospective study. Singapore Med J 1997 Jan;38(1):22-24.
14. Cummins CA, Murrell GA. Mode of failure for rotator cuff repair with suture anchors identified at revision surgery. J Shoulder Elbow Surg 2003 Mar;12(2):128-133.
15. Della Sala SW, Bianchini G. La risonanza Magnetica nello studio della spalla dolorosa: raffronto chirugico in 30 casi consecutive [Magnetic resonance in the study of the painful shoulder: the surgical comparison in 30 consecutive cases]. Radiol Med 1996 Apr;91(4):348-355. (Ita).
16. Djurasovic M, Marra G, Arroyo JS, et al. Revision rotator cuff repair: factors influencing results. J Bone Joint Surg Am 2001 Dec;83(12):1849-1855.
17. Ekeberg OM, Bautz-Holter E, Tveita EK, et al. Subacromial ultrasound guided or systemic steroid injection for rotator cuff disease: randomised double blind study. BMJ 2009;338:3112.
18. Epstein B, Childers MK. The use of gabapentin for neuropathic and musculoskeletal pain: a case series. J Neurol Rehabil 1998;12(2):81-86.
19. Field LD, Warren RF, O'Brien SJ, et al. Isolated closure of rotator interval defects for shoulder instability. Am J Sports Med 1995;23(5):557-563.
20. Flurin PH. Ruptures traumatiques de la coiffe des rotateurs chez le rugbyman. J Traumatol Sport 2007;24(4):203-206.

21. Fornara P, Caniggia M, Ceffa R, et al. Studio preoperatorio con proiezione radiografica “outlet-view” in 150 pazienti operati per sindrome da conflitto sub-acromiale[Preoperative study with “outlet-view” radiographic projection in 150 patients undergoing shoulder impingement syndrome surgery]. Minerva Ortop Traumatol 2001;52(6):245-249. (Ita).
22. Fuchs S, Langenbrick A. Haufigkeit, symptomatik und relevanz von klinisch manifesten rotatorenmanschettenlasionen im alter. Aktuelle Traumatol 1999;29(1):1-7. (Ger).
23. Gradl G, Dietze A, Arndt D, et al. Angular and sliding stable antegrade nailing (Targon PH) for the treatment of proximal humeral fractures. Arch Orthop Trauma Surg 2007;127(10):937-944.
24. Hamada K, Fukuda H, Mikasa M, et al. Roentgenographic findings in massive rotator cuff tears: a long-term observation. Clin Orthop Relat Res 1990 May;(254):92-96.
25. Hartsell HD, Forwell L. Postoperative eccentric and concentric isokinetic strength for the shoulder rotators in the scapular and neutral planes. J Orthop Sports Phys Ther 1997 Jan;25(1):19-25.
26. Hattrup SJ, Cofield RH, Cha SS. Rotator cuff repair after shoulder replacement. J Shoulder Elbow Surg 2006 Jan;15(1):78-83.
27. Hiemstra LA, Sasyniuk TM, Mohtadi NG, et al. Shoulder strength after open versus arthroscopic stabilization. Am J Sports Med 2008;36(5):861-867.
28. Jacquot N. Le long biceps peut-il etre sain dans les ruptures de la coiffe des rotateurs? Epidemiologie et comportement dynamique. Rev Chir Orthop Reparatrice Appar Mot 2007;93(8):5S30-5S31. (Fre).
29. Jerosch J, Schroder M, Schneider T. [Arthroscopic resection of the acromioclavicular joint: indications, surgical technique, outcome]. Unfallchirurg 1998 Sep;101(9):691-696. (Ger).
30. Joo HO, Sae HK, Ho KL, et al. Trans-rotator cuff portal is safe for arthroscopic superior labral anterior and posterior lesion repair: clinical and radiological analysis of 58 SLAP lesions. Am J Sports Med 2008;36(10):1913-1921.
31. Levigne C, Boileau P, Favard L, et al. Scapular notching in reverse shoulder arthroplasty. J Shoulder Elbow Surg 2008;17(6):925-935.
32. Lo IKY, Burkhart SS. Arthroscopic revision of failed rotator cuff repairs: technique and results. Arthroscopy 2004 Mar;20(3):250-267.
33. Lo IKY, Burkhart SS. Immediate postoperative fluid retention and weight gain after shoulder arthroscopy. Arthroscopy 2005 May;21(5):605-610.
34. Ma HL, Hung SC, Wang ST, et al. The reoperation of failed rotator cuff repairs. J Chin Med Assoc 2003 Feb;66(2):96-102.
35. Mazoue CG, Andrews JR. Repair of full-thickness rotator cuff tears in professional baseball players. Am J Sports Med 2006 Feb;34(2):182-189.
36. McKee MD, Yoo DJ. The effect of surgery for rotator cuff disease on general health status: results of a prospective trial. J Bone Joint Surg Am 2000 Jul;82(7):970-979.
37. Mormino MA, Gross RM, McCarthy JA. Captured shoulder: a complication of rotator cuff surgery. Arthroscopy 1996 Aug;12(4):457-461.
38. Murrell G, Marshall J, Cummins C. Rotator cuff repair: an evaluation of the mode of failure in rotator cuff repairs identified at revision surgery (n = 21) in 342 consecutive rotator cuff repairs repaired with suture anchors. J Sci Med Sport 2002;5(4 Suppl):86.
39. Paavolainen P, Ahovuo J. Ultrasonography and arthrography in the diagnosis of tears of the rotator cuff. J Bone Joint Surg Am 1994 Mar;76(3):335-340.
40. Park JY, Lee WS, Lee ST. The strength of the rotator cuff before and after subacromial injection of lidocaine. J Shoulder Elbow Surg 2008 Jan;17(1 Suppl 8):8S-11S.
41. Pichon H, Startun V, Barthelemy R, et al. Étude comparative de deux techniques de section du tendon du muscle subscapulaire dans l’opération de Latarjet [Comparative study of the anatomic and clinical effect of Weaver or subtotal subscapularis tendon section in Latarjet procedure]. Rev Chir Orthop Reparatrice Appar Mot 2008 Feb;94(1):12-18.
42. Post M. Complications of rotator cuff surgery. Clinical orthopaedics and related research 1990;(254):97-104.

43. Rittmeister M, Kerschbaumer F. Grammont reverse total shoulder arthroplasty in patients with rheumatoid arthritis and nonreconstructible rotator cuff lesions. J Shoulder Elbow Surg 2001 Jan;10(1):17-22.
44. Rozing PM. A posterosuperior approach to the shoulder. J Shoulder Elbow Surg 2008;17(3):431-435.
45. Savoie FH. Arthroscopic management of posterior instability: evolution of technique and results. Arthroscopy 2008;24(4):389-396.
46. Schroder RJ, Scheibel M, Tsynman A, et al. Magnetresonanztomographische Untersuchung des Musculus subscapularis nach offener vorderer Schulterstabilisierung [Magnetic resonance analysis of the subscapularis muscle after open anterior shoulder stabilization]. Rofo 2006 Jul;178(7):706-712. (Ger).
47. Scibek JS, Mell A, Downie B, Carpenter J, et al. Shoulder kinematics in patients with full thickness rotator cuff tears following a subacromial injection. University of Michigan; 2005.
48. Seltzer DG, Zvijac J. The technique of arthroscopy-assisted rotator cuff repair. Tech Orthop 1993;8(3):212-224.
49. Skoff HD. Conservative open acromioplasty. J Bone Joint Surg Br 1995 Nov;77(6):933-936.
50. Sonnabend DH, Watson EM. Structural factors affecting the outcome of rotator cuff repair. J Shoulder Elbow Surg 2002 May;11(3):212-218.
51. Stark JT, Zbreski MG, Kruger MJ. Resistance training volume during rehabilitation predicts functional outcomes in workers' compensation rotator cuff repair. Faseb J 2007;21(5):A581.
52. Suder PA, Hougaard K, Frich LH, et al. Intraarticular findings in the chronically painful shoulder: a study of 32 posttraumatic cases. Acta Orthop Scand 1994;65(3):339-343.
53. Urvoy P, Boileau G. Confrontation et validation de plusieurs methodes d' evaluation des resultats apres chirurgie de la coiffe des rotateurs: plaidoyer pour une expression. Rev Chir Orthop Reparatrice Appar Mot 1991;77(3):171-178. (Fre).
54. Viola RW, Boatright KC, Smith KL, et al. Do shoulder patients insured by workers' compensation present with worse self-assessed function and health status? J Shoulder Elbow Surg 2000;9(5):368-372.
55. Walch G, Boulahia A. Le signe du clairon et le "dropping sign" dans les ruptures de la coiffe des rotateurs. J Traumatol Sport 1999;16(1):50-56. (Fre).
56. Warner JJP, Higgins L, Parsons IM, et al. Diagnosis and treatment of anterosuperior rotator cuff tears. J Shoulder Elbow Surg 2001 Jan;10(1):37-46.
57. Wildner M. Lost to follow-up. J Bone Joint Surg Br 1995;77(4):657.
58. Yagci B, Manisali M, Yilmaz E, et al. Indirect MR arthrography of the shoulder in detection of rotator cuff ruptures. Eur Radiol 2001;11(2):258-262.
59. Yen D. Limitations of isokinetic testing to determine shoulder strength after rotator cuff repair. Iowa Orthop J 2005;25:141-144.

Excluded – Not Intervention of Interest (N = 47)

The following studies were excluded because they did not examine an intervention of interest for this review.

1. Apoil AM. Kinesitherapie apres reparation de la coiffe par lambeau de deltoide. Pathologie musculo-tendineuse du membre superieur: de l' epaule a la main. Kinesither Sci 2000;(404):21-23. (Fre).
2. Arntz CT, Jackins S, Matsen FA, III. Prosthetic replacement of the shoulder for the treatment of defects in the rotator cuff and the surface of the glenohumeral joint.[erratum appears in J Bone Joint Surg Am 1993 Jul;75(7):1112]. J Bone Joint Surg Am 1993 Apr;75(4):485-491.
3. Atalar AC, Demirhan M, Uysal M. Biseps uzun baßÝnÝn subakromiyal sÝkÝßma sendromuna etkisi ve artroskopik yardÝmlÝ tenodezi [The role of the long head of the biceps in subacromial impingement syndrome and arthroscopic assisted tenodesis]. Acta Orthop Traumatol Turc 2002;36(5):408-412. (Tur).
4. Augereau B, Bensaida M, Vandenbussche E, et al. Plastie par lambeau de deltoide des ruptures transfixiantes associées des supraspinatus et infraspinatus non réparables par simple suture avec long biceps conservable [Deltoid muscle flap-plasty of associated transfixiant ruptures of supraspinatus and infraspinatus unrepairable by simple suture with preservable long biceps: twenty-nine cases with hindsight for 10 years and a half]. Rev Chir Orthop Reparatrice Appar Mot 2004;90(5 Suppl):1S155-1S158. (Fre).
5. Birmingham PM, Neviaser RJ. Outcome of latissimus dorsi transfer as a salvage procedure for failed rotator cuff repair with loss of elevation. J Shoulder Elbow Surg 2008;17(6):871-874.
6. Boileau P, Walch G, Noel E, et al. Neer shoulder prosthesis: outcome according to the shoulder disease. Rev Rhum Engl Ed 1994;61(9):537-547.
7. Boussagol B, Pelissier J, Herisson C, et al. Évaluation des pathologies de la coiffe des rotateurs: analyse comparative de quatre scores [Clinical assessment of rotator cuff lesions: comparative analysis of four scales]. Ann Readapt Med Phys 1996;39(2):79-88. (Fre).
8. Brownlow HC, Smith C, Corner T, et al. Pain and stiffness in partial-thickness rotator cuff tears. Am J Orthop 2009;38(7):338-340.
9. Chavez-Lopez MA, Navarro-Soltero LA, Rosas-Cabral A, et al. Methylprednisolone versus triamcinolone in painful shoulder using ultrasound-guided injection. Mod Rheumatol 2009;19(2):147-150.
10. Cho NS, Yi JW, Rhee YG. Arthroscopic biceps augmentation for avoiding undue tension in repair of massive rotator cuff tears. Arthroscopy: The Journal of Arthroscopy & Related Surgery 2009;25(2):183-191
11. Contreras-Dominguez V, Carbonell-Bellolio P. Continuous interscalene block for analgesia following shoulder rotator cuff repair: evaluation of 2 bupivacaine concentrations applied with the same infusion technique. Rev Esp Anestesiol Reanim 2008;55(10):610-615.
12. Dierickx C, Vanhoof H. Massive rotator cuff tears treated by a deltoid muscular inlay flap. Acta Orthop Belg 1994;60(1):94-100.
13. Donigan JA, Frisella WA, Haase D, et al. Pre-operative and intra-operative factors related to shoulder arthroplasty outcomes. Iowa Orthop J 2009;29:60-66.
14. Favard LO, Societe orthopedique de l'-ouest-SOO. Omarthrose excentree: hemi-arthroplastie versus prothese inversee: resultats a moyen terme [Glenohumeral arthritis: hemiarthroplasty versus reverse prostheses: midterm results]. Ann Orthop Ouest 2003;(35):81-86. (Fre).
15. Fredrickson MJ, Stewart AW. Continuous interscalene analgesia for rotator cuff repair: a retrospective comparison of effectiveness and cost in 205 patients from a multi-provider private practice setting. Anaesth Intensive Care 2008;36(6):786-791.
16. Gedouin JE, Katz D, Colmar M, et al. Le lambeau deltoidien dans les ruptures massives de la coiffe des rotateurs [Deltoid muscle flap for massive rotator cuff tears: 41 cases with a mean 7-year (minimum 5 year) follow-up]. Rev Chir Orthop Reparatrice Appar Mot 2002 Jun;88(4):365-372. (Fre).
17. Gerber C. Latissimus dorsi transfer for the treatment of irreparable tears of the rotator cuff. Clin Orthop Relat Res 1992 Feb;(275):152-160.

18. Gerber C, Maquieira G, Espinosa N. Transfert du grand dorsal pour le traitement des ruptures massives de la coiffe des rotateurs: quels facteurs déterminent le résultat final? [Latissimus dorsi tendon transfer for treatment of massive tears of the rotator cuff: which factors determine the final result?]. Rev Chir Orthop Reparatrice Appar Mot 2004;90(5 Suppl):1S158-1S162. (Fre).
19. Goutallier D, Postel JM, Van DS, et al. Tension-free cuff repairs with excision of macroscopic tendon lesions and muscular advancement: results in a prospective series with limited fatty muscular degeneration. J Shoulder Elbow Surg 2006 Mar;15(2):164-172.
20. Grammont PM, Baulot E. Delta shoulder prosthesis for rotator cuff rupture. Orthopedics 1993;16(1):65-68.
21. Guven O, Bezer M, Guven Z, et al. Surgical technique and functional results of irreparable cuff tears reconstructed with the long head of the biceps tendon. Bull Hosp Joint Dis 2001;60(1):13-17.
22. Hadjicostas PT, Soucacos PN, Theissen M, et al. The use of split deltoid-flap in the treatment of massive rotator cuff defects: a retrospective study of 61 patients. Knee Surg Sports Traumatol Arthrosc 2008;16(9):876-883.
23. Huguet D, Gruber P, Societe d'-orthopedie-de-l'-Ouest-SOO. Arthroplasties inversees d' epaule: analyse clinique et radiographique de 17 cas a 31 mois de recul. Les Sables d' Olonne: L' avant-pied rhumatoide, luxation des PTH, fracture des deux os de l' avant-bras de l' enfant. Ann Orthop Ouest 2002;(34):93-97. (Fre).
24. Ilahi OA, Cosculluela PE, Ho DM. Classification of anterosuperior glenoid labrum variants and their association with shoulder pathology. Orthopedics 2008;31(3):226.
25. Jost B, Pfirrmann CW, Gerber C, et al. Clinical outcome after structural failure of rotator cuff repairs. J Bone Joint Surg Am 2000 Mar;82(3):304-314.
26. Jost B, Zumstein M, Pfirrmann CW, et al. Long-term outcome after structural failure of rotator cuff repairs. J Bone Joint Surg Am 2006;88(3):472-479.
27. Kadic MA, Rozing PM, Obermann WR, et al. A surgical approach in total shoulder arthroplasty. Arch Orthop Trauma Surg 1992;111(4):192-194.
28. Klein SM, Steele SM, Nielsen KC, et al. The difficulties of ambulatory interscalene and intra-articular infusions for rotator cuff surgery: a preliminary report. Can J Anaesth 2003;50(3):265-269.
29. Lehuec JC, Liquois F, Schaeverbecke T, et al. Résultats d'une series de lambeaux deltoidiens pour rupture massive de la coiffe des rotateurs avec 3,5 ans recul moyen [Results of a series of deltoid flaps for the treatment of massive rotator cuff tears with 3.5 years follow-up]. Rev Chir Orthop Reparatrice Appar Mot 1996;82(1):22-28. (Fre).
30. Longo UG, Franceschi F, Ruzzini L, et al. Higher fasting plasma glucose levels within the normoglycaemic range and rotator cuff tears. BJSM online 2009;43(4):284-287.
31. Lu XW, Verborgt O, Gazielly DF. Long-term outcomes after deltoid muscular flap transfer for irreparable rotator cuff tears. J Shoulder Elbow Surg 2008;17(5):732-737.
32. Mansat M. Place des lambeaux musculo-tendineux dans les ruptures irreparables de la coiffe des rotateurs de l' epaule. Enseignement de la chirurgie de la main 1996;8:119-129. (Fre).
33. Mansat P, Societe francaise de chirurgie orthopedique et traumatologique PFo. Protheses humerales simples pour le traitement des omarthroses avec rupture de la coiffe des rotateurs. 81e reunion annuelle de la Societe francaise de chirurgie orthopedique et traumatologique. Rev Chir Orthop Reparatrice Appar Mot 2007;93(6):3S51-3S56. (Fre).
34. Oh DK, Yoon YC, Kwon JW, et al. Comparison of indirect isotropic MR arthrography and conventional MR arthrography of labral lesions and rotator cuff tears: a prospective study. Am J Roentgenol 2009;192(2):473-479.
35. Postacchini F, Gumina S. Results of surgery after failed attempt at repair of irreparable rotator cuff tear. Clin Orthop Relat Res 2002 Apr;(397):332-341.
36. Razmjou H, Holtby R, Alexander P, Moola F, et al. Size of Tear as a Prognostic Indicator for Outcome Following Rotator Cuff Full-Thickness Tear Repair. 61st Annual Meeting of the Canadian Orthopaedic Association, Toronto, ON, Jun 2-4 2006.

37. Reinold MM, Macrina LC, Wilk KE, et al. The Effect of Electrical Stimulation of the Intraspinatus on Shoulder External Rotation Force Production Following Rotator Cuff Repair Surgery. J Orthop Sports Phys Ther 2005 Jan;35(1):a79-a80.
38. Resch H, Povacz P, Ritter E, et al. Transfer of the pectoralis major muscle for the treatment of irreparable rupture of the subscapularis tendon. J Bone Joint Surg Am 2000;82(3):372-382.
39. Simovitch RW, Zumstein MA, Lohri E, et al. Predictors of scapular notching in patients managed with the delta III reverse total shoulder replacement. J Bone Joint Surg Am 2007;89(3):588-600.
40. Skutek M, Fremerey RW, Zeichen J, et al. Outcome analysis following open rotator cuff repair: early effectiveness validated using four different shoulder assessment scales. Arch Orthop Trauma Surg 2000;120(7-8):432-436.
41. Thomazeau H, Colmar M. Lambeaux deltoidiens: resultats precoces d' une serie continue de 35 cas [The deltoid flap. A series of 35 cases]. Ann Orthop Ouest 1994;(26):79-83. (Fre).
42. Thur C, Redaelli C. Die Deltoideus-Lappen Plastik: therapie der Wahl bei der grossen Rotatoren-Manschetten-Ruptur? [The deltoid flap-plasty: therapy of choice in large rotator cuff ruptures?]. Z Unfallchir Versicherungsmed 1992;85(4):172-185. (Ger).
43. Toyoda H, Ito Y, Inui K, Koike T, et al. Evaluation of the rotator cuff tear with magnetic resonance arthrography. Clin Orthop Relat Res 2005;439:109-115.
44. Vecchio PC, Adebajo AO, Hazleman BL. Suprascapular nerve block for persistent rotator cuff lesions. J Rheumatol 1993 Mar;20(3):453-455.
45. Weber SC, Jain R, Parise C. Pain scores in the management of postoperative pain in shoulder surgery. Arthroscopy 2007 Jan;23(1):65-72.
46. Weiss AP, Adams MA, Moore JR, et al. Unconstrained shoulder arthroplasty: a five-year average follow-up study. Clin Orthop Relat Res 1990 Aug;(257):86-90.
47. Werner CML, Ruckstuhl T, Muller R, et al. Influence of psychomotor skills and innervation patterns on results of latissimus dorsi tendon transfer for irreparable rotator cuff tears. J Shoulder Elbow Surg 2008;17(1 Suppl):S22-S28

Excluded – No Numeric Outcomes of Interest (N = 39)

The following studies were excluded because they did report numeric data for any of the a priori specified outcomes of interest.

1. Agnello L, Cataldo P, Letizia GA. Rehabilitation following injury of the rotator cuff. Acta Med Medit 2003;19(1):43-47.
2. Bhatia M, Singh B, Nicolaou N, et al. Correlation between rotator cuff tears and repeated subacromial steroid injections: a case-controlled study. Ann R Coll Surg Engl 2009;91(5):414-416.
3. Boyer T, Bailly A, Hopital Bichat Clinique rhumatologique Fp. Resultats du traitement arthroscopique des lesions de la coiffe: sport et appareil locomoteur. Rhumatologie 1995;47(5):159-163. (Fre).
4. Brady PC, Arrigoni P, Burkhart SS. Evaluation of residual rotator cuff defects after in vivo single-versus double-row rotator cuff repairs. Arthroscopy 2006;22(10):1070-1075.
5. Bron C. Treatment of myofascial trigger points in common shoulder disorders by physical therapy: a randomized controlled trial [ISRCTN75722066]. BMC Musculoskelet Disord 2007;8:107.
6. Chen SK, Lin GT, Tien YC, et al. Greater tuberosity osteotomy for treatment of impinge rotator cuff tear. Kaohsiung J Med Sci 2000 Apr;16(4):192-196.
7. Dainty K, Litchfield R, Forwell L, et al. Randomized clinical trial comparing the use of hydro-therapy to land based therapy alone following full-thickness rotator cuff repairs. (abstract). Clin J Sport Med 2002 Jan;12(1):67-68.
8. Deutsch A, Altchek DW, Veltri DM, et al. Traumatic tears of the subscapularis tendon: clinical diagnosis, magnetic resonance imaging findings, and operative treatment. Am J Sports Med 1997 Jan;25(1):13-22.
9. Deutsch AA, Taylor MM. A Prospective Comparison of Ethibond vs. Fiberwire Suture for Arthroscopic Rotator Cuff Repair. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, IL, Mar 22-26, 2006.
10. Fukuda H, Hamada K, Nakajima T, et al. Partial-thickness tears of the rotator cuff: a clinicopathological review based on 66 surgically verified cases. Int Orthop 1996;20(4):257-265.
11. Gartsman GM. Arthroscopic assessment of rotator cuff tear reparability. Arthroscopy 1996;12(5):546-549.
12. Gazielly D. Epidémiologie. [Epidemiology of full-thickness tears of the rotator cuff, including subscapularis]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):92. (Fre).
13. Gill TJ, McIrvin E, Kocher MS, et al. The relative importance of acromial morphology and age with respect to rotator cuff pathology. J Shoulder Elbow Surg 2002 Jul;11(4):327-330.
14. Goutallier D, Postel JM, Bernageau J, et al. Fatty muscle degeneration in cuff ruptures: pre- and postoperative evaluation by CT scan. Clin Orthop Relat Res 1994 Jul;(304):78-83.
15. Goutallier D, Postel JM. La degenerescence graisseuse des muscles des coiffes tendineuses rompues de l' epaule. Rev Rhum Ed Fr 1995;62(6):439-446. (Fre).
16. Grana WA, Teague B, King M, et al. An analysis of rotator cuff repair. Am J Sports Med 1994 Sep;22(5):585-588.
17. Gumina S, Di GG, Bertino A, et al. Inflammatory infiltrate of the edges of a torn rotator cuff. Int Orthop 2006 Oct;30(5):371-374.
18. Hardy P. Reparation endoscopique des ruptures des tendons de la coiffe des rotateurs : evaluation de la cicatrisation tendineuse a moyen terme. Congres de la Vingt et Unieme Journee de Bichat "Pathologie Mecanique et Sportive." 15 Mars 2008. Rhumatologie 2008;60(1):23-28. (Fre).
19. Holibka R, Ditmar R, Holibkova A, et al. Isolated ruptures of the supraspinatus muscle. Biomed Pap Med Fac Univ Palacky Olomouc Czech Repub 2003;147(2):227-232.

20. Iannotti JP. Postoperative outcome assessment of the shoulder following rotator cuff repair. Elsevier Science Publishers B.V.; Elsevier Science Publishing Co., Inc.; 1995.
21. Lyons TR, Savoie FH, Field LD. Arthroscopic repair of partial-thickness tears of the rotator cuff. Arthroscopy 2001;17(2):219-223.
22. Ma HL, Wu JJ, Lin CF, et al. Surgical treatment of full thickness rotator cuff tear in patients younger than 40 years. Chin Med J 2000 Jun;63(6):452-458.
23. Maguire MG. Massive tears of the rotator cuff. Elsevier Science Publishers BV; Elsevier Science Publishing Co., Inc.; 1995.
24. Murrell G, Walton J, Cummins C, et al. Long-term temporal outcomes following rotator cuff repair. (abstract). J Sci Med Sport 2003;6(Suppl):5.
25. O'Holleran JD, Kocher MS, Horan MP, et al. Determinants of patient satisfaction with outcome after rotator cuff surgery. J Bone Joint Surg Am 2005 Jan;87(1):121-126.
26. Olley LM, Carr AJ. The use of a patient-based questionnaire (the Oxford Shoulder Score) to assess outcome after rotator cuff repair. Ann R Coll Surg Engl 2008 May;90(4):326-331.
27. Parent EC, Brennan G, Cleland J. Clinical outcomes and utilization of physical therapy services for categories of shoulder pathologies treated conservatively. 2008 Combined Sections Meeting. Nashville, Tennessee, February 6-9, 2008. J Orthop Sports Phys Ther 2008;38(1):A18-A19.
28. Paulos LE, Kody MH. Arthroscopically enhance mini-approach to rotator cuff repair. Arthroscopy 1991;7(3):331.
29. Postacchini F, Perugia D, Rampoldi M. Rotator cuff tears: results of surgical repair. Ital J Orthop Traumatol 1992;18(2):173-188.
30. Putz R, Reichelt A. Strukturelle befunde am lig. coracoacromiale bei rotatorenmanschettenruptur, tendinosis calcarea und supraspinatussyndrom. Z Orthop Ihre Grenzgeb 1990;128(1):46-50. (Ger).
31. Rubin A. Does continuous passive motion help? Phys Sportsmed 1996 Sep;24(9):160.
32. Sherman SL, Lyman S, Koulouvaris P, et al. Risk factors for readmission and revision surgery following rotator cuff repair. Clin Orthop Relat Res 2008 Mar;466(3):608-613.
33. Shinoda T, Shibata Y, Izaki T, et al. A comparative study of surgical invasion in arthroscopic and open rotator cuff repair. J Shoulder Elbow Surg 2009;18(4):596-599.
34. Silver-Bernstein C. Continuous passive motion after repair of the rotator cuff: a prospective outcome study. Phys Ther 79[1], 99. 1999.
35. Simank HG, Dauer G, Schneider S, et al. Incidence of rotator cuff tears in shoulder dislocations and results of therapy in older patients. Arch Orthop Trauma Surg 2006 May;126(4):235-240.
36. Tashjian RZ, Bradley MP, Tocci S, et al. Factors influencing patient satisfaction after rotator cuff repair. J Shoulder Elbow Surg 2007 Nov;16(6):752-758.
37. Thompson C. Abstracts. J Athl Train 1997 Apr;32(2):169.
38. Weber SC, Kauffman JI. All-arthroscopic vs. mini-open rotator cuff repair: Long-term follow-up. Arthroscopy Association of North America 23rd Annual Meeting, Orlando, FL, Apr 22-25, 2004.
39. Zilber S, Carillon Y, Lapner PC, et al. Infraspinatus delamination does not affect supraspinatus tear repair. Clin Orthop Relat Res 2007 May;458:63-69.

Excluded – Followup <12 Months (Operative) (N = 23)

The following operative studies were excluded because the postoperative followup duration was less than 12 months.

1. Balyk R, Luciak-Corea C, Otto D, et al. Do outcomes differ after rotator cuff repair for patients receiving workers' compensation? Clin Orthop Relat Res 2008 Dec;466(12):3025-3033.
2. Benson RT, McDonnell SM, Rees JL, et al. The morphological and immunocytochemical features of impingement syndrome and partial-thickness rotator-cuff tear in relation to outcome after subacromial decompression. J Bone Joint Surg Br 2009;91(1):119-123.
3. Brislin KJ, Field LD, Savoie FH, III. Complications after arthroscopic rotator cuff repair. Arthroscopy 2007 Feb;23(2):124-128.
4. Burkhart SS, Tehrany AM. Arthroscopic subscapularis tendon repair: technique and preliminary results. Arthroscopy 2002 May;18(5):454-463.
5. Catasus-Clave ML, Guillen-Sola A, Diaz-Aristzabal U, et al. Isokinetic study of rotator cuff lesions: pre- and post-surgical results. Rehabil 2007;41(1):25-29.
6. Cordasco FA, McGinley BJ, Charlton T. Rotator cuff repair as an outpatient procedure. J Shoulder Elbow Surg 2000 Jan;9(1):27-30.
7. Ellenbecker TS, Elmore E, Bailie DS. Descriptive report of shoulder range of motion and rotational strength 6 and 12 weeks following rotator cuff repair using a mini-open deltoid splitting technique. J Orthop Sports Phys Ther 2006 May;36(5):326-335.
8. Ellenbecker TS, Fischer DJ, Zeman D. Glenohumeral joint range of motion, rotational isokinetic strength, and functional self-report measures following all-arthroscopic rotator cuff repair. (abstract). J Orthop Sports Phys Ther 2006 Jan;36(1):a68-a69.
9. Gumina S, Di GG, Perugia D, et al. Deltoid detachment consequent to open surgical repair of massive rotator cuff tears. Int Orthop 2008 Feb;32(1):81-84.
10. Hartig A, Rojczyk M. Die arthroskopie subakromiale dekompression: anmerkungen zur indikation und operationstechnik [Arthroscopic sub-acromial decompression: comments on indications and surgical technique]. Unfallchirurg 1993 Feb;96(2):109-115. (Ger).
11. Hofmann-Kiefer K, Eiser T, Chappell D, et al. Does patient-controlled continuous interscalene block improve early functional rehabilitation after open shoulder surgery? Anesth Analg 2008;106(3):991-996.
12. Jeevan R, Roy B, Neumann L, et al. The Nottingham augmentation device: an alternative approach to the management of massive rotator cuff tears? 20th Congress of the European Society for Surgery of the Shoulder and the Elbow 2006, Athens, Sep 20-23, 2006.
13. Kang L, Henn RF, Tashjian RZ, et al. Early outcome of Arthroscopic rotator cuff repair: a matched comparison with mini-open rotator cuff repair. Arthroscopy 2007;23(6):573-582.
14. Kirkley A, Litchfield RB, Jackowski DM, et al. The use of the impingement test as a predictor of outcome following subacromial decompression for rotator cuff tendinosis. Arthroscopy 2002 Jan;18(1):8-15.
15. Landreau P, Societe francaise de rhumatologie Fp. Place de l' arthroscopie dans la chirurgie reconstructrice de la coiffe des rotateurs. Seizieme journee de Bichat "Appareil locomoteur" - 29 mars 2003. Seance pleniere (1ere partie). Rhumatologie 2003;55(2):31-34. (Fre).
16. Leggin BG, Kelley MJ, Ramsey ML, et al. Short-term outcome following arthroscopic rotator cuff repair. (abstract). J Orthop Sports Phys Ther 2005 Jan;35(1):a3-a4.
17. O'Connor DA, Chipchase LS, Tomlinson J, et al. Arthroscopic subacromial decompression: responsiveness of disease-specific and health-related quality of life outcome measures. Arthroscopy 1999;15(8):836-840.
18. Ozbaydar MU, Bekmezci T, Tonbul M, et al. [The results of arthroscopic repair in partial rotator cuff tears]. Acta Orthop Traumatol Turc 2006;40(1):49-55. (Tur).
19. Park JY, Yoo MJ, Kim MH. Comparison of surgical outcome between bursal and articular partial thickness rotator cuff tears. (abstract). J Orthop Sports Phys Ther 2003 Sep;33(9):541.

20. Reinold MM, Macrina LC, Wilk KE, et al. The effect of neuromuscular electrical stimulation of the infraspinatus on shoulder external rotation force production after rotator cuff repair surgery. Am J Sports Med 2008;36(12):2317-2321.
21. Sclamberg SG, Tibone JE, Itamura JM, et al. Six-month magnetic resonance imaging follow-up of large and massive rotator cuff repairs reinforced with porcine small intestinal submucosa. J Shoulder Elbow Surg 2004 Sep;13(5):538-541.
22. Singh H. The efficacy of continuous cryotherapy on the postoperative shoulder: a prospective, randomized investigation. J Shoulder Elbow Surg 2001 Nov;10(6):522-555.
23. Thur C, Julke M, Bircher HP. Die aufrichteosteotomie des akromions (AAO) als neues prinzip in der behandlung des Iimpingementsyndroms, insbesonders im zusammenhang mit der rekonstruktion von großen rotatorenmanschettenläsionen [Lifting osteotomy of the acromion as a new principle in treatment of impingement syndrome, especially in correlation with reconstruction of large rotator cuff lesions]. Unfallchirurg 1998 Mar;101(3):176-183. (Ger).

Excluded – Non-English (N = 79)

The following studies were excluded because they were published in a language other than English.

1. Akpinar S, Ozalay M, Hersekli MA, et al. Rotator manset yirtiklarinin artroskopic yardimli Mini: acik yontemle tamiri [Arthroscopic assisted mini-open rotator cuff repair]. Artroplasti Artroskopik Cerrahi 2003;14(4):209-213. (Tur).
2. Augereau B, Grimberg J. Traitements, résulats fonctionnel et anatomique de la série [Full-thickness tears of the rotator cuff, including subscapularis: treatments, functional and anatomical results of the series]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):100. (Fre).
3. Belgian Association for Arthroscopy ABA Bp. Rupture de la coiffe des rotateurs [Rotator cuff ruptures]. Acta Orthop Belg 1995;61(Suppl 1):3-36. (Fre).
4. Bellumore Y, Mansat P, Determe P, et al. Ruptures associées des tendons des muscles supra et infraspinatus [Full-thickness tears of the rotator cuff, including subscapularis: tendon ruptures of the supraspinatus and the infraspinatus muscles]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):113-117. (Fre).
5. Bezer M, Aydin N, Guven O. Humerus baainin yukari kaymasi rotator kilif cerrahisinde: prognostic bir arac olarak kullanilabilir mi? [Superior excursion of the humeral head: can it be used as a prognostic tool on rotator cuff tear surgery?]. Marmara Med J 2006;19(1):1-5. (Tur).
6. Boehm TD, Ilg A, Werner A, et al. Langzeitergebnisse (5-13 Jahre) nach lokaler rekonstruktion und deltoideuslappenplastiken bei massiven rotatormanschettendefekten [Long-term results (5-13 years) after surgical local repair and deltoid muscle flap for massive rotator cuff tears]. Z Orthop Ihre Grenzgeb 2004 Mar;142(2):228-234. (Ger).
7. Boileau P, Ahrens P. Le long biceps “en sablier” ou long biceps piege: une autre cause de douleur et de blocage de l’ epaule. Rev Chir Orthop Reparatrice Appar Mot 2003;89(8):672-682. (Fre).
8. Boileau P, Coste JS, Deprey F, et al. Traitement arthroscopique des lésions non transfixiantes de la coiffe des rotateurs [Arthroscopic treatment of impingement and partial thickness tears of the rotator cuff of the shoulder]. Rev Chir Orthop Reparatrice Appar Mot 2004 Dec;90(8 Suppl):S35-S48. (Fre).
9. Boldin C, Schippinger G. Vergleich der infekthaufigkeit zwischen resorbierbaren und nicht resorbierbaren nahtmaterialien bei rotatorenmanschetten-operationen. Aktuelle Traumatol 2001;31(3):119-121.(Ger).
10. Brox JI, Bohmer AS, Ljunggren AE, et al. Behandling av kronisk senebetennelse i skulderen [Treatment of chronic shoulder tendinitis]. Tidsskr Nor Laegeforen 1994 Feb 20;114(5):575-577. 9 (Nor).
11. Caira SF, Melanotte PL. Le rotture isolate parziali del tendine del sovraspinoso [Partial tears of the supraspinatus tendon]. Minerva Ortop Traumatol 1997;48(9):337-342. (Ita).
12. Candiotto S, Majoni A, Londei L, et al. Il trattamento chirurgico del conflitto subacromiale e della rottura della cuffia dei rotatori: esperienza personale in 134 casi [Surgical treatment of the impingement syndrome and of the rotator cuff tears: personal experience in 134 cases]. Reumatismo 2002 Oct;54(4):308-315. (Ita).
13. Catalano PA, Castagna A, Auliso M, et al. La sindrome del conflitto subacromiale: principi di trattamento artroscopico [Subacromial impingement syndrome: arthroscopic treatment]. Ortop Traumatol Oggi 1994;14(1):31-35. (Ita).
14. Charousset C, Duranthon LD, Grimberg J, et al. Étude par arthroscanner de la cicatrisation tendineuse après réparation arthroscopique de la coiffe des rotateurs: analyse des facteurs prédictifs à propos d’une série consécutive de 167 réparations [Arthro-C-scan analysis of rotator cuff tears healing after arthroscopic repair: analysis of predictive factors in a consecutive series of 167 arthroscopic repairs]. Rev Chir Orthop Reparatrice Appar Mot 2006 May;92(3):223-233. (Fre).

15. Cossu M, Spagnolo R, Bardelli D. L'intervento riabilativo nei pazienti sottoposti ad acromioplastica secondo Rockwood [Rehabilitative treatment in patients who have undergone acromioplasty according to Rockwood]. Riabilitazione 1998;31(1):3-12. (Ita).
16. Coudane H, Vauge L, Nicoud C, et al. Les ruptures associées des supscapularis, supraspinatus et infraspinatus [Full-thickness tears of the rotator cuff, including subscapularis: ruptures of the subscapularis, supraspinatus and infraspinatus]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):127-132. (Fre).
17. Demirhan M, Atalar AC, Kocabey Y, et al. Rotator manset yirtiklarinin artroskopik yardimli mini-acik yöntemle tamiri [Arthroscopic-assisted mini-open rotator cuff repair]. Acta Orthop Traumatol Turc 2002;36(1):1-6. (Tur).
18. DeSimoni C, Ledermann T, Imhoff AB. Holmium: YAG-Laser beim "outlet impingement" der Schulter [Holmium:YAG laser treatment of outlet impingement syndrome: medium-term results]. Orthopade 1996;25(1):84-90. (Ger).
19. Fabis J, Zwierzchowski H. Ocena punktowa Constanta reconstrukjci piercienia rotatorów [Constant point evaluation for reconstruction of the rotator cuff]. Chir Narzadow Ruchu Ortop Pol 1997;62(6):491-496. (Pol)
20. Frank A, Societe francaise de rhumatologie PFp. Ruptures transfixiantes de la coiffe des rotateurs: decompression sous-acromiale sans reparation: Quelles coiffes faut-il reparer et comment ?. Quinzieme Journee de Bichat : sport et appareil locomoteur, 23 mars 2002. 1ere partie. Rhumatologie 2002;54(2):16-24. (Fre).
21. Fukuda K. [Results of the operative producers of the rotator cuff tear: prospective study of the effect of postoperative local injection of sodium hyaluronate]. Yakuri to Chiryo (Japanese Pharmacology and Therapeutics) 2000;28(9):819-823. (Jpn).
22. Fukushima S, Okamura K, Usui M, et al. [Arthroscopic surgical treatment for subacromial impingement syndrome]. Hokkaido Journal of Orthopedic and Traumatic Surgery 1995;38(1):22-25. (Jpn).
23. Gazielly DF. Resultats fonctionnels et anatomiques apres traitement chirurgical des ruptures de la coiffe des reacteurs. I: evaluation fonctionnelle et anatomique preoperatoire des ruptures de la coiffe des rotateurs [Functional and anatomic results following surgical treatment of rotator cuff tears. I: preoperatoire functional and anatomic assessment]. Rev Chir Orthop Reparatrice Appar Mot 1995;81(1):8-16. (Fre).
24. Gleyze P, Augereau B, Gazielly DF. Méthodologie [Methodology in full-thickness tears of the rotator cuff, including subscapularis]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):90-92. (Fre).
25. Gleyze P, Thomazeau H, Societe Francaise d'-Arthroscophie F. Reparation endoscopique des ruptures de la coiffe des rotateurs. Etude des facteurs predictifs du resultat anatomique et fonctionnel: a propos de 87 cas. Rev Chir Orthop Reparatrice Appar Mot 2000;86(6):566-574. (Fre).
26. Gosak A. Síndrome de fricción subacromial: cirugía artroscópia. [Arthroscopic subacromial decompression: a prospective analysis of 62 patients]. Prensa Med Argent 2001;88(10):1030-1035. (Spa).
27. Goutallier D. Quelles ruptures transfixiantes de la coiffe des rotateurs doivent etre reparees? Pourquoi, quand, comment? Cahiers d'enseignement de la SOFCOT 2003;82:1-14. (Fre).
28. Gschwend N, Bloch HR, Bischof A. Langzeitergebnisse der operierten rotatormanschettenruptur [Long-term results of surgical management of rotator cuff rupture]. Orthopade 1991 Sep;20(4):255-261. (Ger).
29. Hermann B, Steiner D, Van TD. Operative therapie und ergebnisse bei rotatormanschettenruptur [Surgical treatment and results of rotator cuff tears]. Z Orthop Ihre Grenzgeb 1990;126(6):648-651. (Ger).
30. Hoffmann F, Schiller M, Reif G. Arthroskopische rotatormanschettenrekonstuktion [Arthroscopic rotator cuff reconstruction]. Orthopade 2000 Oct;29(10):888-894. (Ger).
31. Holtslag HR, Jaspers PJ, Marting LN, et al. Bevredigende resultaten van operatieve reconstructie van 'rotator-cuff' - rupturen,1984-1990 [Satisfactory results of surgical reconstruction of rotator cuff ruptures, 1984-1990]. Ned Tijdschr Geneeskd 1994 Jul 16;138(29):1462-1466. (Dut).

32. Huguet D, Societe orthopedique de l'-Ouest. Suture de coiffe sous arthroscopie. 38eme reunion annuelle de la Societe orthopedique de l' Ouest, Saint-Malo, 9-11 juin 2005. Ann Orthop Ouest 2006;(38):149-154. (Fre).
33. Ibragimov D. Diagnosis and treatment of traumatic damage to the musculus supraspinatus of the shoulder. Uzbekiston Tibbiet Zhurnali 2001;(1):127-128. (Usb).
34. Jerosch J, Schroder M, Schneider T. Die arthroskopische resektion des AC-gelenkes (ARAC): indikationen, op-technik, ergebnisse [The arthroscopic resection of the ac-joint (ARAC):indications, Surgical technique, results]. Unfallchirurg 1998;101(9):691-696. (Ger).
35. Jimenez-Martin A, ngulo-Gutierrez J, Gonzalez-Herranz J, et al. La acromioplastia con reparación del manguito rotador y sus efectos en el test de Constant tras la aplicación de plasma rico en factores de crecimiento (PRGF) [Acromioplasty with rotator cuff repair and its effects in Constant test after application of plasma rich in growth factors (PRGF)]. Trauma 2008;19(1):6-12. (Spa).
36. Johannsen HV, Andersen NH, Sojbjerg JO, et al. Artroskopisk subakromial dekompression. [Arthroscopic subacromial decompression]. Ugeskr Laeger 1997 Jan 6;159(2):166-170. (Dan).
37. Jouve F, Graveleau N. Luxation recidivante anterieure de l' epaule et rupture de la coiffe des rotateurs : resultats du traitement chirurgical. Rev Chir Orthop Reparatrice Appar Mot 2008;94(7):659-669. (Fre).
38. Kempf JF, Bonnomet F, Orthopaedica Belgica B. Etude multicentrique de 210 ruptures de la coiffe des rotateurs traitees par acromioplastie sous arthroscopie. Acta Orthop Belg 1995;61(Suppl 1):23-31. (Fre).
39. Kempf JF, Marcillou P, Schlemmer B. Étude des différents groupes lésionnels [Full-thickness tears of the rotator cuff, including subscapularis: results of surgical treatment of isolated ruptures of the supraspinatus]. Rev Chir Orthop Reparatrice Appar Mot 1999;85(Suppl II):105-109. (Fre).
40. Kenesi C, Barbato B. Place de l'acromioplastie dans le traitement chirurgical de la pathologie de la coiffe des courts rotateurs de l'epaule [Place of acromioplasty in the surgical treatment of the pathology of the short rotators cuff: report of 66 cases followed from one to ten years]. Rev Rhum Mal Osteoartic 1990;57(3):193-196. (Fre).
41. Kenesi C. Conception biomécanique de l'epaule et ses conséquences chirurgicales: réfexions à propos d'une expérience personelle sur 250 épaules opérées [Biomechanics of the shoulder joint and Its surgical consequences: a personal-experience of 250 operated patients]. Bull Acad Natl Med 1994;178(8):1493-1507. (Fre).
42. Kessler MA, Lichtenberg S, Habermeyer P. Die rekonstruktion von großen rotatormanschettenrupturen. Eine neue technik der Sehnenrefixation mitdem Corkscrew-Fadenankersystem [Reconstruction of big rotator cuff ruptures: a new technique of tendon refixation with the corkscrew suture anchor system]. Unfallchirurg 2003 Oct;106(10):826-833. (Ger).
43. Klein W, Gassen A. Die endoskopische subakromiale dekompression bei kompletter rotatorenmanschettenruptur. Indikation, technik und nachuntersuchungsergebnisse. Arthroskopie 1993;6(3):107-111. (Ger).
44. Ladero MF, Maestro A, Martinez N, et al. Estudio clínico-laboral de la suturas artroscópicas del manguito rotador con anclajes biodegradables [Clinical-occupational study of all-arthroscopic rotator cuff suture using biodegradable anchors]. Patologia del Aparato Locomotor 2006;4(4):254-260. (Spa).
45. Langenhorst AMWW, Diercks RL, Eikelaar HR, et al. Passagesyndroom van de schouder bij patiënten jonger dan 40 jaar, behandeld met een partiële acromionresectie [Impingement problems of the shoulder in patients under 40 treated by partial acromioplasty]. Ned Tijdschr Geneeskd 1990;134(21):1050-1053. (Dut).
46. Leblebici B, Adam M, Yapgu S, et al. [Comparing the effects of open versus closed kinetic chain scapulohumeral stability exercises in rotator cuff problems]. Turkiye Fiziksel Tip ve Rehabilitasyon Dergisi 2007;53(4):134-137. (Tur).

47. Machner A, Pap G, Mohrenweiser L, et al. Vergleich von 2 operationstechniken isolierter supraspinatusruptur [Comparison of 2 surgical techniques in isolated supraspinatus rupture: a matched-pair study]. Unfallchirurg 2001 Jan;104(1):19-24. (Ger).
48. Mariotti U, Motta PO, Vassoney PF, et al. Decompressione sub-acromiale artroscopica versus riparazione bilanciata artroscopica nel trattamento chirurgico delle lesioni massive della cuffia dei rotatori [Arthroscopic sub-acromial decompression versus balanced arthroscopic repair in the surgical treatment of rotator cuff massive tears]. Minerva Ortop Traumatol 2005;56(3):121-126. (Ita).
49. Midorikawa K. [The arthroscopic surgery of the shoulder: a topological and clinical study]. Igaku Kenkyu 1993 Feb;63(1):21-31. (Jpn).
50. Milano G, Deriu L, Ziranu F, et al. Il trattamento artroscopico della capsulite adesiva di spalla [Arthroscopic treatment of adhesive capsulitis of the shoulder]. Artroscopia 2004;5(2):70-79. (Ita).
51. Miyazaki AN, Doneux SP, Saito RY, et al. Acromioplastia artroscópia e reparo das lesões do manguito rotador por "miniincisão" [Arthroscopic acromioplasty and repair of rotator cuff tears using the 'mini-open' approach]. Rev Bras Ortop 1999;37(7):415-420. (Por).
52. Musil D, Sadovsky P. Masivni ruptura rotátorové manzety: srovnáni mini-open a artroskopické rekonstrukce. Cast 2: artroskopicka rekonstrukce [Massive tears of the rotator cuff: comparison of mini-open and arthroscopic techniques. Part 2: arthroscopic repair]. Acta Chir Orthop Traumatol Cech 2007 Oct;74(5):318-325. (Cze).
53. Orsi R, De T, V, Barisone P, et al. Personal experience in the treatment of 'painful shoulder'. Minerva Ortop Traumatol 1994;45(9):399-402. (Ita).
54. Orsi R, Nastro M, Brignolo M, et al. Risultati a medio termine della riparazione della cuffia dei rotatori. Verifica clinica e strumentale [Medium terms results of surgical repair of the rotator cuff]. Minerva Ortop Traumatol 1997;48(1-2):7-12. (Ita).
55. Pechoucek J. Faktory ovlivnujici operacni vysledky lecby roztrzene manzety rotatoru ramena [Factors affecting the surgical results of treatment of rotator cuff tears in the shoulder]. Acta Chir Orthop Traumatol Cech 1990 Feb;57(1):34-39. (Cze).
56. Postel JM. Les ruptures isolees du sous-scapulaire: manifestations osteo-articulaires et sport. Rev Rhum Ed Fr 1998;65(7):79-84. (Fre).
57. Pouget G, Thomazeau H. Ruptures transfixiantes de la coiffe des rotateurs. Ann Orthop Ouest 2001;(33):171-204. (Fre).
58. Prochazka P. Vysledky artroskopické subakromiálni dekomprese u padesátiletých pacientu [Results of arthroscopic subacromial decompression in fifty-year old patients]. Acta Chir Orthop Traumatol Cech 2001;68(1):39-44. (Cze).
59. Russo A, Coari GC, Raffelini F, et al. Ricostruzione artroscopica delle rotture complete di grandezza piccola e media del sopraspinato: risultati a distanza di 2-6 anni [Arthroscopic repair of small to medium full thickness supraspinatus tears: outcome at 2 to 6 year follow up]. Artroscopia 2004;5(1):11-17. (Ita).
60. Seelig W, Kohler O, Gaechter A. [Treatment of rotator cuff ruptures]. In: Laffer U, Duerig M, P Regazzoni, eds. Basler Beitraege Zur Chirurgie, Band 3 Traumatologie und Rehabilitation: I Bewegungsapparat; (Basel Contributions to Surgery, Vol 3 Traumatology and Rehabilitation: I Locomotor Apparatus). Switzerland; 1991. p. 82-92. (Ger).
61. Skutek M, Zeichen J, Fremerey RW, et al. Outcomeanalyse nach offener rekonstruktion von rotatorenmanschettenrupturen: eine vergleichende beurteilung neuer bewertungsverfahren [Outcome analysis after open reconstruction of rotator cuff ruptures: comparative assessment of recent evaluation procedures]. Unfallchirurg 2001 Jun;104(6):480-487. (Ger).
62. Societe francaise d'-arthroscopie. Résumés des communications. Rev Chir Orthop Reparatrice Appar Mot 2004;90(8):3S76-3S95. (Fre).
63. Sonnery-Cottet B, Edwards B. Resultats du traitement chirurgical des ruptures de coiffe des rotateurs chez le tennisman veteran. J Traumatol Sport 2001;18(2):70-76. (Fre).
64. Steinbeck J, Halm H, Jerosch J, et al. Die ergebnisse der endoskopischen subacromialen dekompressionsoperation (ESD) bei tendinitis und partialruptur der rotatorenmanschette [Outcome of endoscopic subacromial decompression operation in tendinitis and partial rupture of the rotator cuff]. Z Orthop Ihre Grenzgeb 1998 Jan;136(1):8-12. (Ger).

65. Steinbeck J, Schneider M, Potzl W, et al. Vergleichende untersuchung der ergebnisse nach der offenen naht kompletter rotatorenmanschettendefekte mit und ohne resektion der lateralen klavikula [Comparison of the results of the surgical repair of full-thickness tears of the rotator cuff with and without resection of the lateral clavicle]. Z Orthop Ihre Grenzgeb 2002 Jul;140(4):385-389. (Ger).
66. Sudkamp NP. Offene oder geschlossene Akromioplastik? Arthroskopische Chirurgie im Schulter- und Kniegelenkbereich. Hefte Unfallheilkd 1994;(243):57-67. (Ger).
67. Tascioglu F, Dalkiran I, Oner C. Parsiyel supraspinatus tendon tupturu olan subakromiyal sikisma sendromlu hastalarda dusuk doz lazer tedavisinin etkinligi [The efficacy of low-level laser in the treatment of subacromial impingement syndrome due to partial rupture of the supraspinatus tendon]. Turkiye Fiziksel Tip ve Rehabilitasyon Dergisi 2003;49(6):18-22. (Tur).
68. Teissier J, Gaudin P. Resultats de la reparation chirurgicale par tendon artificiel des larges ruptures de la coiffe des rotateurs: a propos de 38 patients ayant un recul de plus de 2 ans. Rev Chir Orthop Reparatrice Appar Mot 1992;78(1 Suppl):175-276. (Fre).
69. Thomazeau H, Gleyze P, Societe ff-A. Arthroscopie dans les ruptures transfixiantes de la coiffe des rotateurs: resultats du Symposium de la SFA 1997. Congres sport et appareil locomoteur. Rhumatologie 1998;50(4-5):131-139. (Fre).
70. Urbanek L, Karjagin V. Artoskopicka subakromialni dekomprese: vlastni zkusenosti a vysledky [Arthroscopic subacromial decompression: our experience and outcomes]. Acta Chir Orthop Traumatol Cech 2004;71(1):45-49. (Cze).
71. Urbanek L, Vanecek V, Vasek P, et al. Artroskopicka paliativni resekce rotatorove manzety u nerekonstruovatelnych lezi [Arthroscopic palliative resection of the rotator cuff in patients with unreconstructible lesions]. Acta Chir Orthop Traumatol Cech 2007 Aug;74(4):268-272. (Cze).
72. Valente A, Quaglia F, Ravera R. Lesioni della cuffia dei rotatori: trattamento artrotomico o artroscopico? [Lesions to the cuff of the rotator muscles: arthrotomic or arthroscopic treatment?]. Minerva Ortop Traumatol 2006;57(2):21-26. (Ita).
73. Vitullo A, Anzini M, Sgrambiglia R, et al. Riparazione artroscopica delle lesioni della cuffia dei rotatori: risultati a breve termine [Arthroscopic rotator cuff repair: results at short follow up]. Artroscopia 2004;5(1):18-24. (Ita).
74. von Engelhardt LV, von FM, Fahmy U, et al. MRT nach rekonstruktion der supraspinatussehne: MR-tomographische befunde [MRI after reconstruction of the supraspinatus tendon: MR-tomographic findings]. Z Orthop Ihre Grenzgeb 2004 Sep;142(5):586-591. (Ger).
75. Vontobel B, Simmen BR, Munzinger U, et al. Die arthroskopische behandlung des subakromialen impingementsyndroms: moglichkeiten und grenzen [Arthroscopic treatment of subacromial impingement syndrome: possibilities and limitations]. Schweiz Rundsch Med Prax 1993 Jan 26;82(4):99-105. (Ger).
76. Walch G, Nove-Josserand L, Orthopaedica Belgica B. Reparation chirurgicale des ruptures totales de la coiffe des rotateurs: resultats et limites. Acta Orthop Belg 1995;61(Suppl 1):17-20. (Fre).
77. Wollmerstedt N, Bohm DT, Kirschner S, et al. Prufung eines einfachen Schulterfunktionstests an operativ behandelten Patienten mit Rotatorenmanschettendefekt [Evaluation of a simple test for shoulder function in patients with surgically treated rotator cuff injuries]. Z Orthop Ihre Grenzgeb 2005 Jul;143(4):468-474. (Ger).
78. Yesin I, Demirhan M, Sahinkaya S. Artroskopik subakromial dekompresyon ve mini-acik rotator manset tamiri yapilmis hastalarda rehabilitasyon sonuclarimiz [Rehabilitation results of patients whom their arthroscopic subacromial decompression and mini-open repair of the rotator cuff are made]. [Abstract] Fizyoterapi Rehabilitasyon 2001 Dec;12(3):134-135. (Tur).
79. Zamora-Navas P, Borras Verdera A, Vargas MV, et al. Rehabilitacion en las lesiones del tendon del musculo supraespinoso. Rehabil 2001;35(3):171-174. (Spa).

Excluded – Multiple Publication (N = 13)

The following articles were excluded because they were multiple publications of studies already included in the review.

1. Flurin PH, Landreau P, Gregory T, et al. Reparation arthroscopique des ruptures transfixiantes de la coiffe des rotateurs: etude retrospective multicentrique de 576 cas avec controle de la cicatrisation [Arthroscopic repair of full-thickness cuff tears: a multicentric retrospective study of 576 cases with anatomical assessment]. Rev Chir Orthop Reparatrice Appar Mot 2005;91(8 Suppl):4S31-4S42. (Fre).
2. Galatz LM, Griggs S, Cameron BD, et al. Prospective longitudinal analysis of postoperative shoulder function: a ten-year follow-up study of full-thickness rotator cuff tears. J Bone Joint Surg Am 2001 Jul;83(7):1052-1056.
3. Goutallier D. Surgical treatment of unrepairable associated supraspinatus and infraspinatus tears by simple suture: conclusions. Rev Chir Orthop Reparatrice Appar Mot 2004;90(5 Suppl):1S168-1S169. (Fre).
4. Goutallier D, Augereau B, Bensaida M, et al. [Surgical treatment of unrepairable associated supraspinatus and infraspinatus tears by simple suture]. Rev Chir Orthop Reparatrice Appar Mot 2004;90(5):154-170. (Fre).
5. Hata Y, Saitoh S, Murakami N, et al. A less invasive surgery for rotator cuff tear: mini-open repair. J Shoulder Elbow Surg 2001 Jan;10(1):11-16.
6. LaStayo PC, Wright TW, Jaffe R. Continuous passive motion after rotator cuff repair: a prospective outcome study [abstract]. Orthop Trans 1997;21(1):151.
7. Leblebici B, Adam M, Bagis S, et al. Comparing the effects of open versus closed kinetic chain scapulohumeral stability exercises in patients with impingement syndrome and rotator cuff tears. Ann Rheum Dis 2007;66(Suppl 2):574-575.
8. Liem D, Lichtenberg S, Magosch P, et al. Arthroscopic rotator cuff repair in overhead-throwing athletes. Am J Sports Med 2008 Jul;36(7):1317-1322.
9. Mohtadi N, Hollinshead R, Fletcher J, et al. A randomized clinical trail comparing mini-open to open rotator cuff repair. (abstract). Clin J Sport Med 2005 Sep;15(5):397.
10. Mohtadi NG, Hollinshead RM, Sasyniuk TM, et al. A randomized clinical trail comparing mini-open with open rotator cuff repair: two-year outcomes. (abstract). Clin J Sport Med 2006 Mar;16(2):182.
11. Montgomery T, Savoie F, Yerger B. A comparison of arthroscopic debridement and subacromial decompression vs. open surgical repair of full-thickness tears of the rotator cuff. South Med J 1991;84(9):2S54.
12. Rokito AS, Zuckerman JD, Gallagher MA, et al. Strength after surgical repair of the rotator cuff. J Shoulder Elbow Surg 1996 Jan;5(1):12-17.
13. Tashjian RZ, Bradley MP, Tocci S, et al. A comparison of prospective and retrospective assessment of functional outcome after rotator cuff repair. J Shoulder Elbow Surg 2008;17(6):853-859.

Unobtained Studies (N = 29)

The following articles could not be obtained through the university interlibrary loan system.

14. Lazarus MD, Hoser HD. Rotator cuff repair with and without anterior acromioplasty: a prospective, randomized study [Abstract]. American Academy of Orthopaedic Surgeons 67th Annual Meeting 2000, Orlando (FL), Mar 15-19, 2000.
15. Walmsley R. Shoulder strength following surgical rotator cuff repair: a comparative analysis using isokinetic testing. JOSPT 1992;15(0005):00215-22.
16. Neviaser TJ, Neviaser RJ, Neviaser JS. Incomplete rotator cuff tears. A technique for diagnosis and treatment. Clinical orthopaedics and related research 1994 Sep;(306):12-16.
17. Ritacco EA, Morao LE, Zapata FO, et al. Arthroscopic subacromial decompression with "mini open" biomechanical repair. Prensa Medica Argentina 2006;93(4):248-252.
18. Rubin A. Longer recovery for large rotator cuff tear. Physician & Sportsmedicine 2000;28(2):29.
19. Castagna A. Arthroscopic repair of rotator cuff tears. 12th Congress of the European Society of Sports Traumatology, Knee Surgery and Arthroscopy (ESSKA 2000), Congress Innsbruck, Innsbruck, May 24-27, 2006.
20. Chudik SC, Master D, Obopilwe E, et al. Arthroscopic double-row rotator cuff repair using a knotless parachute tissue anchor. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, Illinois, Mar 22-26, 2006.
21. Costic RS, Lopez-Vidriero E, Gilbertson LG, et al. Double row arthroscopic rotator cuff repair: effect of suture anchor location & insertion technique. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
22. Emery R. Open repair of the rotator cuff - one and two tendon tears. 4th Congress of the European Federation of National Association of Orthopaedics and Traumatology, Brussels, Jun 3-8, 1999.
23. Fleega BA, Kovacs GE, El Shewy MO, et al. Arthroscopic repair of large and massive rotator cuff tears; 15 years follow up. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
24. Gobbi A, Zanazzo M, Constanzo D. Analysis of two different rotator cuff repair techniques with a specific rehabilitation program. 2nd European Congress of Sport Traumatology, Monte Carlo, May 1-3, 2003.
25. Handelberg F, Isenborghs S. Surgical treatment of full-thickness rotator cuff tears over the age of 60. 4th Congress of the European Federation of National Association of Orthopaedics and Traumatology, Brussels, Jun 3-8, 1999.
26. Hashiguchi H, Ito H, Banzai Y, et al. Outcomes of arthroscopic subacromial decompression alone for partial-thickness rotator cuff tear. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, Illinois, Mar 22-26, 2006.
27. Hibbey CS, Babos A, Nosek Z. Colliquation Tendon necrosis after rotator cuff surgery [Poster]. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
28. Madanagopal SG, Pearsall AW, Ibrahim KA. Evaluation of patients undergoing arthroscopic and mini-open rotator cuff repair: minimum two-year evaluation. 24th Annual Meeting of the Mid-America Orthopaedic Association, San Antonio, Texas, Apr 19-23, 2006.
29. Matsumoto I, Ito Y, Tomo H, et al. Advantages of novel surgical technique: arthroscopic multiple suture method, for massive rotator cuff tears. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
30. Meier SW, Manigrasso MB. Rotator cuff repair: the effect of double-row fixation on repair interface motion. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, Illinois, Mar 22-26, 2006.

31. Meyer M, Boru B, Rousselin B, et al. Long-term clinical and anatomical outcomes of arthroscopic repair of small and moderate-sized rotator cuff tears with magnetic resonance arthrography control. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
32. Naka Y, Ito Y, Tomo H, et al. Short-term clinical results of arthroscopic rotator cuff repair with knotless anchors. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
33. Nakamichi N, Ikegami H, Ogawa K, et al. Quantitative assessment of the rotator cuff after open bankart procedure. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
34. Nakano M, Ito Y, Tomo H, et al. Arthroscopic evaluation for delamination in full-thickness rotator cuff tears. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
35. Natsis K, Moebius U, Totlis T, et al. Complete arthroscopic repair of full thickness rotator cuff tears. 4th European Sports Medicine Congress, Lemesos, Oct 13-15, 2005.
36. Neumann L. Mini-open repair of rotator cuff tears. 12th Congress of the European Society of Sports Traumatology, Knee Surgery and Arthroscopy (ESSKA 2000), Congress Innsbruck, Innsbruck, May 24-27, 2006.
37. Nord KD, Gothelf TK. The 3D repair: anterolateral portal for retrograde suture passage in arthroscopic rotator cuff repair. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, Illinois, Mar 22-26, 2006
38. O'Holleran J, Obopilwe E, Altchek DW, et al. Tendon-bone interface force and pressure in single-row vs double-row arthroscopic rotator cuff repair. 2006 Annual Meeting of the American Academy of Orthopaedic Surgeons, Chicago, Illinois, Mar 22-26, 2006.
39. Tashjian R, Spenciner D, Leventhal E, et al. Initial fixation strength of repairs of massive rotator cuff tears. Arthroscopy 23(7):710-716.
40. Weber SC, Sager R. Arthroscopic repair of partial thickness rotator cuff tears: the safety of completing the tear. AANA, Arthroscopy Association of North America 22nd Annual Meeting, Phoenix, AZ, Apr 24-28, 2003.
41. Boehm TD, Rolf O, Baumann B, et al. Age depending outcome of open rotator cuff repairs. 20th Congress of the European Society for Surgery of the Shoulder and the Elbow (SECEC-ESSSE 2006), Athens, Sep 20-23, 2006.
42. Butcher WM, Esch JC. Arthroscopic repair of partial rotator cuff tears: a minimum 2-year follow-up. Arthroscopy Association of North America 23rd Annual Meeting, Orlando, FL, Apr 22-25, 2004.