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

Appendixes
Appendix A. Expert Panel and Peer Reviewers

Technical Expert Panel Members

Judy Chepeha, M.Sc.P.T., Ph.D. (candidate)
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Ann Arbor, MI
### Appendix B. Literature Search Strings

| Table B-1. | MEDLINE®—Ovid Version |
| Table B-2. | EMBASE—Ovid Version |
| Table B-3. | EBM Reviews—The Cochrane Library—Ovid Version |
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Table B-1. MEDLINE®–Ovid Version

| OvidSP_UI02.01.02.102 | Searched: 27Jan09 and 15Sep09
|------------------------|----------------------------------|
| 1950 to January Week 4 2009 | Results: 2291

1. exp rotator cuff/in
2. ((rotator cuff* or rotator interval* or supraspinatus or infraspinatus 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 supraspinatus or infraspinatus 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 experi$ 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>
<thead>
<tr>
<th>Table B-2. EMBASE—Ovid Version</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OvidSP_UI02.01.02.102</strong></td>
</tr>
<tr>
<td>1988 to 2009 Week 3</td>
</tr>
</tbody>
</table>

1. exp rotator cuff rupture/
2. ((rotator cuff* or rotator interval* or supraspinatus or infraspinatus 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 supraspinatus or infraspinatus 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 double$ 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 analyze$).mp.
28. ((control$ 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

<table>
<thead>
<tr>
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<td>4th Quarter 2008</td>
<td>Results: 220</td>
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<tr>
<td>Central**: 165</td>
<td>DARE: 11</td>
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<tr>
<td>CDSR: 35</td>
<td>HTA: 9</td>
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</tbody>
</table>

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

<table>
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<th>Pascal</th>
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</thead>
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<td>AMED</td>
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<tr>
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<td>Searched: 28Jan09</td>
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<tr>
<td>Results: 131</td>
<td>Results: 751</td>
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</tbody>
</table>

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

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<th>Database</th>
<th>Years Searched</th>
<th>Number of Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>CINAHL® (Cumulative Index to Nursing &amp; Allied Health Literature)**</td>
<td>1937 to 2008</td>
<td>93</td>
</tr>
<tr>
<td>SPORTDiscus with Full Text</td>
<td>1800 to 2008</td>
<td>428</td>
</tr>
<tr>
<td>Academic Search Elite</td>
<td>1985 to 2008</td>
<td>327</td>
</tr>
<tr>
<td>Health Source: Nursing and Academic Edition</td>
<td></td>
<td>47</td>
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</tbody>
</table>

**Searches: 04Feb09 and 15Sep09**

**Results:** 895

**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**

- S4 not S5
- 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

| #24 | #23 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 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 infant* 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 infant* OR baby OR babies) |
| #9 | #8 NOT #1 |
| #8 | #7 OR #4 |
| #7 | #6 AND #5 |
| #6 | TS=(shoulder or glenohumeral*) |
| #5 | TS=((tendon or tendons OR muscle OR muscular) SAME (torn or tears or tore or torn or lesion OR rupture OR avuls* OR injur* OR repair OR debride*)) |
| #4 | #2 AND #3 |
| #3 | TS=(torn 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 chimps* OR horse OR horses OR cat OR cats OR dog OR dogs OR canine OR feline) |

Table B-7. Scopus® Elsevier B.V.

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<th>1966 to 2009</th>
<th>1990 to 2009</th>
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<tbody>
<tr>
<td>1990 to 2009</td>
<td>Results: 804</td>
</tr>
</tbody>
</table>

(TITLE-ABS-KEY(rotator cuff* OR rotator interval* OR supraspinatus OR infraspinatus* OR teres minor OR subscapularis OR anterosuperior OR posterosuperior) AND TITLE-ABS-KEY(torn 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"))
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<td>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 &amp; OCCUPATIONAL HEALTH OR NUTRITION &amp; DIETETICS OR PHARMACOLOGY &amp; PHARMACY)</td>
</tr>
<tr>
<td>#11</td>
<td>#6 OR #3</td>
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<td>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)</td>
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<td>#10</td>
<td>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)</td>
</tr>
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<td>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)</td>
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<td>#8</td>
<td>#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)</td>
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<td>#7</td>
<td>#6 OR #3</td>
</tr>
<tr>
<td>#6</td>
<td>#5 AND #4</td>
</tr>
<tr>
<td>#5</td>
<td>TS=(shoulder or glenohumer*)</td>
</tr>
<tr>
<td>#4</td>
<td>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*))</td>
</tr>
<tr>
<td>#3</td>
<td>#1 AND #2</td>
</tr>
<tr>
<td>#2</td>
<td>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)</td>
</tr>
<tr>
<td>#1</td>
<td>TS=(supraspinatus OR infraspinatus OR teres minor OR subscapularis OR rotator cuff* OR anterosuperior OR posterosuperior)</td>
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### Table B-9. PubMed—National Library of Medicine

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<td>298</td>
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</tbody>
</table>

Limits: added to PubMed in last 2 years or in process

#3 #1 OR #2

#2 ((rotator cuff* OR rotator interval* OR supraspinatus OR infraspinatus OR “teres minor” OR subscapularis OR anterosuperior OR posterosuperior) AND (torn OR torn 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 (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 (torn OR torn 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) 2007-2009
- American Physical Therapy Association (APTA) 2006-2008
- American Shoulder and Elbow Surgeons 2005-2008
- American Society of Shoulder and Elbow Therapists 2004-2008
- European Congress of Physical and Rehabilitation Medicine 2008
- European Society for Surgery of the Shoulder and the Elbow** 2006-2008
- Mid-America Orthopaedic Association (MAOA) 2007-2009

#### Clinical Trials Registers

Searched: 23Jun09

- ANZCTR (Australia NewZealand 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

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>Yes</th>
<th>No</th>
<th>Unclear</th>
</tr>
</thead>
</table>

### 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

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
<th>Review authors’ judgment</th>
<th>Consensus (circle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequence generation</td>
<td></td>
<td>Was the allocation sequence adequately generated?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td>Allocation concealment</td>
<td></td>
<td>Was allocation adequately concealed?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td>Blinding of participants, personnel and outcome assessors, <em>Outcome:</em></td>
<td>Patient-rated scales (subjective)</td>
<td>Was knowledge of the allocated intervention adequately prevented during the study?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td></td>
<td>Clinical measures (objective)</td>
<td>Was knowledge of the allocated intervention adequately prevented during the study?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td>Incomplete outcome data, <em>Outcome:</em></td>
<td>Patient-rated scales (subjective)</td>
<td>Were incomplete outcome data adequately addressed?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td></td>
<td>Clinical measures (objective)</td>
<td>Were incomplete outcome data adequately addressed?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td>Selective outcome reporting</td>
<td></td>
<td>Are reports of the study free of suggestion of selective outcome reporting?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td>Other sources of bias</td>
<td></td>
<td>Was the study apparently free of other problems that could put it at a high risk of bias?</td>
<td>YES / NO / UNCLEAR</td>
</tr>
<tr>
<td>Overall risk of bias</td>
<td>Patient-rated scales</td>
<td>HIGH / LOW / UNCLEAR</td>
<td>HIGH LOW UNCLEAR</td>
</tr>
<tr>
<td></td>
<td>Clinical measures (objective)</td>
<td>HIGH / LOW / UNCLEAR</td>
<td>HIGH LOW UNCLEAR</td>
</tr>
</tbody>
</table>
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 (e.g 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

<table>
<thead>
<tr>
<th>Reviewer initials:</th>
<th>Date:</th>
<th>Study ID:</th>
</tr>
</thead>
</table>

### 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
  - \( \leq 10\% \) of enrolled patients withdrew/ dropped out of the study before the last outcome assessment; OR
  - \( \leq 25\% \) 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: 
8. Language of publication: [ ] (1) English [ ] (2) French [ ] (3) German
9. Funding: [ ] (1) Government [ ] (2) Academic [ ] (3) Industry [ ] (4) Foundation [ ] (5) Comp Board [ ] NR [ ] (4) No funding [ ] (5) Other (describe)
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 [ ] (2) Technique [ ] (3) Augmentation [ ] (4) Additional procedure [ ] Nonoperative [ ] 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
15. Recruitment dates (X to Y): 
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

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
<th>Group C</th>
<th>Group D</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

25. Brief label of study arms

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

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

<table>
<thead>
<tr>
<th>46. Intervention (mark all that apply):</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–exercise –</td>
</tr>
<tr>
<td>a) stretching (ROM)</td>
</tr>
<tr>
<td>i) passive</td>
</tr>
<tr>
<td>ii) active</td>
</tr>
<tr>
<td>b) strengthening</td>
</tr>
<tr>
<td>c) joint mobilization</td>
</tr>
<tr>
<td>d) soft-tissue</td>
</tr>
<tr>
<td>(manual/massage)</td>
</tr>
<tr>
<td>2–corticosteroid injection</td>
</tr>
<tr>
<td>3–NSAIDs</td>
</tr>
<tr>
<td>4–acupuncture</td>
</tr>
<tr>
<td>5–PT NOS (only if not described)</td>
</tr>
<tr>
<td>6–other (specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>47. Modalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1–heat / cold</td>
</tr>
<tr>
<td>2–therapeutic ultrasound</td>
</tr>
<tr>
<td>3–neuromuscular stimulation</td>
</tr>
<tr>
<td>4–other (specify)</td>
</tr>
</tbody>
</table>

| 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**

<p>| 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, &lt;1cm, n (%)                     |
| 2–medium, 1-3cm, n (%)                   |
| 3–large, 3-5cm, n (%)                    |
| 4–massive, &gt;5cm, n (%)                   |
| 65. Tendon torn                          |
| 1–supraspinatus n (%)                    |
| 2–infra spinatus n (%)                   |</p>
<table>
<thead>
<tr>
<th>Question</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 - subscapularis n (%)</td>
<td></td>
</tr>
<tr>
<td>4 - teres minor n (%)</td>
<td></td>
</tr>
<tr>
<td>67. Dominant shoulder RCT n (%)</td>
<td></td>
</tr>
<tr>
<td>68. Cause of tear</td>
<td></td>
</tr>
<tr>
<td>1 - degenerative n (%)</td>
<td></td>
</tr>
<tr>
<td>2 - traumatic n (%)</td>
<td></td>
</tr>
<tr>
<td>69. Degree of fatty muscle infiltration (grades 0-4)</td>
<td></td>
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<tr>
<td>70. Recreational athlete n (%), specify sport</td>
<td></td>
</tr>
<tr>
<td>71. Manual labour job n (%)</td>
<td></td>
</tr>
<tr>
<td>72. Workers’ Compensation claim n (%)</td>
<td></td>
</tr>
<tr>
<td>73. Smoker n (%)</td>
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<tr>
<td>74. Shoulder co-morbidities (describe), i.e., Labral (SLAP, Bankart), Hill-Sachs, biceps pathology, OA, stiffness, bursitis, frozen shoulder/ adhesive capsulitis</td>
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<td>75. Other co-morbidities (e.g., diabetes)</td>
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<td>76. Ethnic distribution n (%)</td>
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<td>77. ROM – abduction (circle: active, passive, NR) [mean±SD/SE; med(range)]*</td>
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<td>78. ROM – flexion (circle: active, passive, NR) [mean±SD/SE; med(range)]*</td>
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<td>79. ROM – internal/medial rotation (circle: active, passive, NR) [mean±SD/SE; med(range)]*</td>
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<td>80. ROM – external/lateral rotation (circle: active, passive, NR) [mean±SD/SE; med(range)]*</td>
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<td>81. ROM – other (specify) [mean±SD/SE; med(range)]*</td>
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<td>81. Strength (gr; kg)* position:</td>
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<td>82. VAS pain (10-point scale)</td>
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<td>83. Constant-Murley (x/100); subscores □</td>
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<tr>
<td>84. UCLA (x/35); subscores □</td>
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<td>85. ASES (x/100); subscores □</td>
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<td>86. DASH (x/100)</td>
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<td>87. Western Ontario RC scale (WORC)</td>
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<td>88. Simple shoulder test (SST) (x/12)</td>
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<td>89. Japanese Orthopedic Assoc. scale (JOA)</td>
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<td>90. SF-36</td>
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<td>91. Other</td>
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<td>93. Other</td>
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### VI. REPORTED OUTCOMES
(outcomes with data reported, either pre-post, or comparing 2 groups)

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<td>b) Function / Disability</td>
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<td>102.</td>
<td>103.</td>
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<tr>
<td>c) Time to return to work / activities</td>
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<td>d) Pain</td>
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<td>f) Strength</td>
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<td>g) Other reported outcomes</td>
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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 |
| e) etiology of tear | f) fatty infiltration | g) number of torn tendons |
| i) pre-op pain | l) pre-op stiffness /pass. ROM | k) pre-op strength/ act. ROM |
| m) sex | n) smoking | o) tear size |
| 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)

<table>
<thead>
<tr>
<th>Author, year</th>
<th>Study design, ITT</th>
<th>Sequence generation</th>
<th>Study design, ITT</th>
<th>Sequence generation</th>
<th>Blinding</th>
<th>Selective outcome reporting</th>
<th>Other sources of bias</th>
<th>Overall RoB – Pt-rated outcomes</th>
<th>Overall RoB – Clinical outcomes</th>
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CCT = controlled clinical trial; ITT = intention-to-treat analysis; pt = patient; NA = not applicable; Pt = patient; RCT = randomized controlled trial; RoB = risk of bias
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Table D-2. Methodological quality of cohort studies (continued)

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

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*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)

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

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### Appendix E. Evidence Tables

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<th>Surgical approach: open</th>
<th>Outcomes reported: HRQL: NR</th>
<th>Author conclusions: 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.</th>
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**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

**Pre-op Treatment**: yes

- **Duration**: 3 mo (min)
- **Type of treatment**: NR

**Other**:
- • acromioclavicular
- • mesh thickness
- • cuff integrity

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**Notes**:
- 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; Ig = 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 = pre-operative; 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

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<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baker CL, 1995</td>
<td>Recruitment dates: Jan 1987 to Jan 1990</td>
<td>Enrolled: 36 (shld: 37)</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Arthroscopically assisted RCR is as effective as open repair in the surgical tx of symptomatic complete RC tears.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: retrospective cohort</td>
<td>Analyzed: 36 (shld: 37)</td>
<td>Surgical approach: open</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative approach</td>
<td>Follow up duration, (minimum): 2 yr</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
<td>● UCLA</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: (1) chronic RC tear + pain, weakness, disability not improved by nonoperative tx &gt;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</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>Pain:</td>
<td>● VAS</td>
</tr>
<tr>
<td>Funding: No funding</td>
<td>Exclusion criteria: Mass tears</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: NR</td>
<td>ROM:</td>
<td>● flexion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
<td>abduction</td>
<td>● external rotation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (day 1–wk 3); active-assisted stretching (wk 3–6 or 8); strengthening (wk 6–8)</td>
<td>Strength:</td>
<td>● time to return to work</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N: 20 (shld: 20)</td>
<td>Rehab regime: NR</td>
<td>Other:</td>
<td>● days of hospitalization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age, means±SD (range): 62 yr. (38-81 yr.)</td>
<td>GROUP 2</td>
<td>cuff integrity</td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Baysal D, 2005</td>
<td>Recruitment dates: Apr 1997 to Jul 2000</td>
<td>Enrolled: 84</td>
<td>GROUP 1</td>
<td>HRQL:</td>
<td>Mini-open RCR led to improved shoulder function and health related quality of life up to 5 yr post surgery.</td>
</tr>
<tr>
<td>Country: Canada</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 60</td>
<td>Surgical approach: mini-open</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 24</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2</td>
<td>Followup duration, mean (endpoint): 1–5 yr</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N):</td>
<td>ROM:</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Inclusion criteria: Symptomatic FTT confirmed by MRI or arthrogram</td>
<td>Type of tear: FTT</td>
<td>acromioplasty (all); SLAP repair (NR); biceps tenotomy/tenodesis (NR)</td>
<td>external rotation (arm at side)</td>
<td></td>
</tr>
<tr>
<td>BA Quality: Consecutive: U</td>
<td>Exclusion criteria: (1) previous surgery of affected shld, (2) PTT, (3) SC involvement, (4) Bankart lesions or severe glenohumeral OA</td>
<td>Tendon(s) torn: SS, SS+IS+TM</td>
<td>Duration of immobilization: 6 wk.</td>
<td>external rotation (arm abducted)</td>
<td></td>
</tr>
<tr>
<td>Followup: N</td>
<td>GROUP 1 N: 84</td>
<td>Duration of rehab: 26 wk</td>
<td>Duration of rehab: 26 wk</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td>Outcome assessment: Y</td>
<td>Age, mean±SD (range): 53.2±9.9 yr (22–82 yr)</td>
<td>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)</td>
<td>Rehab regime: NR</td>
<td>Other:</td>
<td>return to work status</td>
</tr>
<tr>
<td></td>
<td>Males %: 72.6</td>
<td>PRE-OP TREATMENT: NR</td>
<td>Rehab regime: NR</td>
<td>satisfaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration: NR</td>
<td>PRE-OP TREATMENT: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tear size: all sizes</td>
<td>Type of treatment: NR</td>
<td>PRE-OP TREATMENT: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dominant shoulder %: NR</td>
<td></td>
<td>PRE-OP TREATMENT: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comorbidities: biceps, labral and/or articular abnormalities in addition to tears (35)</td>
<td></td>
<td>PRE-OP TREATMENT: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Bennett WF, 2003</td>
<td>Recruitment dates: 1997 to 1999</td>
<td>Enrolled: 37</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>The arthroscopic RCR of massive RC tear is effective for decreasing pain and improving the functional status of the shld for most patients.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: prospective cohort treated as before-and-after</td>
<td>Analyzed: 37</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative</td>
<td></td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
<td>• ASES</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2</td>
<td></td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): inferolateral coracoplasty</td>
<td>• percent function</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Enrollment consecutively: yes</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 3 wk</td>
<td>• CMS</td>
<td></td>
</tr>
<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: U</td>
<td>Followup duration, mean (range): 3.2 yr (2-4 yr)</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td>Inclusion criteria: Mass RC tear</td>
<td></td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (wk 3); strengthening (wk 6)</td>
<td>ROM: NR</td>
<td></td>
</tr>
<tr>
<td>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</td>
<td></td>
<td>N: 29</td>
<td>Rehab regime: NR</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 68.2 yr (NR)</td>
<td>GROUP 2</td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Males %: 58.6</td>
<td>Surgical approach: all-arthroscopic</td>
<td>• satisfaction</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Type of surgery: repair</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: mass</td>
<td>Additional procedures: inferolateral coracoplasty</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 86.2</td>
<td>Duration of immobilization: 3 wk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Duration of rehab: NR</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>GROUP 2</td>
<td>Rehab components: passive stretching (wk 3); strengthening (wk 6)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>N: 8</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 63 yr (NR)</td>
<td>PRE-OP TREATMENT: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 75</td>
<td>Duration: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Type of treatment: NR</td>
<td></td>
<td></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 24</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair and debridement</td>
<td>• CMS</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): NR (2-4 yr.)</td>
<td>Type of tear: FTT</td>
<td>Additional procedures (N): acromioplasty (NR)</td>
<td>• ASES</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Exclusion criteria: (1) FTT with involvement of the SS tendon alone, (2) positive Jobe test</td>
<td>Tendon(s) torn: SS</td>
<td>Duration of immobilization: 6 wk.</td>
<td>Pain:</td>
<td>• VAS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 59.9 yr. (NR)</td>
<td>Rehab components: passive stretching–wk. 1-6; strengthening–wk. 6; active-assisted stretching–wk. 6; active stretching–wk. 9;</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Males %: 58.3</td>
<td>Rehab regime: NR</td>
<td>Other:</td>
<td>• percent function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Type of treatment: physical therapy NOS; cortisone injection; NSAID</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: sm, med</td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 79.2</td>
<td>Duration: 3 mo. (min)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Type of treatment:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Bennett WF, 2003</td>
<td>Recruitment dates: 1995 to 1999</td>
<td>Enrolled: 35</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: prospective cohort</td>
<td>Analyzed: 19</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 16</td>
<td>Type of surgery: repair and debridement</td>
<td>- CMS</td>
<td></td>
</tr>
<tr>
<td>category: Operative technique</td>
<td>Follow-up duration, mean (range): NR (2–4 yr)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
<td>ASES</td>
<td>percent function</td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: (1) PTT and FTT of SC tendon, (2) FTT of SS lesion</td>
<td>Type of tear: FTT</td>
<td>Technique: bioabsorbable tacs</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>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</td>
<td>Tendon(s) torn: SS, SC</td>
<td>Duration of immobilization: 3 wk (daytime); 6 wk (nighttime)</td>
<td>ROM: NR</td>
<td></td>
</tr>
<tr>
<td>NOS: 4*/8*</td>
<td>GROUP 1</td>
<td>GROUP 2</td>
<td>Duration of rehab: NR</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rehab components: passive stretching (wk 6); active-assisted stretching (≥wk 6); strengthening (≥wk 6); active stretching (≥wk 9)</td>
<td>Other: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rehab regime: NR</td>
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<td>Pre-OP treatment: NR</td>
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<td>Duration: NR</td>
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<td></td>
<td></td>
<td></td>
<td>Type of treatment: NR</td>
<td></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Bigoni M, 2009</td>
<td>Recruitment dates: Sept 2004 to Sept 2006</td>
<td>Enrolled: 50  Analyzed: NR  Withdrawals: NR</td>
<td>GROUP 1  Surgical approach: all-arthroscopic  Type of surgery: repair and debridement  Additional procedures (N): NR  Technique: side-to-side repair &amp; permanent sutures</td>
<td>HRQL: NR</td>
<td>There was a significant difference in strength between the groups, favouring the tendon-to-bone over the side-to-side technique for arthroscopic repairs.</td>
</tr>
<tr>
<td>Country: Italy</td>
<td>Study design: RCT (parallel)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: NR</td>
<td>Function:  ● CMS  Pain: NR  ROM: NR</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative technique</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: FTT  Tendon(s) torn: SS</td>
<td>Duration of rehab: &gt;6 mo</td>
<td>Strength:  ● IR peak torque %  ● ER peak torque %</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q6</td>
<td>Followup duration, mean (range): 12 mo</td>
<td>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</td>
<td>Rehab components: neutral rotation in sling (day 1–wk 4); passive stretching with pool therapy (≥wk 3); active-assisted stretching (≥wk 6); isometric, isotonic &amp; isokinetic training after full ROM</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Inclusion criteria: (1) age 50–65 year, (2) FTT of SS with an intact SC, (3) healthy contralateral shoulder, (4) concomitant pathology of LHB</td>
<td>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</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROB: High</td>
<td>Exclusion criteria: (1) PTT, (2) mass RC tear, (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</td>
<td>Duration of immobilization: NR</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Duration of rehab: &gt;6 mo</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Rehab components: neutral rotation in sling (day 1–wk 4); passive stretching with pool therapy (≥wk 3); active-assisted stretching (≥wk 6); isometric, isotonic &amp; isokinetic training after full ROM</td>
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<td></td>
<td></td>
<td></td>
<td>Rehab regime: NR</td>
<td></td>
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<td>PRE-OP TREATMENT: NR</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
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</tr>
<tr>
<td>Bishop J, 2006</td>
<td>Recruitment dates: 1996 to 2002</td>
<td>Enrolled: 102</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Open and arthroscopic RCR have similar clinical outcomes.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: Prospective cohort</td>
<td>Analyzed: 72</td>
<td>Surgical approach: open (24); mini-open (8)</td>
<td>Function:</td>
<td>• ASES</td>
</tr>
<tr>
<td>Treatment category: Operative approach</td>
<td>Enrolled consecutively: yes</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair</td>
<td>• CMS</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q6</td>
<td>Followup duration, (endpoint): 1 yr</td>
<td>Type of tear: FTT</td>
<td>Additional procedures (N): distal clavicle resection (4); revision surgery (2); capsular release (all)</td>
<td>Pain:</td>
<td>• VAS</td>
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<tr>
<td>Funding: Government, foundation</td>
<td>Inclusion criteria: FTT confirmed by MRI</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td>ROM: NR</td>
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<tr>
<td>NOS: 5*/8*</td>
<td>Exclusion criteria: (1) glenohumeral arthritis, (2) fracture, (3) osteonecrosis labral pathology; 4) unable/unwilling to undergo MRI</td>
<td>GROUP 1</td>
<td>Duration of rehab: 3–4 mo</td>
<td>Strength:</td>
<td>• flexion</td>
</tr>
<tr>
<td></td>
<td></td>
<td>N: 47</td>
<td>Rehab components: passive stretching (wk 1–6); active stretching (wk ≥6); strengthening (wk 6–12 or 16)</td>
<td>Other:</td>
<td>• external rotation</td>
</tr>
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<td>Age, mean±SD (range): 64 yr (NR)</td>
<td>Rehab regime: NR</td>
<td></td>
<td>• cuff integrity</td>
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<tr>
<td></td>
<td></td>
<td>Males %: NR</td>
<td></td>
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<td></td>
<td></td>
<td>Cause of tear: NR</td>
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<td></td>
<td></td>
<td>Tear size: sm,med, lg, mass (mean: 2.6 cm)</td>
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<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
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<td></td>
<td></td>
<td>Comorbidities: NR</td>
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<tr>
<td>GROUP 2</td>
<td></td>
<td></td>
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<tr>
<td>N: 55</td>
<td>Age, mean±SD (range): 64 yr (NR)</td>
<td>Duration of immobilization: 6 wk</td>
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<tr>
<td>Males %: NR</td>
<td>Cause of tear: NR</td>
<td>Duration of rehab: 3–4 mo</td>
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<td>Tear size: sm, med, lg, mass (mean: 3.0 cm)</td>
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<td>Dominant shoulder %: NR</td>
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<tr>
<td>Comorbidities: NR</td>
<td></td>
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<tr>
<td>PRE-OP TREATMENT: NR</td>
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<tr>
<td>Duration: NR</td>
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<tr>
<td>Type of treatment: NR</td>
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<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boehm TD, 2005</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 100</td>
<td>Group 1 Surgical approach: open</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Germany</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 93</td>
<td>Type of surgery: repair and debridement</td>
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<tr>
<td>Treatment category: Operative technique</td>
<td>Followup duration, mean (range): Group 1: 27 mo (24–30); Group 2: 26 mo (24–29)</td>
<td>Withdrawals: 7</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (9); lateral clavicle resection (40)</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: (1) repairable, nontraumatic FTT (1–5 cm), (2) suitable for direct tendon-to-bone repair</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Suture/anchor type: non-absorbable suture with Mason-Allen technique; side-to-side sutures</td>
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<tr>
<td>Funding: No funding</td>
<td>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</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 6 wk</td>
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<td>ROB: High</td>
<td>Group 1 N: 50</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: 6 wk</td>
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<tr>
<td></td>
<td>Age, mean±SD (range): 56 yr (38–69 yr)</td>
<td>Males %: 72</td>
<td>Rehab components: passive stretching (day 1–wk 6); CPM (day 1–wk 6); active stretching (wk ≥6)</td>
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<td>Cause of tear: degenerative (44), traumatic (5)</td>
<td>Cause of tear: degenerative (49), traumatic (1)</td>
<td>Rehab regime: Frequency–passive stretching, 3x/wk.; active stretching 2x daily; Intensity–CPM, 30 min</td>
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<td></td>
<td>Tear size: sm, med, lg</td>
<td>Tear size: sm, med, lg</td>
<td>GROUP 2 Surgical approach: open</td>
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<td></td>
<td>Dominant shoulder %: NR</td>
<td>Dominant shoulder %: NR</td>
<td>Type of surgery: repair and debridement</td>
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<td>Comorbidities: rupture of long head biceps (4)</td>
<td>Comorbidities: rupture of LHB (2)</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (10); lateral clavicle resection (34)</td>
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<td></td>
<td>GROUP 2 N: 50</td>
<td>Suture/anchor type: absorbable suture with modified Kessler technique; side-to-side sutures</td>
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<tr>
<td></td>
<td>Age, mean±SD (range): 57 yr (41–71 yr)</td>
<td>Suture/anchor type: absorbable suture with modified Kessler technique; side-to-side sutures</td>
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<td></td>
<td>Males %: 64</td>
<td>Duration of immobilization: 6 wk</td>
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<tr>
<td></td>
<td>Cause of tear: degenerative (49), traumatic (1)</td>
<td>Duration of rehab: 6 wk</td>
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<tr>
<td></td>
<td>Tear size: sm, med, lg</td>
<td>Other:</td>
<td></td>
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<tr>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>• pt satisfaction</td>
<td></td>
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<tr>
<td></td>
<td>Comorbidities: rupture of LHB (2)</td>
<td>• pt willingness to have the same surgery again</td>
<td></td>
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<td></td>
<td></td>
<td>• cuff integrity</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Boehm TD, 2005 (continued)</td>
<td></td>
<td></td>
<td><strong>Rehab components:</strong> passive stretching (day 1–wk 6); CPM (day 1–wk 6); active stretching (wk ≥6)</td>
<td><strong>PRE-OP TREATMENT:</strong> NR</td>
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</tr>
<tr>
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<td></td>
<td><strong>Rehab regime:</strong> Frequency–passive stretching, 3x/wk; active stretching, 2x daily; Intensity–CPM, 30 min</td>
<td><strong>Duration:</strong> NR</td>
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<td><strong>Type of treatment:</strong> NR</td>
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<tr>
<td>Country: France</td>
<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean (range): NR Type of tear: FTT Tendon(s) torn: NR</td>
<td>Duration of immobilization: 2–3 wk Recovery of motion</td>
<td>Function: CMS Pain: NR</td>
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<tr>
<td>Treatment category: Operative approach</td>
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<td>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)</td>
<td>Duration of rehab: NR Rehab components: passive stretching (day 1); strengthening (wk ≥6) Rehab regime: Frequency–5x/day; Intensity–5 min.</td>
<td>ROM: flexion (active) external rotation (active) internal rotation external rotation (passive) flexion (passive)</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean±SD (range): 35±7 mo (24–76 mo)</td>
<td>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</td>
<td>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.</td>
<td>Strength: NR</td>
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<tr>
<td>Funding: No funding NOS: 6*/8*</td>
<td>Inclusion criteria: (1) mass, irreparable RC tear; (2) treated with tenotomy or tenodesis</td>
<td></td>
<td>PRE-OP TREATMENT: yes Duration: 6 mo (min) Type of treatment: NR</td>
<td>Other: number of pts satisfied with procedure post-op symptoms related to biceps</td>
<td></td>
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<tr>
<td>Study, Year</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Boileau P, 2005</td>
<td>Recruitment dates: May 1999 to Dec 2001</td>
<td>Enrolled: 65</td>
<td>GROUP 1 Surgical approach: all-arthroscopic</td>
<td>HRQL: NR</td>
<td>Arthroscopic RCR leads to complete tendon healing. Patients with associated delamination of SC and/or IS and &gt;65 yr have significantly lower healing.</td>
</tr>
<tr>
<td>Country: France</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 65</td>
<td>Type of surgery: repair and debridement</td>
<td>Function:</td>
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<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): 2.2 yr (7 mo–20 yr)</td>
<td>• CMS</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
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<td>Type of tear: FTT</td>
<td>• UCLA</td>
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<td>Funding: No funding</td>
<td></td>
<td>Tendon(s) torn: SS</td>
<td>• SST</td>
<td></td>
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<tr>
<td></td>
<td>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</td>
<td>Age, mean±SD (range): 60 yr (29–79 yr)</td>
<td>ROM: NR</td>
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<tr>
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<td>Enrolled consecutively: yes</td>
<td>Males %: 49.2</td>
<td>Strength: NR</td>
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<tr>
<td></td>
<td>Followup duration, mean (range): 29 mo (24–46 mo)</td>
<td>Cause of tear: degenerative (36), traumatic (29)</td>
<td>Other:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: sm, med, lg</td>
<td>• cuff integrity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 76.9</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: biceps pathology (56)</td>
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<tr>
<td></td>
<td>Exclusion criteria: (1) PTT, (2) partial repair, (3) previous operation on involved cuff</td>
<td>Type of treatment: yes</td>
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<tr>
<td></td>
<td></td>
<td>Duration: 6 mo (min)</td>
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<td></td>
<td></td>
<td>Type of treatment: physical therapy NOS, cortisone injection, medication NOS</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Boissonnault</td>
<td>Recruitment dates: May 2002 to Jun 2003</td>
<td>Enrolled: 118</td>
<td>GROUP 1</td>
<td>HRQL:</td>
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<td>WG, 2007</td>
<td>Study design: before- and-after</td>
<td>Analyzed: 86</td>
<td>Surgical approach: open (NR) or all-arthroscopic (NR)</td>
<td>• SF-36</td>
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<td>Country: USA</td>
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<td>Withdrawals: 32</td>
<td>Type of surgery: repair</td>
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<td>Treatment category: Post-op rehabilitation</td>
<td>Duration since symptom onset, mean (range): NR</td>
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<td>Additional procedures (N): NR</td>
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<td>Questions: Q2, Q6</td>
<td>Type of tear: NR</td>
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<tr>
<td>Funding: Professional association</td>
<td>Tendon(s) torn: NR</td>
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<tr>
<td>BA Quality: Consecutive: U Followup: N Outcome assessment: N</td>
<td>GROUP 1 N: 118</td>
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<td>Enrolled consecutively: NR</td>
<td>Age, mean±SD (range): 67±8.6 yr (49–82 yr)</td>
<td>Duration of immobilization: NR</td>
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<tr>
<td>Followup duration, mean±SD (range): 13±5.1 wk (3–28 wk)</td>
<td>Males %: 31.4</td>
<td>Duration of rehab: 12 wk</td>
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<td>Inclusion criteria: (1) recent surgical repair of RC tear + outpatient rehab, (2) &gt;45 yr</td>
<td>Cause of tear: traumatic (86)</td>
<td>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</td>
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<td>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</td>
<td>Tear size: NR</td>
<td>Rehab regime: Frequency– daily; Intensity–2x/day (home program)</td>
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<td></td>
<td>Dominant shoulder %: NR Comorbidities: BMI &gt;25; high blood pressure; degenerative OA; asthma; depression; headache; pneumonia; kidney disease; sinus infection</td>
<td>PRE-OP TREATMENT: yes</td>
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<td></td>
<td></td>
<td>Duration: NR Type of treatment: physical therapy NOS</td>
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</table>

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.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Boszotta H, 2004</td>
<td>Recruitment dates: 1997 to NR</td>
<td>Enrolled: 84</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Austria</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 84</td>
<td>Surgical approach: mini-open</td>
<td>Function:</td>
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<td>Treatment category: Operative</td>
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<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
<td>● CMS</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Enrollment consecutively: No</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N):</td>
<td>● UCLA</td>
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<td>Funding: NR</td>
<td>Followup duration, mean (range): 35 mo (28–44 mo)</td>
<td>Type of tear: NR</td>
<td>acromioplasty (all); biceps tenotomy (7)</td>
<td>Pain: NR</td>
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<td>BA Quality: Consecutive: N</td>
<td>Inclusion criteria: Failed nonoperative tx</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of immobilization: 3–4 wk</td>
<td>ROM: NR</td>
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<tr>
<td>Followup: Y</td>
<td>Exclusion criteria: NR</td>
<td>GROUP 1</td>
<td>Duration of rehab: NR</td>
<td>Strength: NR</td>
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<td>Outcome assessment: U</td>
<td></td>
<td>N: 84</td>
<td>Rehab components: passive stretching (wk 1–3/4); active stretching (wk ≥4)</td>
<td>Other: NR</td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 54.8 yr (32–74 yr)</td>
<td>Rehab regime: NR</td>
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<td></td>
<td>Males %: NR</td>
<td>PRE-OP TREATMENT: yes</td>
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<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration: 3–14 mo (range)</td>
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<td>Tear size: NR</td>
<td>Type of treatment: physical therapy NOS, cortisone injection, NSAID</td>
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<td>Dominant shoulder %: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comorbidities: biceps pathology (32)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
</tr>
<tr>
<td>-------</td>
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<td>-------------------</td>
</tr>
<tr>
<td>Brady B, 2008</td>
<td>Recruitment dates: Nov 2004 to Apr 2005</td>
<td>Enrolled: 18</td>
<td>GROUP 1</td>
<td>HRQL:</td>
<td>A combined aquatic and land-based physical therapy program following surgical RCR has comparable outcomes with a conventional land-based program.</td>
</tr>
<tr>
<td>Country: Australia</td>
<td>Study design (trial type): CCT (parallel)</td>
<td>Analyzed: NR</td>
<td>Duration of immobilization: NR</td>
<td>- WORC index</td>
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</tr>
<tr>
<td>Questions: Q2, Q5</td>
<td>Followup duration (endpoint): 12 wk</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>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)</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td></td>
<td>Type of tear: NR</td>
<td>Rehab regime: Frequency–land, 5x/day; Intensity–land, 10 reps; aqua, 3 sets of 5–10 reps</td>
<td>ROM:</td>
<td></td>
</tr>
<tr>
<td>ROB: High</td>
<td>Inclusion criteria: (1) &gt;18 yr, (2) symptoms &gt;3 mo and &lt;12 mo, (3) transportation for appointments, (4) diagnostic evidence of RC tear</td>
<td>Tendon(s) torn: NR</td>
<td>GROUP 2</td>
<td>flexion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exclusion criteria: NR</td>
<td></td>
<td>Duration of immobilization: NR</td>
<td>external rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Duration of rehab: 12 wk</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rehab components: passive stretching (wk 1–3); active-assisted stretching (wk 4–6); strengthening (wk 10–12)</td>
<td>Other: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Rehab regime: Frequency–5x/day; Intensity–10 reps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>-------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Buess E, 2005</td>
<td>Recruitment dates: Mar 1999 to Feb 2001</td>
<td>Enrolled: 95 (shld: 99)</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Switzerland</td>
<td>Study design: prospective cohort</td>
<td>Analyzed: 92 (shld: 96)</td>
<td>Surgical approach: open (NR), mini-open (NR)</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category:</td>
<td></td>
<td>Withdrawals: 3</td>
<td>Type of surgery: repair and debridement</td>
<td>• SST</td>
<td></td>
</tr>
<tr>
<td>Operative approach</td>
<td></td>
<td>Duration since symptom</td>
<td>Additional procedures (N):</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 24.6</td>
<td>onset, mean (range): NR</td>
<td>biceps /tenodesis (9); SLAP</td>
<td>• VAS</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>mo (15–40 mo)</td>
<td>Type of tear: NR</td>
<td>repair (1); AC resection (5)</td>
<td>ROM:</td>
<td></td>
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<tr>
<td>NOS: 6*/8*</td>
<td>Inclusion criteria:</td>
<td>Tendon(s) torn: Group 1: SS</td>
<td>Duration of immobilization: 6 wk</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) RCR with bony reattachment, (2)</td>
<td>and/or IS, SC</td>
<td>Duration of rehab: NR</td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>surgery performed by the same surgeon</td>
<td>Group 2: SS and/or IS</td>
<td>Rehab components: passive stretching; active stretching</td>
<td>• mean days free of pain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exclusion criteria:</td>
<td>GROUP 1</td>
<td>Rehab regime: NR</td>
<td>• number of pts satisfied</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1) intratendinous sutures, (2) open</td>
<td>N: 29 (shld: 30)</td>
<td>GROUP 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>repair by a different surgeon</td>
<td>Age, mean±SD (range): 48.3 yr</td>
<td>Surgical approach: all-arthroscopic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yr (18–73 yr)</td>
<td>Type of surgery: repair and debridement</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 72.4</td>
<td>Additional procedures (N):</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative</td>
<td>biceps tenodesis (10); SLAP</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(11), traumatic (18)</td>
<td>repair (19) + AC resection (9)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: all sizes</td>
<td>Duration of immobilization: 6 wk</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>Duration of rehab: NR</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Rehab components: active-assisted stretching (wk 1–6)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>GROUP 2</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N: 63 (shld: 66)</td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 53.2 yr</td>
<td>Duration: 3 mo (min)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>yr (20–77 yr)</td>
<td>Type of treatment: physical therapy NOS</td>
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<tr>
<td></td>
<td></td>
<td>Males %: 69.8</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(19), traumatic (44)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: all sizes</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Burks RT, 2009</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 40</td>
<td>GROUP 1</td>
<td>No clinical or MRI differences were seen between patients repaired with a single-row or double-row technique.</td>
<td></td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: RCT (parallel)</td>
<td>Analyzed: 40</td>
<td>Surgical approach: all-arthroscopic</td>
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<tr>
<td>Treatment category: Operative technique</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair and debridement</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): 12 mo</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>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)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding: Industry</td>
<td>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</td>
<td>Type of tear: FTT</td>
<td>Technique: double-row repair</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROB: High</td>
<td>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) irreparable RC tear, (6) WCB, (7) significant SC tear, (8) tear pattern that required a significant side-to-side repair</td>
<td>Tendon(s) torn: SS, SC</td>
<td>Duration of immobilization: &lt;1 wk</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative (15), traumatic (25)</td>
<td>Duration of rehab: &gt;6 mo</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (1 wk); active-assisted stretching (4–6 wk); active stretching (6–8 wk); strengthening (10–12 wk)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N: 20</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 57 yr (41–81 yr)</td>
<td>GROUP 2</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: NR</td>
<td>Surgical approach: all-arthroscopic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: med, lg</td>
<td>Type of surgery: repair and debridement</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>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)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Technique: single-row repair</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GROUP 2</td>
<td>Duration of immobilization: &lt;1 wk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>N: 20</td>
<td>Duration of rehab: &gt;6 mo</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 56 yr (43–74 yr)</td>
<td>Rehab components: passive stretching (1 wk); active-assisted</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Males %: NR</td>
<td></td>
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</tr>
</tbody>
</table>
Burks RT, 2009 (continued)

<table>
<thead>
<tr>
<th>stretching (4–6 wk); active stretching (6–8 wk); strengthening (10–12 wk)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Rehab regime:</strong> NR</td>
</tr>
<tr>
<td><strong>PRE-OP TREATMENT:</strong> yes</td>
</tr>
<tr>
<td><strong>Duration:</strong> NR</td>
</tr>
<tr>
<td><strong>Type of treatment:</strong> NR</td>
</tr>
<tr>
<td>Study</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Caniggia M, 1995</td>
</tr>
<tr>
<td>Country: Italy</td>
</tr>
<tr>
<td>Treatment category: Operative</td>
</tr>
<tr>
<td>Questions: Q2, Q6</td>
</tr>
<tr>
<td>Funding: NR</td>
</tr>
<tr>
<td>BA Quality: Consecutive: N</td>
</tr>
<tr>
<td>Followup: Y</td>
</tr>
<tr>
<td>Outcome assessment: U</td>
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<td></td>
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<tr>
<td>Exclusion criteria: NR</td>
</tr>
</tbody>
</table>

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

Good results in terms of functional recovery can be achieved by arthroscopic RCR. Female sex, upper-limb heavy work, and poor bone quality are negative prognostic factors.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charousset C, 2007</td>
<td>Recruitment dates: Oct 2001 to Mar 2003</td>
<td>Enrolled: 66</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: France</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 61</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
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<td>Treatment category: Operative technique</td>
<td></td>
<td>Withdrawals: 5</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
<td></td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Enrolled consecutively: NR</td>
<td>Duration since symptom onset, mean (range):</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy (9)</td>
<td>ROM: NR</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Followup duration, mean (range): 28.1 mo (24–40 mo)</td>
<td></td>
<td>Technique: double-row anchor; side-to-side suture</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td>ROB: High</td>
<td></td>
<td></td>
<td></td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• time to return to work</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>• number of pts back to work</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>• cuff integrity</td>
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<td>GROUP 1</td>
<td>N: 31</td>
<td>Type of tear: NR</td>
<td>Duration of immobilization: 5 wk</td>
<td>Duration of rehab: NR</td>
<td></td>
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<tr>
<td></td>
<td>Age, mean±SD (range): 60 yr (37–62 yr)</td>
<td>Tendon(s) torn: IS, SC, SS</td>
<td>Duration of rehab: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Males %: 51.6</td>
<td></td>
<td>Rehab components: passive stretching (day 1–5 wk); active stretching (wk ≥6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cause of tear: degenerative (22), traumatic (9)</td>
<td></td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tear size: NR</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Dominant shoulder %: 74.2</td>
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<tr>
<td></td>
<td>Comorbidities: NR</td>
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<td>GROUP 2</td>
<td>N: 35</td>
<td>Type of tear: NR</td>
<td>Duration of immobilization: 5 wk.</td>
<td>Duration of rehab: NR</td>
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<td>Age, mean±SD (range): 58 yr (32–74 yr)</td>
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<td>Males %: 42.9</td>
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<td>Rehab components: passive stretching (day 1–wk 6); active stretching (wk ≥6)</td>
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<td>Cause of tear: degenerative (26), traumatic (9)</td>
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<td>Rehab regime: NR</td>
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<td>Comorbidities: NR</td>
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PRE-OP TREATMENT: yes
Type of treatment: physical therapy NOS; infiltrations, medication NOS
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<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Checchia SL, 2005</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 15</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>The suture involving the RC and the biceps tendon was effective to correct both lesions.</td>
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<td>Country: Brazil</td>
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<td>Analyzed: 15</td>
<td>Surgical approach: all-arthroscopic</td>
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<td>Operative</td>
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<td>Additional procedures (N): acromioplasty (all); labral repair (1); biceps tenodesis (all);</td>
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<td>Duration since symptom onset, mean (range): NR (7 mo.)</td>
<td>resection of distal clavicle (10)</td>
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<td>Questions: Q2, Q5</td>
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<td>Type of tear: FTT</td>
<td>Duration of immobilization: 4–6 wk</td>
<td>• external rotation</td>
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<td>Funding: NR</td>
<td>Followup duration, mean (range): 2.7 yr (20 mo–5.6 mo)</td>
<td>Tendon(s) torn: SS, SS+IS, SS+IS+SC, SS+SC</td>
<td>Duration of rehab: NR</td>
<td>• internal rotation</td>
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<td>BA Quality:</td>
<td>Inclusion criteria: 1) RC tear associated with severe biceps tendon lesions</td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (wk ≥6); active stretching (wk 6–8+)</td>
<td>Strength: NR</td>
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<td>Consecutive: U</td>
<td>Exclusion criteria: 1) self-adherent rupture (no mobility of the biceps tendon)</td>
<td>N: 15</td>
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<td>Followup: Y</td>
<td>Age, mean±SD (range): 62 yr (41–80 yr)</td>
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<td>Duration: NR</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: NR</td>
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<td>Comorbidities: SLAP lesion (1); biceps tendon: dislocation (6); subluxated (2); severe incomplete tear (7)</td>
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<td>Country: USA Study design: before-and-after</td>
<td>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</td>
<td>Enrolled consecutively: yes</td>
<td>Rehabilitation components: passive stretching (day 2–wk 4/6); active-assisted stretching and strengthening (wk 4/6); strengthening (≥3 mo) Rehabilitation regime: NR</td>
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<td>Treatment category: Operative questions: Q2, Q5, Q6 Funding: No funding</td>
<td>Followup duration, mean (range): 13.4 yr (2–22 yr)</td>
<td>Type of tear: degenerative (43), traumatic (62) Tear size: all sizes Dominant shoulder %: NR Comorbidities: mild glenohumeral arthritis (3); biceps pathology (44)</td>
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<td>Exclusion criteria: NR</td>
<td>Cause of tear:</td>
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<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 47 (shld: 49)</td>
<td>Surgical approach: all-arthroscopic</td>
<td>All outcomes improved after a short term followup after arthroscopic RCR.</td>
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<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 6 shld</td>
<td>Type of surgery: repair</td>
<td>Significant differences were present in age, active ROM, and strength between intact and retear group.</td>
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<td>Duration since symptom onset, mean (range): 17 mo (2 mo–16.4 yr)</td>
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<td>Duration of immobilization: 4 wk</td>
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<td>Outcome assessment: Y</td>
<td>N: 47 (shld: 49)</td>
<td>Rehab components: passive stretching (day 1–wk 4); active-assisted stretching (wk 4–6); strengthening (wk 6–12)</td>
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<td>Age, means±SD (range): 57 yr (34–80 yr)</td>
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<td>Males %: 59.6</td>
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<td>Duration: NR</td>
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<td>Dominant shoulder %: 74.5</td>
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<td>Comorbidities: biceps pathology (23)</td>
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<td>Country: UK</td>
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<td></td>
<td></td>
<td>Withdrawals: NR</td>
<td>Type of surgery: repair</td>
<td>• CMS</td>
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<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
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<td>Type of tear: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td>• OSS</td>
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<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
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<td>Rehab components: NR</td>
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<td>Surgical approach: all-arthroscopic</td>
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<td>Type of surgery: repair</td>
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<td>Additional procedures (N): NR</td>
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<td>Duration of immobilization: 6 wk</td>
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<td>Rehab regime: NR</td>
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<td>Type of treatment: NR</td>
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<th>Study</th>
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<td>Enrolled: 123</td>
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<td>Arthroscopic RCR is comparable with the mini-open repair with well correlated postoperative recovery rates.</td>
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<td>Type of surgery: repair</td>
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<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
<td>• DASH</td>
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<td>Type of tear: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td>• OSS</td>
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<td>Duration of rehab: NR</td>
<td>Pain: NR</td>
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<td>Rehab components: NR</td>
<td>ROM: NR</td>
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<td>Surgical approach: all-arthroscopic</td>
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<td>Type of surgery: repair</td>
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<td>Additional procedures (N): NR</td>
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<td>Duration of immobilization: 6 wk</td>
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<td>Type of treatment: NR</td>
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<td>Participant characteristics</td>
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<td>Author conclusions</td>
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<td>Cools A, 2006</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 53</td>
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<td>HRQL: NR</td>
<td>Shoulder function is not completely normalised, although significant strength gains are present 18 mo after RCR.</td>
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<td>Country: Belgium</td>
<td>Study design: prospective cohort treated as before-and-after</td>
<td>Analyzed: 53</td>
<td>Surgical approach: open</td>
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<td>Exclusion criteria: (1) prior surgery to the shld, (2) neurologic pathology</td>
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<td>Duration of rehab: &gt;12 wk</td>
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<td>Rehab components: strengthening (wk 1–12)</td>
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<td>Age, mean±SD (range): 57.2±9.8 yr</td>
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<td>Males %: 45.8</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: sm, med, lg</td>
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<td>Dominant shoulder %: all groups: 79.2</td>
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<td>Males %: 44.8</td>
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<td>Author conclusions</td>
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<td>Country: NR</td>
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<td>Surgical approach: open RCR</td>
<td>Function: CMS</td>
<td>Isolated SS FTT can be treated with open or arthroscopic repair but open repair is associated with increased progression of fatty degeneration.</td>
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<td>NOS: 5/8*</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>GROUP 1</td>
<td>Other:</td>
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<td>Type of treatment: repair</td>
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<td>• fatty infiltration</td>
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<td></td>
<td>Duration of immobilization: NR</td>
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<td>Duration of rehab: NR</td>
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<td></td>
<td>Rehabilitation: NR</td>
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<td>PRE-OP TREATMENT: NR</td>
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<td>Duration: NR</td>
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<td>Type of treatment: NR</td>
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<tr>
<td>Study Design</td>
<td>Participant Characteristics</td>
<td>Treatment Characteristics</td>
<td>Outcomes Reported</td>
<td>Author Conclusions</td>
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<td><strong>Cummins CA, 2003</strong></td>
<td><strong>Recruitment dates:</strong> Sept 1999 to May 2000</td>
<td><strong>Enrolled:</strong> 27</td>
<td><strong>GROUP 1</strong></td>
<td><strong>HRQL:</strong> NR</td>
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<td><strong>Country:</strong> USA</td>
<td><strong>Study design:</strong> Prospective cohort</td>
<td><strong>Ana lysis:</strong> 27</td>
<td><strong>Surgical approach:</strong> open</td>
<td><strong>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.</strong></td>
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<td><strong>Treatment category:</strong> Operative technique</td>
<td><strong>Withdrawals:</strong> 0</td>
<td><strong>Type of surgery:</strong> repair and debridement</td>
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<td><strong>Questions:</strong> Q2, Q5</td>
<td><strong>Duration since symptom onset, mean (range):</strong> NR</td>
<td><strong>Additional procedures (N):</strong> acromioplasty (all)</td>
<td><strong>● CMS</strong></td>
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<td><strong>Funding:</strong> NR</td>
<td><strong>Type of tear:</strong> NR</td>
<td><strong>Technique:</strong> Mitek metal RC suture anchors; mattress stitch configuration</td>
<td><strong>● Shoulder overall function rating</strong></td>
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<td><strong>NOS:</strong> 5*/8*</td>
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<td><strong>Exclusion criteria:</strong> NR</td>
<td><strong>GROUP 1</strong></td>
<td><strong>Duration of rehab:</strong> NR</td>
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<td></td>
<td><strong>N:</strong> 18</td>
<td><strong>Rehab components:</strong> NR</td>
<td><strong>● abduction</strong></td>
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<td><strong>Age, mean±SD (range):</strong> 63±8 yr (NR)</td>
<td><strong>Rehab regime:</strong> NR</td>
<td><strong>Strength:</strong> NR</td>
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<td></td>
<td><strong>Males %:</strong> 66.7</td>
<td><strong>GROUP 2</strong></td>
<td><strong>Other:</strong> NR</td>
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<td><strong>Cause of tear:</strong> NR</td>
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<td><strong>Duration of treatment:</strong> NR</td>
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<td><strong>Tear size:</strong> mean: 1.9 cm²</td>
<td><strong>Type of surgery:</strong> repair and debridement</td>
<td><strong>Type of treatment:</strong> NR</td>
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<td><strong>Dominant shoulder %:</strong> NR</td>
<td><strong>Additional procedures (N):</strong> acromioplasty (all)</td>
<td><strong>PRE-OP TREATMENT:</strong> NR</td>
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<td><strong>Comorbidity:</strong> NR</td>
<td><strong>Technique:</strong> headed bio-corkscrews</td>
<td><strong>Duration:</strong> NR</td>
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<td><strong>Type of treatment:</strong> NR</td>
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<td><strong>Type of treatment:</strong> NR</td>
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<td><strong>Rehab regime:</strong> NR</td>
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<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Davidson PA, 2000</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 63 (shld: 67)</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Increased tension repairs are associated with poor functional outcomes.</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair and debridement</td>
<td>Pain: NR</td>
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<td>Questions: Q2, Q6</td>
<td>Duration of immobilization: NR</td>
<td>Type of tear: FTT</td>
<td>Additional procedures (N): acromioplasty–open (30), all-arthroscopic (42); distal clavicle resection (13)</td>
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<td>Funding: NR</td>
<td>Duration of rehab: NR</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
<td>Strength: NR</td>
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<td>BA Quality: Consecutive: Y</td>
<td>Rehab components: NR</td>
<td>FOLLOW-UP TREATMENT: NR</td>
<td>Rehab regime: NR</td>
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<td>Followup U</td>
<td>Other: NR</td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
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<tr>
<td>Outcome assessment: U</td>
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</table>

Enrolled: 63 (shld: 67)
Analyzed: 63 (shld: 67)
Withdrawals: 0

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

Increased tension repairs are associated with poor functional outcomes.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tbody>
<tr>
<td>De Carli A, 2006</td>
<td>Recruitment dates: Oct 2001 to Mar 2004</td>
<td>Enrolled: 30</td>
<td>GROUP 1</td>
<td></td>
<td>Surgical tx shows better overall results for strength and function than ESWT.</td>
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<tr>
<td>Country: Italy</td>
<td>Study design: RCT (parallel)</td>
<td>Analyzed: NR</td>
<td>Surgical approach: mini-open</td>
<td>HRQL: NR</td>
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<tr>
<td>Treatment category: Nonoperative vs. operative</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
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<td>Questions: Q4</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
<td>• ASES</td>
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<td>Funding: Industry</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: NR</td>
<td>• CMS</td>
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<td>ROB: High</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
<td>• UCLA</td>
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<td>Inclusion criteria: (1) complete RCT</td>
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<td>Rehab components: NR</td>
<td>Pain: NR</td>
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<tr>
<td>Exclusion criteria: NR</td>
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<td>Rehab regime: NR</td>
<td>ROM: NR</td>
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<tr>
<td>GROUP 1</td>
<td>N: 20</td>
<td></td>
<td>Strength: NR</td>
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<tr>
<td>GROUP 2</td>
<td>N: 20</td>
<td></td>
<td>Other: NR</td>
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<tr>
<td></td>
<td>Age, mean±SD (range): 56 yr (43–74) yr</td>
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<tr>
<td></td>
<td>Males %: NR</td>
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<td></td>
<td>Cause of tear: NR</td>
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<td></td>
<td>Tear size: med, lg</td>
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<td>Dominant shoulder %: NR</td>
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<td></td>
<td>Comorbidities: NR</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>DeFranco MJ, 2007</td>
<td>Recruitment dates: May 2000 to Mar 2003</td>
<td>Enrolled: 30 Analyzed: 30 Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): NR Type of tear: FTT (22); PTT (8) Tendon(s) torn: SS</td>
<td>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</td>
<td>HRQL: • SF-36</td>
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<tr>
<td></td>
<td>Country: USA Study design: before-and-after</td>
<td>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</td>
<td>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</td>
<td>Function: • PENN Pain: NR ROM: NR Strength: NR Other: • actual physical activity • cuff integrity</td>
<td></td>
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</tbody>
</table>


<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tbody>
<tr>
<td>Delbrouck C, 2003</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 79 (shld: 84) Analyzed: 71 (shld: 76) Withdrawals: 8</td>
<td>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</td>
<td>HRQL: NR Function: NR Pain: • VAS ROM: • abduction • flexion • external rotation Strength: NR Other: NR</td>
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<td>Country: France</td>
<td>Study design: Prospective cohort</td>
<td>Duration since symptom onset, mean (range): NR</td>
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<td>Treatment category: Post-op rehabilitation</td>
<td>Enrolled consecutively: NR Followup duration (endpoint): 60 days</td>
<td>Type of tear: FTT (71) PTT (13) Tendon(s) torn: NR</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Funding: NR NOS: 2*/8*</td>
<td>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 %: NS Comorbidities: NR</td>
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<td>Exclusion criteria: (1) RC tear due to overuse, (2) surgical RCR by simple suture or “systeme d’ancrape”</td>
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<td>Inclusion criteria: (1) non-operated RC tear, (2) isolated acromioplasty, (3) isolated ruptures of SC, (4) tendon transfers or deltoide flaps, (5) retractable capsularis preoperative, (6) previous shld surgery, (7) associated surgical procedures (prosthesis Rx for instability), (8) RC tear associated with fractures</td>
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<td>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 %: NS Comorbidities: NR</td>
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<td>GROUP 1</td>
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<td>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</td>
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<td>Surgical approach: open (14); mini-open (7); all-arthroscopic (2) Type of surgery: repair Additional procedures (N): acromioplasty (23); labral repair (NR); biceps tenotomy/tenodesis (16); manipulation (NR)</td>
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<td>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</td>
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<td>PRE-OP TREATMENT: NR Duration: NR Type of treatment: NR</td>
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</table>

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.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Country: USA</td>
<td>Study design: prospective cohort treated as before-and-after</td>
<td>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)</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (2); biceps debridement (2)</td>
<td>Function: ASES Pain: VAS</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: FTT Tendon(s) torn: Group 1: SS Group 2: SS, IS, SS</td>
<td>Duration of immobilization: 6 wk</td>
<td>ROM: forward flexion, external rotation, internal rotation</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 3.2 yr (2–5 yr)</td>
<td>Group 1</td>
<td>Duration of rehab: NR Rehab components: passive stretching–post operative; strengthening (wk 6) Rehab regime: NR</td>
<td>Strength: NR</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: FTT involved at least the full width of the SS tendon insertion</td>
<td>Group 2</td>
<td>Surgical approach: all-arthroscopic repair</td>
<td>Other: satisfaction, cuff integrity</td>
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<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: Y</td>
<td>Exclusion criteria: (1) mass tears, (2) previous shld surgery, (3) glenohumeral OA, (4) adhesive capsulitis, (5) osacromidale requiring stabilization</td>
<td>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</td>
<td>Duration of immobilization: 6 wk.</td>
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<td>GROUP 1</td>
<td>Type of surgery: repair Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (1)/4; biceps debridement (3)</td>
<td>Duration of rehab: NR Rehab components: passive stretching–post operative; strengthening (wk 8) Rehab regime: NR</td>
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<td>GROUP 2</td>
<td>Surgical approach: all-arthroscopic repair</td>
<td>PRE-OP TREATMENT: yes</td>
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<td>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</td>
<td>Type of treatment: physical therapy NOS, cortisone injection, NSAID</td>
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<thead>
<tr>
<th>Study</th>
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<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Deutsch A, 2007</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 46&lt;br&gt;Analysed: 41&lt;br&gt;Withdrawals: 5</td>
<td>GROUP 1&lt;br&gt;Surgical approach: all-arthroscopic repair and debridement&lt;br&gt;Type of surgery: repair and debridement&lt;br&gt;Additional procedures (N): acromioplasty (39); SLAP repair (5); biceps tenodesis (3); AC joint resection (18)&lt;br&gt;Duration of immobilization: 6 wk&lt;br&gt;Duration of rehab: NR&lt;br&gt;Rehab components: passive stretching (day 1–wk 6); active stretching and strengthening (wk 6–3 mo); strengthening (abduction, flexion) (3–6 mo)&lt;br&gt;Rehab regime: NR&lt;br&gt;PRE-OP TREATMENT: yes&lt;br&gt;Duration: 6 mo (min)&lt;br&gt;Type of treatment: physical therapy NOS, cortisone injection, NSAID</td>
<td>HRQL: NR&lt;br&gt;Function: ASES&lt;br&gt;Pain: VAS&lt;br&gt;ROM: flexion, internal rotation, external rotation&lt;br&gt;Strength: strength&lt;br&gt;Other: NR</td>
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<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Duration since symptom onset, mean (range): Group 1: 10 mo (6 mo–3 yr)&lt;br&gt;Type of tear: PTT&lt;br&gt;Tendon(s) torn: SS</td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Enrolleed consecutively: yes</td>
<td>Duration since symptom onset, mean (range): Group 1: 10 mo (6 mo–3 yr)&lt;br&gt;Type of tear: PTT&lt;br&gt;Tendon(s) torn: SS</td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): 3.2 yr (2–4.2 yr)</td>
<td>Inclusion criteria: Arthroscopic repair for PTT of SS that involved &gt;50% of tendon thickness</td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
<td></td>
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</tr>
<tr>
<td>Funding: NR</td>
<td></td>
<td>Exclusion criteria: (1) previous surgery, (2) adhesive capsulitis, (3) concomitant glenohumeral instability</td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
<td></td>
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<tr>
<td>BA Quality: Consecutive: Y</td>
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<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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<tr>
<td>Followup: Y</td>
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<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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<tr>
<td>Outcome assessment: Y</td>
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<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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</tr>
<tr>
<td>GROUP 1</td>
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<td></td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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<tr>
<td>N: 46</td>
<td></td>
<td></td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
<td></td>
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</tr>
<tr>
<td>Age, mean±SD (range): 49 yr (23–70 yr)</td>
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<td></td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
<td></td>
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</tr>
<tr>
<td>Males %: 56.5</td>
<td></td>
<td></td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
<td></td>
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<tr>
<td>Cause of tear: degenerative (29), traumatic (12)</td>
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<td></td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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<tr>
<td>Tear size: mean: 0.9 cm</td>
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<td></td>
<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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<tr>
<td>Dominant shoulder %: 54.3</td>
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<td>Arthroscopic RCR resulted in excellent pain relief, strength, ROM, return of shoulder function and a high degree of pt satisfaction.</td>
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E-34
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<th>Study</th>
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<th>Participant characteristics</th>
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<th>Outcomes reported</th>
<th>Author conclusions</th>
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<td>Questions: Q2, Q5, Q6</td>
<td>Study design: prospective cohort treated as before-and-after</td>
<td>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)</td>
<td>Duration of immobilization: NR</td>
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<td>BA Quality: Consecutive: N Followup: Y Outcome assessment: N</td>
<td>Followup duration, mean (range): 3.6 yr (2–7.3 yr)</td>
<td>Tendon(s) torn: SS, IS</td>
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<td>• flexion</td>
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<td>Inclusion criteria: FTT</td>
<td>GROUP 1</td>
<td>Rehab regime: NR</td>
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<td>Exclusion criteria: Pts not ideal for arthroscopic subacromial decompression as determined by investigator</td>
<td>N: 40</td>
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<td>Strength:</td>
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<td>Age, mean±SD (range): 67.9 yr (41–89 yr)</td>
<td>Surgical approach: allarthroscopic</td>
<td>• flexion (grade)</td>
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<td>Males %: 60</td>
<td>Type of surgery: repair and debridement</td>
<td>• external rotation (grade)</td>
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<td>Other: NR</td>
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<td>Tear size: all sizes</td>
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<td>Dominant shoulder %: 50</td>
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<td>Comorbidities: NR</td>
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<td>N: 10</td>
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<td>Males %: 60</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: sm, med</td>
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<td></td>
<td>Dominant shoulder %: 60</td>
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<td></td>
<td>Comorbidities: NR</td>
<td></td>
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<td>N: 8</td>
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<td>Surgical approach: allarthroscopic</td>
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<td>Age, mean±SD (range): 66.7 yr (41–89 yr)</td>
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<td>Type of surgery: repair and debridement</td>
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<td>Males %: 87.5</td>
<td>Additional procedures (N): acromioplasty (all)</td>
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<td>Dominant shoulder %: 50</td>
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<tr>
<td>Ellman H, 1993 (continued)</td>
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<td>Comorbidities: NR</td>
<td>Duration of immobilization: NR</td>
<td>Duration of rehab: NR</td>
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<td>Favard L, 2009</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 192</td>
<td>Surgical approach: open (68), all-arthroscopic (34)</td>
<td>HRQL: NR</td>
<td>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.</td>
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<tr>
<td>Country: France</td>
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<td>Funding: No funding</td>
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<td>Type of tear: NR</td>
<td>Duration of rehab: NR</td>
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<td>NOS: 2*/8*</td>
<td>Exclusion criteria: (1) ≥ stage III glenohumeral or acromiohumeral arthritis</td>
<td>Tendon(s) torn: NR</td>
<td>Rehab components: NR</td>
<td>Other: NR</td>
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<td>Age, mean±SD (range): 55.2±6.2 yr</td>
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<td>Duration of rehab: NR</td>
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<td>Cause of tear: NR</td>
<td>Rehab components: NR</td>
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<td></td>
<td>Tear size: mass</td>
<td>Rehab regime: NR</td>
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<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: NR</td>
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<td>N: 89</td>
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<td>Age, mean±SD (range): 57.1±5.5 yr</td>
<td>Duration of immobilization: NR</td>
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<td></td>
<td>Males %: NR</td>
<td>Duration of rehab: NR</td>
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<td>Cause of tear: NR</td>
<td>Rehab components: NR</td>
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<td>Tear size: mass</td>
<td>Rehab regime: NR</td>
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<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: NR</td>
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<tr>
<td></td>
<td>Type of treatment: NR</td>
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<td>Study</td>
<td>Study design</td>
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<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Fenlin JM Jr, 2002</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 20, Analyzed: 19, Withdrawals: 1</td>
<td>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</td>
<td>HRQL: NR Function: • modified UCLA Pain: NR ROM: NR Strength: NR Other: NR</td>
<td>In the short term, tuberoplasty can provide pain relief and improved function in patients with massive irreparable RC tears.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>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</td>
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<td>Treatment category: Operative</td>
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<td>Followup duration, mean (range): 3.4 yr (7 mo–4.8 yr)</td>
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<td>Questions: Q2, Q5</td>
<td>Inclusion criteria: Mass, irreparable RC tear with superior humeral head migration</td>
<td>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</td>
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<td>Exclusion criteria: (1) glenohumeral arthritis, (2) ability to re-establish functional rotator cable, (3) RC tear arthropathy</td>
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<td>BA Quality: Consecutive: U Followup: Y Outcome assessment: Y</td>
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<td>Franceschi F, 2008</td>
<td>Recruitment dates: Jan 1999 to Dec 2003</td>
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<td>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.</td>
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<td>Country: UK</td>
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<td>Duration since symptom onset, mean (range): ≥ 3 mo (NR)</td>
<td>Additional procedures (N): acromioplasty (7); labral repair (NR)</td>
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<td>Tendon(s) torn: SS, SS+IS</td>
<td>Duration of rehab: 6 mo.</td>
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<td>Followup duration, mean (range): 5.2 yr (2.9–7.8 yr)</td>
<td>Rehab components: passive stretching (day 1–6 wk); active-assisted stretching (wk 6); strengthening (wk 10/12–6 mo)</td>
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<td>Age, mean±SD (range): 61.8 yr (51–79 yr)</td>
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<td>Dominant shoulder %: 71.9</td>
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<td>Franceschi F, 2007</td>
<td>Recruitment dates: Feb to Sep 2004</td>
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<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Comparable clinical outcomes were present at 2 yr for single and double-row techniques.</td>
</tr>
<tr>
<td>Country: Italy</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 52</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
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<tr>
<td>Treatment category: Operative technique</td>
<td>Withdrawals: 8</td>
<td>Type of surgery: repair and debridement</td>
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<td>Pain: NR</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Duration since symptom onset, mean (range): 3 mo (NR)</td>
<td>Additional procedures (N): NR</td>
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<td>ROM:</td>
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<tr>
<td>Funding: NR</td>
<td>Type of tear: FTT</td>
<td>Technique: double-row mattress suture, anchors, side-to-side sutures</td>
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<td>• flexion</td>
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<tr>
<td>ROB: High</td>
<td>Tendon(s) torn: SS, SS+IS, SS+SC</td>
<td>Duration of immobilization: 6 wk</td>
<td></td>
<td>• external rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (wk 1–10); strengthening (wk 10/12–6 mo)</td>
<td></td>
<td>• internal rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>N: 30</td>
<td>Rehab regime: NR</td>
<td></td>
<td>Strength: NR</td>
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</tr>
<tr>
<td></td>
<td>Age, mean (range): 59.6 yr (45–80 yr)</td>
<td>GROUP 2</td>
<td></td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Males %: 53.3</td>
<td>Surgical approach: all-arthroscopic</td>
<td></td>
<td>• cuff integrity</td>
<td></td>
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<td></td>
<td>Cause of tear: NR</td>
<td>Type of surgery: repair and debridement</td>
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<tr>
<td></td>
<td>Tear size: lg, mass</td>
<td>Additional procedures (N): NR</td>
<td></td>
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<tr>
<td></td>
<td>Dominant shoulder %: 63.3</td>
<td>Technique: single-row mattress suture, anchors</td>
<td></td>
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<td></td>
<td>Comorbidities: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>GROUP 2</td>
<td>Rehab components: passive stretching (wk 1–10); strengthening (wk 10 or 12–26)</td>
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<td></td>
<td>N: 30</td>
<td>Rehab regime: NR</td>
<td></td>
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<td></td>
<td>Age, mean±SD (range): 63.5 yr (43–76 yr)</td>
<td>PRE-OP TREATMENT: yes</td>
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<td>Males %: 40</td>
<td>Duration: NR</td>
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<td>Cause of tear: NR</td>
<td>Type of treatment: physical therapy</td>
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<td></td>
<td>Tear size: lg, mass</td>
<td>NOS, cortisone injection, NSAID</td>
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<td>Dominant shoulder %: 66.7</td>
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<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Franceschi F, 2007</td>
<td>Recruitment dates: 1999 to 2001</td>
<td>Enrolled: 22</td>
<td>HRQL: NR</td>
<td>No difference was found between detaching and not detaching the biceps after including it in the RCR.</td>
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<td>Country: Italy</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 22</td>
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<td>• UCLA</td>
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<td>Questions: Q2, Q5</td>
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<td>Duration since symptom onset, mean (range): NR</td>
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<td>Funding: NR</td>
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<td>Type of tear: FTT</td>
<td>ROM:</td>
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<td>ROB: High</td>
<td></td>
<td>Tendon(s) torn: SS, IS, SC</td>
<td>• flexion</td>
<td></td>
<td></td>
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<tr>
<td>Inclusion criteria:</td>
<td></td>
<td>GROUP 1</td>
<td>• internal rotation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(1) RC repair with severe associated bicep tendon lesion, (2) failure of nonoperative tx</td>
<td></td>
<td></td>
<td>• external rotation</td>
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<td>Exclusion criteria: NR</td>
<td></td>
<td>Surgical approach: all-arthroscopic</td>
<td>Strength: NR</td>
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<tr>
<td></td>
<td></td>
<td>Type of surgery: repair</td>
<td>Other: NR</td>
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<tr>
<td></td>
<td></td>
<td>Additional procedures (N): acromioplasty (all); biceps tenodesis (all)</td>
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<tr>
<td></td>
<td></td>
<td>Duration of immobilization: 6 wk</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Duration of rehab: 6 mo</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Rehab components: passive stretching (day 1–wk 6); active-assisted stretching (wk 6–10/12); strengthening (wk 10/12–6 mo)</td>
<td></td>
<td></td>
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<td>Rehab regime: NR</td>
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<td></td>
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<td>GROUP 2</td>
<td></td>
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<td></td>
<td></td>
<td>Surgical approach: all-arthroscopic</td>
<td></td>
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<td>Type of surgery: repair</td>
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<td>Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (all)</td>
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<td>Duration of immobilization: 6 wk</td>
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<td>Rehab components: passive stretching (day 1–wk 6); active-assisted stretching (wk 6–10/12); strengthening (wk 10/12–6 mo)</td>
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<td>Rehab regime: NR</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Duration: NR</td>
<td></td>
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<td></td>
<td>Type of treatment: physical therapy NOS, cortisone injection, NSAID, rest</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Fuchs B, 2006</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 32</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Direct, open repair of a complete isolated tear of one tendon resulted in significant improvement in clinical and structural measures.</td>
</tr>
<tr>
<td>Country: Switzerland</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 32</td>
<td>Surgical approach: open</td>
<td>Function:</td>
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<td>Treatment category: Operative</td>
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<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
<td>CMS</td>
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<td>Questions: Q2, Q5, Q6</td>
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<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N):</td>
<td>Pain:</td>
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<td>Funding: No funding</td>
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<td>Type of tear: FTT</td>
<td>capsulectomy (all)</td>
<td>VAS (15 points)</td>
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<td>BA Quality:</td>
<td>Enrolled consecutively: yes</td>
<td>Tendon(s) torn: SS, SC</td>
<td>Duration of immobilization: 6 wk.</td>
<td>ROM:</td>
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<td>Consecutive: Y</td>
<td>Followup duration, mean (range): 3.2 yr (2–4.4 yr)</td>
<td>GROUP 1</td>
<td>Duration of rehab: NR</td>
<td>flexion (active)</td>
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<tr>
<td>Followup: Y</td>
<td>Inclusion criteria: (1) single RC tendon FTT, (2) pain and/or disability following ≥3 mo nonoperative tx, (3) use of arm at or above head level, (4) use of an abduction brace for 6 wk postoperative</td>
<td>N: 32</td>
<td>Rehab components: passive stretching immediately post operative; active stretching (wk 6)</td>
<td>abduction (active)</td>
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<tr>
<td>Outcome assessment: U</td>
<td>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</td>
<td>Age, mean±SD (range): 59 yr (40–75 yr)</td>
<td>Rehab regime: NR</td>
<td>internal rotation (active)</td>
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<td></td>
<td></td>
<td>Males %: 65.6</td>
<td>PRE-OP TREATMENT: yes</td>
<td>external rotation (active)</td>
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<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration: 3 mo (min)</td>
<td>Strength:</td>
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<tr>
<td></td>
<td></td>
<td>Tear size: NR</td>
<td>Type of treatment: NR</td>
<td>abduction strength (kilos)</td>
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<td></td>
<td></td>
<td>Dominant shoulder %: 71.9</td>
<td></td>
<td>abduction strength (points)</td>
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<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td></td>
<td>Other:</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>activities of daily living</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>cuff integrity</td>
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E-42
<table>
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<tr>
<th>Study</th>
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<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Gartsman GM, 2004</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 93</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Arthroscopic subacromial decompression does not appear to change the functional outcome after arthroscopic RCR.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 93</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
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<td>Treatment category: Operative approach</td>
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<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
<td>● ASES</td>
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<td>Questions: Q2</td>
<td>Followup duration, mean±SD (range): 15.6±3.3 mo (NR)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N):</td>
<td>Pain: NR</td>
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<td>Inclusion criteria:</td>
<td>Type of tear: FTT</td>
<td>acromioplasty (all)</td>
<td>ROM: NR</td>
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<tr>
<td>ROB: High</td>
<td>(1) isolated, repairable SS tendon FTT, (2) type 2 acromion</td>
<td>Tendon(s) torn: SS</td>
<td>Duration of immobilization: 6 wk</td>
<td>Strength: NR</td>
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</tr>
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<td>Exclusion criteria:</td>
<td>GROUP 1</td>
<td>Group 1</td>
<td>Rehab regime: NR</td>
<td>Other: NR</td>
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<td></td>
<td>(1) type 1/3 acromion, (2) two-tendon tears (3) PTT, (4) irreparable tears, (5) concomittant procedure, (6) WCB claim, (7) prior surgery</td>
<td>N: 47</td>
<td>Duration of rehab: NR</td>
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<td>Age, mean±SD (range): 59.3 yr (39–81 yr)</td>
<td>Rehab components: CPM (day 1–wk 2); active stretching (wk 2–6); strengthening (wk 12 onward)</td>
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<td>Males %: 57.4</td>
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<td></td>
<td></td>
<td>Cause of tear: mean: 2.1 cm</td>
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<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
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<td></td>
<td>Comorbidities: NR</td>
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<td>GROUP 2</td>
<td>N: 46</td>
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<td>Age, mean±SD (range): 60 yr (37–79 yr)</td>
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<td>Males %: 52.2</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: mean: 2.3 cm</td>
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<td>Dominant shoulder %: NR</td>
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<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td></td>
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<tr>
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<td>PRE-OP TREATMENT:</td>
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<tr>
<td></td>
<td>Duration: NR</td>
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<td>Type of treatment: NR</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
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<td>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</td>
<td>Function: CMS UCLA ASES</td>
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<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
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<td>Pain: NR ROM: NR Strength: NR Other: NR</td>
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<td>Questions: Q2, Q6</td>
<td>Followup duration, mean (range): 12.7 mo (11–21 mo)</td>
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<td>Funding: No funding</td>
<td>Inclusion criteria: 1) reparable FTT of one or more tendons; 2) verified at operation</td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: N</td>
<td>Exclusion criteria: 1) previous shld operation; 2) PTT; 3) irreparable tears; 4) WCB claim; 5) acute tear repaired &lt;3 mo after injury</td>
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<td>GROUP 1 N: 50 Age, mean±SD (range): 61 yr (37–78 yr) Males %: 52 Cause of tear: NR</td>
<td>Type of tear: FTT Tendon(s) torn: SS, SS+IS, SS+IS+TM, SS+IS+SC, SS+SC</td>
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<td>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</td>
<td></td>
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<td>Type of treatment: physical therapy, cortisone injection, NSAID</td>
<td></td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td><strong>Country:</strong> USA</td>
<td><strong>Study design:</strong> before-and-after</td>
<td>Analyzed: 33</td>
<td>Surgical approach: open</td>
<td>Open operative debridement and decompression of irreparable tears of RC showed improvements in functional scores.</td>
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<td><strong>Treatment category:</strong> Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: debidement</td>
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<td><strong>Questions:</strong> Q2, Q5, Q6</td>
<td><strong>Followup duration, mean (range):</strong> 5.3 yr (4–9.8 yr)</td>
<td>Duration since symptom onset, mean (range): 17 mo (6 mo–8 yr)</td>
<td>Additional procedures (N):</td>
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<td><strong>Funding:</strong> NR</td>
<td><strong>Type of tear:</strong> FTT</td>
<td><strong>Duration of immobilization:</strong> NR</td>
<td>acromioplasty (all); biceps tenotony/tenodesis (1)/(1); resection of greater tuberosity (7)</td>
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<tr>
<td><strong>BA Quality:</strong> Consecutive: Y Followup: Y</td>
<td><strong>Tendon(s) torn:</strong> SS+IS, SS+SC</td>
<td><strong>Duration of rehab:</strong> NR</td>
<td><strong>Rehab components:</strong> passive stretching (day 1 until max movement achieved); active stretching (wk 3); strengthening (wk 6 until pain absent)</td>
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<td><strong>Outcome assessment:</strong> N</td>
<td><strong>GROUP 1</strong> N: 33</td>
<td><strong>Rehab regime:</strong> NR</td>
<td><strong>PRE-OP TREATMENT:</strong> yes</td>
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<td><strong>Age, mean±SD (range):</strong> 62 yr (42–77 yr)</td>
<td><strong>Duration:</strong> NR</td>
<td><strong>Type of treatment:</strong> physical therapy</td>
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<td></td>
<td><strong>Males %:</strong> 90.9</td>
<td><strong>Type of treatment:</strong> NOS, cortisone injection, NSAID</td>
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<td></td>
<td><strong>Cause of tear:</strong> NR</td>
<td><strong>Strength:</strong> NR</td>
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<td></td>
<td><strong>Tear size:</strong> mass</td>
<td><strong>Other:</strong> NR</td>
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<td></td>
<td><strong>Dominant shoulder %:</strong> 75.8</td>
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<td><strong>Comorbidities:</strong> biceps pathology: (absent (12); frayed but intact (14); hypertrophied (4)); osteoarthritis (10); AC joint; OA of glenohumeral (4)</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Country: France</td>
<td>Study design: Before-and-after</td>
<td>Withdrawals: 0</td>
<td>Surgical approach: open</td>
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<td>Treatment category: Operative</td>
<td>Duration since symptom onset, mean±SE (range): 24.19±3.05 mo (1 mo–10 yr)</td>
<td>Type of surgery: repair</td>
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<td>Questions: Q2, Q5, Q6</td>
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<td>BA Quality: Y</td>
<td>Followup duration, mean (range): 4 yr (2–6 yr)</td>
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<td>Followup: Y</td>
<td>Followup: yes</td>
<td>Rehab components: passive stretching (wk 1–6); active-assisted stretching (wk 6–8); strengthening (wk 12)</td>
<td>● cuff integrity</td>
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<td>Outcome assessment: Y</td>
<td>Exclusion criteria: (1) PTT, (2) stiff shld</td>
<td>Rehab regime: NR</td>
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<td>Inclusion criteria: (1) no previous cuff surgery, (2) FTT, (3) follow up ≥2 yr</td>
<td>PRE-OP TREATMENT: yes</td>
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<tr>
<td></td>
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<td>Duration: NR</td>
<td></td>
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<td></td>
<td></td>
<td>Type of treatment: exercise</td>
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<td></td>
<td>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.</td>
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<td>Study</td>
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<td>Treatment characteristics</td>
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<td>Ghroubi S, 2008</td>
<td>Recruitment dates: Jan 1995 to Dec 2004</td>
<td>Enrolled: 59</td>
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<td>Country: Tunisia</td>
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<td>Analyzed: NR</td>
<td>Intervention: strengthening, soft tissue massage, corticosteroid injection, NSAIDs, analgesics, movement awareness</td>
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<td>Treatment category: Nonoperative</td>
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<td>Withdrawals: NR</td>
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<td>Questions: Q3, Q5</td>
<td>Followup duration, mean (range): 7 yr (4–12 yr)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of treatment: varied by PT</td>
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<td>Inclusion criteria: (1) RC tear, (2) complete baseline evaluation, (3) ≥4 yr followup, (4) adhere to rehab program</td>
<td>Type of tear: FTT (39); PTT (20)</td>
<td>Treatment regime: varied by PT</td>
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<td>BA Quality: Consecutive: U Followup: U Outcome assessment: U</td>
<td>Exclusion criteria: (1) traumatic rupture; (2) infections, inflammation, tumor or neurological symptoms; (3) severe psychological problems; (4) refuse examination or interview</td>
<td>Tendon(s) torn: SS, SS+IS</td>
<td>Degree of supervision: NR</td>
<td>• VAS</td>
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<td>ROM:</td>
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<td>• abduction (active)</td>
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<td>• flexion (active)</td>
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<td>• external rotation (active)</td>
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<td>• internal rotation (active)</td>
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<td>Other:</td>
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<td>• return to work</td>
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<td>• pt compliance</td>
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<td>• pt satisfaction</td>
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<td>• required surgery</td>
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Study results demonstrate benefits of individualized rehab program combined with medical tx.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Gladstone JN, 2007</td>
<td>Recruitment dates: NR</td>
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<td>Questions: Q2, Q6</td>
<td>Followup duration, mean (range): 1 yr (12–15 mo)</td>
<td>Duration since symptom onset, mean (range): 10.5 mo (2 wk–4.3 yr)</td>
<td>Additional procedures (N): tendon mobilization</td>
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<td>Inclusion criteria: pre- and postoperative MRI permitted evaluation of fatty infiltration</td>
<td>Tendon(s) torn: SS, IS GROUP 1</td>
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<td>Duration of rehab: 3–4 mo</td>
<td>- VAS</td>
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<td>Exclusion criteria: (1) glenohumeral arthritis, (2) fracture, (3) osteonecrosis</td>
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<td>Duration of immobilization: 6 wk</td>
<td>Rehab components: passive stretching (wk 1–6); active stretching (wk 6); strengthening (wk 6–12 or 16)</td>
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<td>Age, mean±SD (range): all groups: 62 yr (3–6.5 yr)</td>
<td>Age, mean±SD (range): see group 1</td>
<td>Rehab regime: NR</td>
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<td>Males %: NR</td>
<td>Males %: NR</td>
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<td>- flexion</td>
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<td>Cause of tear: NR</td>
<td>Cause of tear: NR</td>
<td>Surgical approach: all-arthroscopic</td>
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<td>Dominant shoulder %: NR</td>
<td>Additional procedures (N): NR</td>
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<td>Comorbidities: NR</td>
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<td>Duration of immobilization: 6 wk</td>
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<td>Rehab components: passive stretching (wk 1–6); active stretching (wk 6); strengthening (wk 6–12 or 16)</td>
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<td>Rehab regime: NR</td>
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<td>PRE-OP TREATMENT: NR</td>
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<td>Type of treatment: NR</td>
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<td>Study</td>
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<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
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<td>Country: Italy</td>
<td>Study design: RCT (parallel)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Surgical approach: all-arthroscopic repair and debridement</td>
<td>At short-term followup, there was no significant difference in clinical or functional outcomes between single-row and double-row repair.</td>
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<td>Treatment category: Operative technique</td>
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<td>Followup duration, mean (range): 24.8±1.4 mo</td>
<td>Tendon(s) torn: SS</td>
<td>Additional procedures (N): acromioplasty (all); tenotomy (12); tenodesis (8)</td>
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<td>Inclusion criteria: (1) repairable FTT of SS or the posterior-superior RC ± biceps pathology or rotator interval involvement</td>
<td>GROUP 1</td>
<td>Technique: single-row repair</td>
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<td>ROB: High</td>
<td>Exclusion criteria: (1) PTT, (2) irreparable FTT, (3) extension of tear to SC, (4) isolated SC tear, (5) repairable labral pathology, degenerative OA of glenohumeral joint, symptomatic OA of AC joint, RC arthropathy, previous surgery on the same shoulder, WCB</td>
<td>N: 37</td>
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<td>Males %: 43</td>
<td>Rehab components: passive, active and active-assisted stretching (4–8 wk); strengthening exercises (10–12 wk); open kinetic chain exercises (13–16 wk)</td>
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<td>GROUP 2</td>
<td>N: 35</td>
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<td>Age, mean±SD (range): 55.2±6.5 yr</td>
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<td>Rehab regime: NR</td>
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<td>Type of treatment: NR</td>
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<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Hata Y, 2004</td>
<td>Recruitment dates: 1994 to 1997</td>
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<td>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.</td>
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<td>NOS: 4*/8*</td>
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<td>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)</td>
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<td>Exclusion criteria: (1) tears &gt;3 tendons, (2) tendon retraction &gt;5cm</td>
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<td></td>
<td>Tear size: sm, med, lg</td>
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<td>Dominant shoulder %: NR</td>
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**PRE-OP TREATMENT:** NR

**Duration:** NR

**Type of treatment:** NR
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawkins RH, 1995</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 50</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Pts who have insurance claims or are experiencing significant sleep loss due to pain are unlikely to be satisfied with nonoperative tx.</td>
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<td>Country: Canada</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 33</td>
<td>Intervention: active ROM, strengthening</td>
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<td>Treatment category: Nonoperative</td>
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<td>Withdrawals: 17</td>
<td>Drug name: NR</td>
<td>• CMS</td>
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<td>Questions: Q3, Q6</td>
<td>Enrolled consecutively: yes</td>
<td>Duration since symptom onset, mean±SD (range): 59.8±116.7 mo (1 mo–25 yr)</td>
<td>Duration of treatment: &gt;10 wk</td>
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<td>Funding: Foundation</td>
<td>Followup duration, mean (range): 3.8 yr (2.6–4.6 yr)</td>
<td>Type of tear: FTT</td>
<td>Treatment regime: Frequency–daily for 10 wk, 3x/wk.; Intensity–3 sets x 10 reps of 6 exercises</td>
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<td>Other: German BA Quality: Consecutive: Y Followup: N Outcome assessment: Y</td>
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<td>Treatment provider: PT</td>
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<td>N: 50</td>
<td>Additional comments: exercises at home; PT taught and reinforced technique at visits</td>
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<td>Study</td>
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<td>Participant characteristics</td>
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<td>Hayes K, 2004</td>
<td>Recruitment dates:</td>
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<td>Outcomes for patients allocated to individualized PT tx after RCR were no better than for patients receiving standardized home exercise regime.</td>
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<td>Country:</td>
<td>Feb 1999 to Mar 2001</td>
<td>Analyzed: 42</td>
<td>Surgical approach: mini-open</td>
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<td>Duration since symptom</td>
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<td></td>
<td>type): RCT (parallel)</td>
<td>yr); Group 2: 19±27 mo (1</td>
<td>immobilization: 1 day</td>
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<td>mo–8 yr)</td>
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<td>Type of tear: FTT (50); PT</td>
<td>Rehab components: active</td>
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<td>stretching (day 2–wk 6);</td>
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<td>strengthening (wk 6–24);</td>
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<td>SS+SC, SS+IS+SC</td>
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<td>Rehab regime: Frequency–1-</td>
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<td>5x/day; Intensity–5-10 reps per</td>
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<td>(7), traumatic (19)</td>
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<td>stretching (day 2–wk 6);</td>
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<td>active stretching and</td>
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<td>strengthening (wk 6–24);</td>
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<td>5x/day; Intensity–5-10 reps per</td>
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<td>PRE-OP TREATMENT: NR</td>
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<td>Duration: NR</td>
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<td>Type of treatment: NR</td>
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<td>internal rotation</td>
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<td>flexion</td>
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PRE-OP TREATMENT: NR
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<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Heers G, 2005</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 34</td>
<td>All GROUPS</td>
<td>HRQL: NR</td>
<td>Patients with RC defects benefit from simple home exercises independent from the size of the defect.</td>
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<td>Country: Germany</td>
<td>Study design: prospective cohort treated as before-and-after</td>
<td>Analyzed: 30 (shld: 38)</td>
<td>Intervention: passive and active ROM, strengthening</td>
<td>Function: CMS</td>
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<td>Treatment category: Nonoperative</td>
<td>Withdrawals: 4</td>
<td>Duration since symptom onset, mean±SD (range):</td>
<td>Drug name: NR</td>
<td>Pain: night pain (15-point VAS)</td>
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<td>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</td>
<td>Duration of treatment: 12 wk.</td>
<td>Duration of treatment: 12 wk.</td>
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<td>Treatment Regime: Frequency—daily; Intensity—40 min/day, 5 sets of 10 reps for 11 exercises</td>
<td>Type of tear: FTT (24); PTT (14)</td>
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<td>Inclusion criteria: (1) RC tear, (2) 40–70 yr</td>
<td>Tendon(s) torn: Group 1–2: SS; Group 3: SS, IS</td>
<td>Degree of supervision: indirect</td>
<td>ROM:</td>
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<td>Outcome assessment: U</td>
<td>Exclusion criteria: (1) abnormal subacromial spur, (2) previous shld surgery</td>
<td>ALL GROUPS</td>
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<td>Strength: NR</td>
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<td>N: Group 1, shld: 14; Group 2, shld: 14; Group 3, shld: 10</td>
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<td>Other: NR</td>
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<td>Age, mean±SD (range): all groups: 60.4 yr (44–69 yr)</td>
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<td>Males %: NR</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: NR</td>
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<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: NR</td>
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E-53
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<th>Treatment characteristics</th>
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<tr>
<td>Henn RF III, 2008</td>
<td>Recruitment dates: Jan 1998 to Sep 2001</td>
<td>Enrolled: 125</td>
<td>GROUP 1</td>
<td>HRQL:</td>
<td>Pts with worker’s compensation claims reported worse outcomes, even after controlling for confounding factors.</td>
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<td>Country: USA</td>
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<td>Analyzed: 125</td>
<td>Surgical approach: open (7); mini-open (19); all-arthroscopic (13)</td>
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<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
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<td>Questions: Q2, Q5</td>
<td>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)</td>
<td>Additional procedures (N):</td>
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<td>Funding: No funding</td>
<td>Type of tear: FTT</td>
<td>acromioplasty (all); biceps tenotomy/tenodesis (1)/(2); bicep relocation (2); clavicular resection (14)</td>
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<td>BA Quality: Consecutive: U</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of immobilization: 5 wk</td>
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<td>Followup: U</td>
<td>Duration of rehab: 5 wk</td>
<td>Rehab components: mini open/open surgery: passive stretching; all-arthroscopic repair: passive stretching</td>
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<td>Outcome assessment: U</td>
<td>Rehab regime: NR</td>
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<td>Males %: 61.5</td>
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<td>Tear size: NR</td>
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<td>Comorbidities, mean±SD (range): number of comorbidities: 1.8±1.5 (0–5)</td>
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<td>Age, mean±SD (range): 57.8±1.3 yr (35–84 yr)</td>
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<td>Dominant shoulder %: 68.6</td>
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<td>Comorbidities, mean±SD (range): number of comorbidities: 2.0±1.5 (0–6)</td>
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**GROUP 1**

Surgical approach: open (7); mini-open (19); all-arthroscopic (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-arthroscopic (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
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country: Taiwan</td>
<td>Study design: before-and-after</td>
<td>Analyzed: shld: 47 Withdrawals: 0</td>
<td>Surgical approach: open</td>
<td>Function:</td>
<td></td>
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<tr>
<td>Treatment category: Operative</td>
<td></td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
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<tr>
<td></td>
<td></td>
<td>Type of tear: FTT (20); PTT (27)</td>
<td>Additional procedures: acromioplasty (all); manipulation (all); surgical lysis of the adhesive tissue (all)</td>
<td>ROM:</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tendon(s) torn: Group 1 and 3: NR; Group 2: SS</td>
<td>Duration of immobilization: NR</td>
<td>abduction</td>
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<tr>
<td></td>
<td></td>
<td>Enrollment: shld: 47</td>
<td>Duration of rehab: NR</td>
<td>flexion</td>
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<tr>
<td></td>
<td></td>
<td>Followup: yes</td>
<td>Rehab components: passive stretching (day 2); active-assisted stretching (day 3/4); active-stretching (day 7/10)</td>
<td>external rotation</td>
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<td></td>
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<td>Enrolled consecutively: yes</td>
<td>Rehab regime: NR</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td></td>
<td></td>
<td>GROUP 2</td>
<td>Strength: NR</td>
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<td>Funding: NR</td>
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<td>Surgical approach: open</td>
<td>Other: NR</td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: Y</td>
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<td>Type of surgery: repair</td>
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<tr>
<td>Outcome assessment: U</td>
<td></td>
<td></td>
<td>Additional procedures (N): acromioplasty (all); manipulation (all); surgical lysis of the adhesive tissue (all)</td>
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<tr>
<td></td>
<td></td>
<td>Inclusion criteria: (1) RC tear with associated shld stiffness, (2) ≥2yr followup</td>
<td>Duration of immobilization: NR</td>
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<tr>
<td></td>
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<td>Exclusion criteria: (1) previous operations, (2) traumatic fracture on the involved shld</td>
<td>Duration of rehab: NR</td>
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<td></td>
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<td></td>
<td>Rehab components: passive stretching (day 2); active-assisted stretching (day 3/4); active stretching (day 7/10)</td>
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<td></td>
<td></td>
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<td>Rehab regime: NR</td>
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<td></td>
<td>GROUP 3</td>
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<td></td>
<td></td>
<td>Surgical approach: open</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Type of surgery: repair</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Additional procedures (N): acromioplasty (all); manipulation (all); surgical lysis of the adhesive tissue (all); deltoid flap transfer (1)</td>
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<td></td>
<td></td>
<td></td>
<td>Duration of immobilization: 3 day</td>
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<td></td>
<td></td>
<td>Duration of rehab: NR</td>
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<td></td>
<td></td>
<td></td>
<td>Rehab components: passive stretching (day 3/4); active-assisted stretching (wk 2)</td>
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<td></td>
<td></td>
<td>Rehab regime: NR</td>
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<td>PRE-OP TREATMENT: yes</td>
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<td>Duration: 3 mo (min)</td>
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<td>Type of treatment: physical therapy</td>
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<td>Study</td>
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<td>Author conclusions</td>
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<tr>
<td>Iannotti JP, 2006</td>
<td>Recruitment dates: Jan 2002 to Jan 2004</td>
<td>Enrolled: 32 Analyzed: 30 Withdrawals: 2</td>
<td>GROUP 1 Surgical approach: open Type of surgery: repair Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (4); os acromiale repair (3) Technique: polyester tape through bone tunnels; Mason-Allen and horizontal mattress 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</td>
<td>HRQL: NR Function: • PENN Pain: NR ROM: NR Strength: NR Other: • cuff integrity</td>
<td>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.</td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
</tbody>
</table>
**Analyzed:** 40 (shld: 41)  
**Withdrawals:** 6 | **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. |
| Country: USA  
Treatment category: Operative  
Questions: Q2, Q6  
Funding: NR  
BA Quality: Consecutive: Y  
Followup: Y  
Outcome assessment: Y | Study design: before-and-after | Duration since symptom onset, mean (range): 8.9±7.4 mo. (3-36 mo.)  
Type of tear: FTT  
Tendon(s) torn: NR  | | | |
|  | 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 | | | | |
|  | | **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) | | | | |
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ide J, 2007</td>
<td>Recruitment dates: Apr 2001 to Oct 2004</td>
<td>Enrolled: 20 Analyzed: 20 Withdrawals: 0</td>
<td>GROUP 1 Surgical approach: all-arthroscopic Type of surgery: repair and debridement Additional procedures (N): biceps tenotomy/tenodesis (5)/(7); coracoplasty (6)</td>
<td>Duration of rehabilitation: 3-6 mo. Rehabilitation components: passive stretching and active-assisted stretching–day 1-wk. 4; active stretching–wk. ≥6; strengthening–wk. 9-12 Rehab regime: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Japan</td>
<td>Study design: before-and-after</td>
<td>Duration since symptom onset, mean (range): 2.7 mo. (1-6 mo.)</td>
<td>Duration of immobilization: 6 wk.</td>
<td>HRQL: NR</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: FTT Tendon(s) torn: SS+SC, SS+IS+SC</td>
<td>Duration of rehab: 3-6 mo.</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 36.1 mo. (24-60 mo.)</td>
<td>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)</td>
<td>Rehab components: passive stretching and active-assisted stretching–day 1-wk. 4; active stretching–wk. ≥6; strengthening–wk. 9-12</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>Funding: No funding</td>
<td>Inclusion criteria: (1) arthroscopic repair of FTT, (2) MRI of involved shld pre- or post-op, (3) followup &gt;2 yr</td>
<td></td>
<td>Other:</td>
<td>ROM:</td>
<td></td>
</tr>
<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: Y</td>
<td>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</td>
<td></td>
<td>Strength: NR</td>
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<td></td>
<td></td>
<td></td>
<td>Type of treatment: NR</td>
<td></td>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ide J, 2005</td>
<td>Recruitment dates: 1999 to 2002</td>
<td>Enrolled: 21</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Arthroscopic transtendon repair is a safe, reliable procedure in patients with grade III PTT.</td>
</tr>
<tr>
<td>Country: Japan</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 17</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
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<tr>
<td>Treatment category: Operative</td>
<td>Withdrawals: 4 excluded (SLAP repair [3]; Bankart repair [1])</td>
<td>Duration since symptom onset, mean (range): 11 mo (7–24 mo)</td>
<td>Type of surgery: repair</td>
<td>● UCLA</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2</td>
<td></td>
<td>Type of tear: PTT</td>
<td>Additional procedures (N): NR</td>
<td>● JOA</td>
<td></td>
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<tr>
<td>Funding: No funding</td>
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<td>Tendon(s) torn: SS</td>
<td>Duration of immobilization: 4 wk</td>
<td>Pain: NR</td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: Y</td>
<td>Enrolled consecutively: yes</td>
<td>Duration of rehab: 3 mo</td>
<td>Rehab components: CPM (day 1–3 mo); active-assisted stretching (wk 2–3 mo); strengthening (wk 4/6–3 mo)</td>
<td>ROM: NR</td>
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<tr>
<td></td>
<td>Followup duration, mean (range): 39 mo (25–57 mo)</td>
<td>Type of tear: PTT</td>
<td>Rehab regime: Frequency–NR; Intensity–CPM, 2 hr/day</td>
<td>Strength: NR</td>
<td></td>
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<tr>
<td></td>
<td>Inclusion criteria: articular side SS PTT involving ≥6 mm of the tendon, treated with arthroscopic transtendon repair</td>
<td>GROUP 1</td>
<td>PRE-OP TREATMENT: NR</td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Exclusion criteria: (1) arthroscopic SLAP repair, (2) arthroscopic Bankart repair</td>
<td>N: 21</td>
<td>Duration: NR</td>
<td>● Number of pts returning to original level of sport</td>
<td></td>
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<tr>
<td></td>
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<td>Age, mean±SD (range): 42 yr (17–51 yr)</td>
<td>Type of treatment: NR</td>
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<td></td>
<td></td>
<td>Males %: 66.7</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative (10), traumatic (7)</td>
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<td></td>
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<td>Tear size: NR</td>
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<td>Dominant shoulder %: 66.7</td>
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<td></td>
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<td>Comorbidities: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Ide J, 2005</td>
<td>Recruitment dates: 1996 to 2001</td>
<td>Enrolled: NR</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Japan</td>
<td></td>
<td>Analyzed: 100</td>
<td>Surgical approach: open</td>
<td>Function:</td>
<td></td>
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<tr>
<td>Treatment category: Operative approach</td>
<td>Followup duration, mean (range): 49 mo (25–83 mo)</td>
<td>Withdrawals: NR</td>
<td>Type of surgery: repair and debridement</td>
<td>● UCLA</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: FTT including mass tears</td>
<td>Duration since symptom onset, mean (range): Group 1: 8 mo (2–24 mo); Group 2: 6.4 mo (2–36 mo)</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>● JOA</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Exclusion criteria: (1) PTT, (2) irreparable RC tear reconstructed with implantation of fascia lata, (3) SC repair/prior surgery on shld, (4) other significant intraarticular pathology, (5) WCB claim</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 3 wk</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>NOS: 7*/8*</td>
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<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: 3 mo</td>
<td>ROM: NR</td>
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<td>Rehab components: passive stretching and CPM (day 1–wk 6/9); strengthening (wk 6–9); active-assisted stretching (wk 2–4)</td>
<td>Strength: NR</td>
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<td>Rehab regime: NR</td>
<td>Other:</td>
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<td>● pt satisfaction</td>
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<td>Author conclusions</td>
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<tr>
<td>Ito J, 2003</td>
<td>Recruitment dates: 1983 to 1987</td>
<td>Enrolled: 28 (shld: 30) Analyzed: 21 (shld: 21) Withdrawals: 7</td>
<td>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</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Japan</td>
<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean±SD (range): Group 1: 5.8±4.7 mo (NR); Group 2: 4.1±2.9 mo (NR)</td>
<td>GROUP 1 Type of tear: NR Tendon(s) torn: NR</td>
<td>Function: ● JOA</td>
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<tr>
<td>Treatment category: Operative augmentation</td>
<td>Enrolled consecutively: NR</td>
<td>Followup duration, mean (range): 3.7 yr (2–8.4 yr)</td>
<td></td>
<td>Pain: NR</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Funding: NR Inclusion criteria: (1) surgical tx for RC tear between 1983–1997, (2) lg or mass tear</td>
<td>Exclusion criteria: NR</td>
<td></td>
<td>ROM: ● abduction ● external rotation ● flexion</td>
<td></td>
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<tr>
<td>NOS: 4*/8*</td>
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<td>Strength: NR</td>
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<td>Other: NR</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Kane TP, 2008</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 12</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
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<tr>
<td>Country: England</td>
<td>Study design: before-and-after</td>
<td>Analyzed: NR</td>
<td>Intervention: pulsed radio frequency ablation</td>
<td>In patients with painful, endstage RC tear arthropathy who are not fit for surgery, pulsed radio frequency may be a useful therapeutic adjunct.</td>
<td></td>
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<tr>
<td>Treatment category: Nonoperative</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: NR</td>
<td>Drug name: NR</td>
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<td>Questions: Q3, Q5</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of treatment: NR</td>
<td>Duration of treatment: Frequency—once in study duration; Intensity—6–8 min.</td>
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<tr>
<td>Funding: NR</td>
<td>Type of tear: NR</td>
<td>Degree of supervision: direct one-to-one</td>
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<tr>
<td>BA Quality: Consecutive: Y</td>
<td>Tendon(s) torn: NR</td>
<td>Treatment provider: NR</td>
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<tr>
<td>Followup: U</td>
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<tr>
<td>Outcome assessment: U</td>
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<tr>
<td>Inclusion criteria: (1) painful endstage RC tear arthropathy, (2) medically unfit for surgery, (3) failure of nonoperative tx</td>
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<td>Exclusion criteria: (1) previous surgery, (2) nerve block</td>
<td></td>
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<tr>
<td>Group 1</td>
<td>N: 12</td>
<td>Age, mean±SD (range): 68 yr (60–83 yr)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Males %: 25</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: OA (11); RA (1); renal failure; DM; chronic obstructive pulmonary disease; heart failure</td>
<td></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Kim SH, 2003</td>
<td>Recruitment dates: 1995 to 1998</td>
<td>Enrolled: NR</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: South Korea</td>
<td>Study design (trial type): CCT (parallel)</td>
<td>Analyzed: 76</td>
<td>Surgical approach: mini-open</td>
<td>Function:</td>
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<tr>
<td>Treatment category: Operative approach</td>
<td>Participant characteristics</td>
<td>Withdrawals: NR</td>
<td>Type of surgery: repair and debridement</td>
<td>• UCLA</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (all); manipulation (NR)</td>
<td>• VAS-function</td>
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<tr>
<td>Funding: NR</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 3 wk</td>
<td>• ASES</td>
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</tr>
<tr>
<td>ROB: High</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab (N): &lt;6 mo (18); 6–12 mo (12); &gt;12 mo (4)</td>
<td>Pain:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inclusion criteria: med/lg RC tears</td>
<td>GROUP 2</td>
<td>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)</td>
<td>• flexion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>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</td>
<td>N: 34</td>
<td>Rehab regime: Frequency–CPM, daily; Intensity–2 hr</td>
<td>• internal rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Duration of followup, mean (range): 39 mo (24–64 mo)</td>
<td>Age, mean±SD (range): 58±9 yr (42–68 yr)</td>
<td>GROUP 1</td>
<td>• external rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inclusion criteria:</td>
<td>Males %: 64.7</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Strength:</td>
<td></td>
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<tr>
<td></td>
<td>Exclusion criteria:</td>
<td>Cause of tear: degenerative (28), traumatic (6)</td>
<td>Type of surgery: repair and debridement</td>
<td>• manual muscle testing</td>
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<td></td>
<td></td>
<td>Tear size: med, lg</td>
<td>Additional procedures (N): acromioplasty (all); manipulation (NR)</td>
<td>Other: NR</td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 88.2</td>
<td>Duration of immobilization: 3 wk</td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities (all groups): fraying of biceps tendons (6); early degenerative arthritis changes of glenoid articular surface (4)</td>
<td>Duration of rehab (N): &lt;6 mo (21); 6–12 mo (14); &gt;12 mo (7)</td>
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<td></td>
<td></td>
<td>GROUP 2</td>
<td>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)</td>
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<tr>
<td></td>
<td></td>
<td>N: 42</td>
<td>Rehab regime: Frequency–CPM, daily; Intensity–2 hr</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 55±10.5 yr (42–75 yr)</td>
<td>PRE-OP TREATMENT: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 64.3</td>
<td>Duration: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative (33), traumatic (9)</td>
<td>Type of treatment: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: med, lg</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 88.1</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: see group 1</td>
<td></td>
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</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Duration since symptom onset, mean (range): 10 mo (2 mo–5 yr)</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: NR</td>
<td>Type of tear: NR Tendon(s) torn: SS, IS, TM</td>
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<tr>
<td>Questions: Q2, Q6</td>
<td>Followup duration, (endpoint): 12 mo</td>
<td>GROUP 1 N: 25 Age, mean±SD (range): 62 yr (27–76 yr) Males %: 64</td>
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<tr>
<td>Funding: NR</td>
<td>Inclusion criteria: 1) positive arthrogram of RC tears and shld pain limiting everyday activity</td>
<td>Cause of tear: degenerative (4), traumatic (21) Tear size: all sizes Dominant shld %: 56 Comorbidities: NR</td>
<td></td>
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</tr>
<tr>
<td>BA Quality: Consecutive: U Followup: Y Outcome assessment: Y</td>
<td>Exclusion criteria: 1) shld pain on the nonoperative side</td>
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</table>

Shoulder strength is significantly improved by RC repair.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tbody>
<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 32</td>
<td>Surgical approach: open (24); mini-open (8)</td>
<td>Function:</td>
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<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 15</td>
<td>Type of surgery: repair</td>
<td>• ASES</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, (minimum): 1 yr</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (NR); capsular release</td>
<td>CMS</td>
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<tr>
<td>Funding: Foundation</td>
<td>Inclusion criteria:</td>
<td>Type of tear: FTT</td>
<td>(13); distal clavicle resection (4)</td>
<td>UCLA</td>
<td></td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: N Outcome assessment: Y</td>
<td>Exclusion criteria:</td>
<td>Duration of immobilization: 6 wk</td>
<td>Duration of rehab: 3–4 mo</td>
<td>Pain:</td>
<td></td>
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<tr>
<td></td>
<td>(1) 40–80 yr, (2) able to communicate and give informed consent</td>
<td>GROUP 1 N: 47</td>
<td>Rehab components: passive stretching (wk 1–6); active stretching (wk 6–3/4 mo); strengthening (wk 6–3/4 mo)</td>
<td>• VAS</td>
<td></td>
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<td></td>
<td></td>
<td>Age, mean±SD (range): 64 yr (NR)</td>
<td>Rehab regime: NR</td>
<td>ROM: NR</td>
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<tr>
<td></td>
<td></td>
<td>Males %: NR</td>
<td>PRE-OP TREATMENT: NR</td>
<td>Strength:</td>
<td>• flexion (lb)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration: NR</td>
<td>• external rotation (lb)</td>
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<tr>
<td></td>
<td></td>
<td>Tear size: all sizes</td>
<td>Type of treatment: NR</td>
<td>Other:</td>
<td>• cuff integrity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Klinger HM, 2005</td>
<td>Recruitment dates: 1997 to 1999</td>
<td>Enrolled: 33</td>
<td>Enrolled: 33</td>
<td>HRQL: NR</td>
<td>Arthroscopic debridement early results suggest it is an acceptable tx for elderly pts with modest functional demands.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Analyzed: 33</td>
<td>Analyzed: 33</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Withdrawals: 0</td>
<td>Withdrawals: 0</td>
<td>CMS</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Pain: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Followup duration, mean (range): 31 mo (24–46 mo)</td>
<td>ROM: NR</td>
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<tr>
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<td>Duration since symptom onset, mean (range): 11 mo (6–23 mo)</td>
<td>Strength: NR</td>
</tr>
<tr>
<td></td>
<td>Study design: before-and-after</td>
<td>Duration since symptom onset, mean (range): 11 mo (6–23 mo)</td>
<td>Type of tear: FTT</td>
<td>Other: NR</td>
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<tr>
<td>Country: Germany</td>
<td>Treatment category: Operative</td>
<td></td>
<td>Tendon(s) torn: SS+IS, SS+SC, SS+IS+SC</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: irreparable mass tear</td>
<td>GROUP 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Funding: NR</td>
<td>Exclusion criteria: reparable tears or previous procedures involving the shld</td>
<td></td>
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<tr>
<td></td>
<td>BA Quality: Consecutive: Y</td>
<td></td>
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<tr>
<td></td>
<td>Followup: Y</td>
<td></td>
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<tr>
<td></td>
<td>Outcome assessment: Y</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Type of treatment: NR</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Duration: 6 mo (min)</td>
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</tbody>
</table>

**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%)
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
</table>
Analyzed: 41  
Withdrawals: 0 | GROUP 1  
Surgical approach: all-arthroscopic  
Type of surgery: debridement  
Additional procedures (N): acromioplasty (all); labral repair (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. |

Country: Germany  
Study design: retrospective cohort  
Treatment category: Operative approach  
Questions: Q2, Q5  
Funding: NR  
NOS: 4*/8*  

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  

Recruitment dates: 1998 to 2000  
Duration since symptom onset, mean (range): Group 1: 11 mo (6–23 mo); Group 2: 10 mo (6–18 mo)  
Followup duration, mean (range): 2.6 yr (2–4 yr)  
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)  

Type of treatment: NR  
PRE-OP TREATMENT: yes  
Duration: 6 mo (min)
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Klintberg IH, 2009</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 18</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
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<tr>
<td>Country: Sweden</td>
<td>Study design: RCT (parallel)</td>
<td>Analyzed: 14</td>
<td>Surgical approach: NR</td>
<td>The progressive rehabilitation protocol has no adverse effects compared with the traditional protocol.</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Post-op rehabilitation</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 4</td>
<td>Type of surgery: repair &amp; debridement</td>
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<tr>
<td>Followup duration, mean (range): 2 yr</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
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</tr>
<tr>
<td>Questions: Q2, Q5</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 4 wk</td>
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<tr>
<td>Funding: Academic</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: &gt;12 mo</td>
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<tr>
<td>ROB: High</td>
<td>Inclusion criteria: (1) FTT of RC</td>
<td>Rehab components: passive stretching (1–4 wk); active-assisted stretching with</td>
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<tr>
<td></td>
<td>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 &amp; writing in Swedish</td>
<td>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)</td>
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<td></td>
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<td>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)</td>
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<td>Treatment provider: PT</td>
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<td>GROUP 2</td>
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<td></td>
<td>N: 7</td>
<td>Surgical approach: NR</td>
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<tr>
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<td></td>
<td>Age, mean±SD (range): NR</td>
<td>Type of surgery: repair &amp; debridement</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Males %: NR</td>
<td>Additional procedures (N): NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<td>Cause of tear: degenerative (NR); traumatic (4)</td>
<td>Duration of immobilization: 6 wk</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: med, lg</td>
<td>Duration of rehab: &gt;24 mo</td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>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)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Rehab regime: supervised PT 2–3 times/wk; aquatic training 1 (1x/week); aquatic training 2 (2x/wk)</td>
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<td>Treatment provider: PT</td>
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<td></td>
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<td>Other: NR</td>
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</tbody>
</table>

**Study design: RCT (parallel)**
- Enrollment: 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

**Participant characteristics**
- 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

**Treatment characteristics**
- 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

**Outcomes reported**
- 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

**PRE-OP TREATMENT:** NR
**Duration:** NR
**Type of treatment:** NR
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tbody>
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<td>Ko SH, 2009</td>
<td>Recruitment dates: Dec 2004 to Jun 2006</td>
<td>Enrolled: 77 Analyzed: 71 Withdrawals: 6 Duration since symptom onset, mean (range): NR</td>
<td>GROUP 1 Surgical approach: all-arthroscopic Type of surgery: repair and debridement Additional procedures (N): acromioplasty (7) Technique: massive cuff stitch repair</td>
<td>HRQL: NR No difference in clinical outcomes between massive cuff stitch or simple stitch, but massive cuff stitch was superior to simple stitch in repair integrity.</td>
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<tr>
<td>Country: South Korea</td>
<td>Study design: Prospective cohort</td>
<td>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</td>
<td>Duration of immobilization: NR Duration of rehab: &gt;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</td>
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<td>GROUP 2 Surgical approach: all-arthroscopic Type of surgery: repair and debridement Additional procedures (N): acromioplasty (7) Technique: simple stitch repair</td>
<td>Duration of immobilization: NR Duration of rehab: &gt;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</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 2.8 yr (2–3.4 yr)</td>
<td>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</td>
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<td>Exclusion criteria: (1) AC arthritis (2) biceps subluxation and dislocation, (3) SC tears that require repair, (4) stiffness requiring capsulotomy, (5) fractures around shoulder, (6) flexion&lt;120 degrees, abduction &lt;120 degrees, external rotation&lt;0 degrees</td>
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<td>Treatment characteristics</td>
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<td>Author conclusions</td>
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<tr>
<td>Ko SH, 2008</td>
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<td>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.</td>
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<td>Köse KC, 2008</td>
<td>Recruitment dates: 2001 to 2005</td>
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<td>HRQL: NR</td>
<td>Clinical results are similar but have a higher cost for arthroscopic RCR compared with mini-open RCR.</td>
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<td>Surgical approach: mini-open</td>
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<td>• CMS</td>
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<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>• UCLA</td>
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<td>Rehab components: passive stretching (up to wk 6); active stretching (wk 6)</td>
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<td>Tear size: sm, med, lg</td>
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<td>Rehab components: passive stretching (up to wk 6); active stretching (wk 6)</td>
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**Notes:**
- NR: Not reported
- NOS: 5*/8*
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<td>Koubaa S, 2006</td>
<td>Recruitment dates: Aug 2001 to Mar 2002</td>
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<td>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.</td>
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<td>Country: Tunisia</td>
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<td>Treatment Regime: Frequency–3x/wk.; Intensity– NR</td>
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<td>Recruitment dates: 1994 to 1999</td>
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<td>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.</td>
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<td></td>
<td></td>
<td>Age, mean±SD (range): 46 yr (27–64 yr)</td>
<td>Duration of rehab: NR</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Males %: 87.5</td>
<td>Rehab components: passive stretching–NR; active-assisted stretching (wk 4); stretching (3 mo)</td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: traumatic (16)</td>
<td>Rehab regime: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: NR</td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 93.8</td>
<td>Duration (mean/range): PTT (4.7 mo; 3–7 mo); FTT (0.9 mo; 0.25–2 mo)</td>
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<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Type of treatment: PT NOS, NSAID</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Lafosse L, 2007</td>
<td>Recruitment dates: 1999 to 2003</td>
<td>Enrolled: 95 (shld: 105)</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: France</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 95 (shld: 105)</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
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<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair</td>
<td>Pain:</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td></td>
<td>Type of tear: FTT</td>
<td>Additional procedures: acromioplasty (105); biceps tenotomy/tenodesis (59)/(50)</td>
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<tr>
<td>Funding: No funding</td>
<td>Followup duration, mean (range): 3 yr (2–4.8 yr)</td>
<td>Tendon(s) torn: SS, SS+IS</td>
<td>Duration of immobilization: NR</td>
<td></td>
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<tr>
<td>Exclusion criteria:</td>
<td></td>
<td>Age, mean±SD (range): 52 yr (37–79 yr)</td>
<td>Rehab components: passive stretching (day 1–wk 3); active stretching (≥wk 6); Modalities–hydrotherapy (encouraged)</td>
<td></td>
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</tr>
<tr>
<td>(1) single-row repair, (2) open repair, (3) a contaminant SC tear, (4) refusal of having postop arthrogram, (5) follow up &lt;2 yr</td>
<td></td>
<td>Males %: 49.5</td>
<td>Rehab regime: NR</td>
<td></td>
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<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: all sizes</td>
<td>Duration: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 72.4</td>
<td>Type of treatment: physical therapy NOS</td>
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<td></td>
<td></td>
<td>Comorbidities: SC fraying (17)</td>
<td></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Lafosse L,</td>
<td>Recruitment dates:</td>
<td>Enrolled: 17</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Arthroscopic SC repair can result in durable RC repair with clinical results that are at least comparable with those open repair techniques.</td>
</tr>
<tr>
<td>2007</td>
<td>May 2000 to Jul 2002</td>
<td>Analyzed: 17</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
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<td>Country:</td>
<td>Study design:</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair and</td>
<td>• CMS</td>
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<tr>
<td>France</td>
<td>before-and-after</td>
<td></td>
<td>debridement</td>
<td>• UCLA</td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>Enrolled: yes</td>
<td>Duration since symptom</td>
<td>Additional procedures (N): biceps</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td>category:</td>
<td></td>
<td>onset, mean (range): 2 yr</td>
<td>tenodesis (9)</td>
<td>• VAS (15 points)</td>
<td></td>
</tr>
<tr>
<td>Operative</td>
<td></td>
<td>(3 mo–3.7 yr)</td>
<td></td>
<td></td>
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<tr>
<td>Questions:</td>
<td>Followup duration,</td>
<td>Type of tear: FTT (15);</td>
<td></td>
<td>ROM:</td>
<td></td>
</tr>
<tr>
<td>Q2, Q5, Q6</td>
<td>mean (range): 2.4 yr</td>
<td>PTT (2)</td>
<td></td>
<td>• flexion</td>
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<tr>
<td></td>
<td>(2–3.3 yr)</td>
<td>Tendon(s) torn: SC</td>
<td></td>
<td>• external rotation</td>
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<tr>
<td>Funding:</td>
<td>Inclusion criteria:</td>
<td></td>
<td></td>
<td>• internal rotation</td>
<td></td>
</tr>
<tr>
<td>No funding</td>
<td>pt with RC tear</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>BA Quality:</td>
<td>involving the SC</td>
<td></td>
<td></td>
<td>Strength:</td>
<td></td>
</tr>
<tr>
<td>Consecutive:</td>
<td>tendon</td>
<td></td>
<td></td>
<td>• strength (25 points)</td>
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<tr>
<td>Followup: Y</td>
<td></td>
<td></td>
<td></td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Exclusion criteria:</td>
<td></td>
<td></td>
<td>• cuff integrity</td>
<td></td>
</tr>
<tr>
<td>assessment: Y</td>
<td>RC tear involving</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>other tendons</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 47 yr</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>(29–59 yr)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 76.5</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative (4), traumatic (13)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: sm, med, lg</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 94.1</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: rupture of</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>LHB (2); partial tear of</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>biceps tendon (7)</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>-----------------</td>
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</tr>
<tr>
<td>LaStayo PC, 1998</td>
<td>Recruitment dates: 1991 to 1994</td>
<td>Enrolled: 31 (shld: 32) Analized: NR Withdrawals: NR Duration since symptom onset, mean (range): NR</td>
<td>GROUP 1 Surgical approach: open Type of surgery: repair and debridement Additional procedures (N): acromioplasty (all)</td>
<td>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</td>
<td>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.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>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</td>
<td>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–3x/day; Intensity–3 sets, 10–15 reps</td>
<td></td>
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<tr>
<td>Treatment category: Post-op rehabilitation</td>
<td>Enrolled consecutively: NR Followup duration, mean±SD (range): 22±9.8 mo (6 mo–3.8 yr)</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: RCR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding: No funding</td>
<td>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</td>
<td></td>
<td></td>
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<tr>
<td>ROB: High</td>
<td></td>
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PRE-OP TREATMENT: NR Duration: NR Type of treatment: NR
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leroux JL, 1993</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 112 (shld: 115)</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: France</td>
<td>Study design: Retrospective cohort</td>
<td>Analyzed: 60</td>
<td>Intervention: PT NOS, corticosteroid injection</td>
<td></td>
<td></td>
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<tr>
<td>Treatment category: Nonoperative</td>
<td></td>
<td>Withdrawals: 52</td>
<td>Drug name: NR</td>
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<tr>
<td>Questions: Q3</td>
<td></td>
<td>Duration since symptom onset, mean±SD (range): 7.5±0.5 mo (NR)</td>
<td>Duration of treatment: NA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td></td>
<td>Type of tear: FTT Tendon(s) torn: SS, SS+IS, SS+SC</td>
<td>Treatment Regime: Frequency=NR; Intensity=(mean±SD) 1.9±0.6 injections</td>
<td></td>
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<tr>
<td>NOS: 3*/8*</td>
<td></td>
<td>Followup duration, mean (range): 114.4 days (5 days–2 yr)</td>
<td>Degree of supervision: NR</td>
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<tr>
<td>Exclusion criteria: NR</td>
<td></td>
<td>Enrolled consecutively: yes</td>
<td>Treatment provider: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP 1</td>
<td></td>
<td>GROUP 2</td>
<td></td>
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<tr>
<td>N: 18</td>
<td></td>
<td>N: 42</td>
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<tr>
<td>Age, mean±SD (range): all groups: 61.5 yr (36–85 yr)</td>
<td></td>
<td>Age, mean±SD (range): see group 1</td>
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<tr>
<td>Males %: all groups 60.7</td>
<td></td>
<td>Males %: see group 1</td>
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<tr>
<td>Cause of tear: NR</td>
<td></td>
<td>Cause of tear: NR</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Tear size: NR</td>
<td></td>
<td>Tear size: NR</td>
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</tr>
<tr>
<td>Dominant shoulder %: all groups 70</td>
<td></td>
<td>Dominant shoulder %: see group 1</td>
<td></td>
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<tr>
<td>Comorbidities: all groups: pseudoparalytic shld (6%)</td>
<td></td>
<td>Comorbidities: see group1</td>
<td></td>
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<tr>
<td>GROUP 2</td>
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<td>N: 42</td>
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<td>Age, mean±SD (range): see group 1</td>
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<tr>
<td>Males %: see group 1</td>
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<tr>
<td>Cause of tear: NR</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Tear size: NR</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dominant shoulder %: see group 1</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Comorbidities: see group1</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Levy O, 2008</td>
<td>Recruitment dates: Oct 1998 to May 2003</td>
<td>Enrolled: 115</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: UK</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 102</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
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<tr>
<td>Treatment</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 13</td>
<td>Type of surgery: repair and</td>
<td>• CMS</td>
<td></td>
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<tr>
<td>category: Operative</td>
<td>Followup duration, mean (range): 3.0 yr (2–6.1 yr)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>debridement</td>
<td>Pain: NR</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: RC tears + undergoing arthroscopic repair</td>
<td>Type of tear: NR</td>
<td>Additional procedures (N):</td>
<td>ROM: NR</td>
<td></td>
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<tr>
<td>Funding: No funding</td>
<td>Exclusion criteria: lost to followup</td>
<td>Tendon(s) torn: SS+IS+SC</td>
<td>acromioplasty (99); biceps tenotomy/tenodesis (12); manipulation (all); resection arthroplasty of joint (41)</td>
<td>Strength: NR</td>
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<tr>
<td>BA Quality: Consecutive: Y</td>
<td>Duration of immobilization: 6 wk.</td>
<td>Duration of rehab: 6 mo (min)</td>
<td>Treatment characteristics: repair and debridement</td>
<td>Other:</td>
<td></td>
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<tr>
<td>Followup: U</td>
<td>Rehab components: passive stretching (up to wk 6); active stretching and strengthening (wk 6 onward)</td>
<td>Duration: NR</td>
<td>• number of pts able to return to work/leisure activities</td>
<td></td>
<td></td>
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<tr>
<td>Outcome assessment: U</td>
<td>Rehab regime: NR</td>
<td>Type of treatment: NR</td>
<td>• cuff integrity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Levy O, 2008</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 17</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>A structured deltoid rehabilitation program is suitable for massive RC tears in elderly pts.</td>
</tr>
<tr>
<td>Country: UK</td>
<td>Country:</td>
<td>Analyzed: 17</td>
<td>Intervention: strengthening, corticosteroid injection, NSAIDs, PT NOS</td>
<td>Function:</td>
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<tr>
<td>Treatment category: Non-operative</td>
<td>Treatment category:</td>
<td>Withdrawals: 0</td>
<td>Drug name: Marcaine 0.5%; Depomedrone</td>
<td>Pain: NR</td>
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<td>Questions: Q3, Q6</td>
<td>Questions:</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of treatment: 12 wk (min)</td>
<td>ROM:</td>
<td>flexion</td>
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<td>Funding: NR</td>
<td>Funding:</td>
<td>Type of tear: FTT</td>
<td>Treatment Regime: Frequency–3-5 x/day (first 6 wk); Intensity–Marcaine 10 mg, Depomedrone 40 mg</td>
<td>Strength: NR</td>
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<tr>
<td>BA Quality: Consecutive: U Followup: Y Outcome assessment: U</td>
<td>BA Quality:</td>
<td>Tendon(s) torn: SS</td>
<td>Degree of supervision: NR</td>
<td>Other: NR</td>
<td></td>
</tr>
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<td>Recruitment dates: NR</td>
<td>Recruitment dates:</td>
<td>Enrolled consecutively: NR</td>
<td>Treatment provider: PT</td>
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<tr>
<td>Study design: before-and-after</td>
<td>Study design:</td>
<td>Followup duration, (minimum): 9 mo</td>
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<td>Enrolled consecutively: NR</td>
<td>Enrolled consecutively:</td>
<td>Inclusion criteria: (1) mass irreparable RC tears, (2) severely medially retracted (grade 3)</td>
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<td>Followup duration, (minimum): 9 mo</td>
<td>Followup duration, (minimum):</td>
<td>Exclusion criteria: NR</td>
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<td>Inclusion criteria:</td>
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</tr>
<tr>
<td>(1) mass irreparable RC tears, (2) severely medially retracted (grade 3)</td>
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<td>Exclusion criteria:</td>
<td></td>
<td></td>
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<tr>
<td>NR</td>
<td></td>
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<tr>
<td>GROUP 1</td>
<td>GROUP 1</td>
<td>N: 17</td>
<td></td>
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<tr>
<td>Age, mean±SD (range): 80 yr (70–96 yr)</td>
<td>Age, mean±SD (range):</td>
<td>Males %: 35.3</td>
<td></td>
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<tr>
<td>Males %: 35.3</td>
<td>Males %:</td>
<td>Cause of tear: degenerative (17)</td>
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<tr>
<td>Tear size: mass</td>
<td>Tear size: mass</td>
<td>Dominant shoulder %: NR</td>
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<td></td>
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<tr>
<td>Comorbidities: pseudo paralysis (all); multiple medical comorbidities (all)</td>
<td>Comorbidities:</td>
<td></td>
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</table>
Study | Study design | Participant characteristics | Treatment characteristics | Outcomes reported | Author conclusions
--- | --- | --- | --- | --- | ---
Lichtenberg S, 2006 | Recruitment dates: NR | Enrolled: 53 | GROUP 1 | HRQL: NR | 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.
Country: Germany | Study design: before-and-after | Analyzed: 53 | Surgical approach: all-arthroscopic | Function: • CMS |
Treatment category: Operative | Withdrawals: 0 | Type of surgery: repair and debridement | Pain: NR |
Questions: Q2, Q5, Q6 | Duration since symptom onset, mean (range): 11.7 mo (1 mo–6 yr) | Additional procedures (N): acromioplasty (52); biceps tenotomy/tenodesis (18) resection of lateral clavicle (14) | ROM: NR |
Funding: NR | Type of tear: FTT | Duration of immobilization: 3 wk | Strength: NR |
BA Quality: Consecutive: Y | Tendon(s) torn: SS | Duration of rehab: 4 mo (min) | Other: • cuff integrity |
Followup: U | GROUP 1 | Rehab components: passive stretching (day 1–wk 6); active stretching (NR); stretching (min 4 mo); hydrotherapy (NR) |
Outcome assessment: U | N: 53 | Rehab regime: NR |
Inclusion criteria: FTT of SS tendon | Age, mean±SD (range): 60.9 yr (46–74 yr) | PRE-OP TREATMENT: NR |
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 | Males %: 64.2 | Duration: NR |
<p>| | Cause of tear: NR | Type of treatment: NR |
| | Tear size: NR |</p>
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<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Liem D, 2007</td>
<td>Recruitment dates: Jan 2000 to Aug 2003</td>
<td>Enrolled: 77, Analyzed: 38, Withdrawals: 39</td>
<td><strong>GROUP 1</strong> Surgical approach: mini-open Type of surgery: repair Additional procedures (N): acromioplasty (18); labral repair (1); biceps tendinitis/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</td>
<td><strong>HRQL:</strong> NR Function: • CMS Pain: NR</td>
<td>In isolated SS tears, arthroscopic RC repair produces excellent clinical results and equivalent tendon integrity compared with mini-open repair.</td>
</tr>
<tr>
<td>Country: Germany</td>
<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean±SD (range): Group 1: 10.6±7.9 mo (NR); Group 2: 9.6±5.2 mo (NR)</td>
<td><strong>GROUP 2</strong> 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</td>
<td><strong>PRE-OP TREATMENT:</strong> YES Duration: NR Type of treatment: physical therapy NOS, cortisone injection, NSAID</td>
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<tr>
<td>Treatment category: Operative approach</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: NR Tendon(s) torn: SS</td>
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<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, (endpoint): group 1: 25 mo.; group 2: 17.6 mo.</td>
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<td>Funding: No funding</td>
<td>Inclusion criteria: isolated SS tear with persistent pain and reduced function</td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: U</td>
<td>Exclusion criteria: (1) previous surgery; (2) major trauma including dislocation or fracture; (3) concomitant adhesive capsulitis; grade 3 atrophy</td>
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<tr>
<td>GROUP 1</td>
<td><strong>N:</strong> 24</td>
<td><strong>GROUP 1</strong></td>
<td></td>
<td></td>
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<tr>
<td>Age, mean±SD (range): 62.9±6.7 yr (NR)</td>
<td>Males %: 66.7</td>
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<td>Cause of tear: degenerative (13), traumatic (6)</td>
<td>Tear size: sm, med, lg Dominant shoulder %: NR Comorbidities: SLAP lesion (1)</td>
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<tr>
<td>GROUP 2</td>
<td><strong>N:</strong> 53</td>
<td><strong>GROUP 2</strong></td>
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<tr>
<td>Age, mean±SD (range): 61.9±6.6 yr (NR)</td>
<td>Males %: 30.2</td>
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<tr>
<td>Cause of tear: degenerative (9), traumatic (10)</td>
<td>Tear size: sm, med, lg Dominant shoulder %: NR Comorbidities: SLAP lesion (2)</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>---------------------------------------------------------------------------------------------</td>
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<td>Lim JTK, 2005</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 23</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
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<td>Country:</td>
<td>Study design: prospective cohort</td>
<td>Analyzed: 23</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function: CMS</td>
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<tr>
<td>England</td>
<td>treated as before-and-after</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: NA</td>
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<td>Treatment</td>
<td>Enrolled consecutively: yes</td>
<td>Duration since symptom</td>
<td>Additional procedures (N): acromioplasty (all); excision of AC joint (52)</td>
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<tr>
<td>category:</td>
<td>Followup duration, mean (range):</td>
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<td>Duration of immobilization: 3–5 day</td>
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<tr>
<td>Operative</td>
<td>14 mo (3–24 mo)</td>
<td>mo (NR)</td>
<td>Duration of rehab: NR</td>
<td>Other: NR</td>
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<tr>
<td>Questions:</td>
<td>Inclusion criteria: (1) symptomatic</td>
<td>Type of tear: FTT</td>
<td>Rehab regime: NR</td>
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<tr>
<td>Q2</td>
<td>&gt;6 mo; (2) failed nonoperative tx; (3) impingement syndrome with/without tear</td>
<td>Tendon(s) torn: NR</td>
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<td></td>
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<tr>
<td>Funding:</td>
<td>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</td>
<td>GROUP 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NR</td>
<td>Duration: NR</td>
<td>N: 19</td>
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<tr>
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<td>Age, mean±SD (range): NR</td>
<td>Duration of immobilization: 3–5 day</td>
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<td>Followup:</td>
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<td>Cause of tear: NR</td>
<td>Rehab components: passive stretching (immediately post-operative); stretching NOS (NR)</td>
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<tr>
<td>Y</td>
<td>acromioplasty (all); excision of AC joint (10)</td>
<td>Tear size: NR</td>
<td>Rehab regime: NR</td>
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<tr>
<td>Outcome</td>
<td>Duration: NR</td>
<td>Dominant shoulder %: NR</td>
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<tr>
<td>assessment: Y</td>
<td>PRE-OP TREATMENT: yes</td>
<td>Comorbidities: NR</td>
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</table>

Substantial improvement of CMS following decompression in patients with FTT with predominant symptoms of impingement. No patients went on to further surgery.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Country: France</td>
<td>Study design: prospective cohort</td>
<td>Analyzed: 19</td>
<td>Intervention: corticosteroid injection, PT</td>
<td>Comparing the gain in the CMS, there was no significant benefit between those treated operatively and nonoperatively.</td>
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<tr>
<td>Study</td>
<td>Treatment characteristics</td>
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<td>NOS, activity modification</td>
<td>Function:</td>
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<td></td>
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<td>● CMS</td>
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<td>Treatment category:</td>
<td>Duration since symptom onset, mean (range): 4.3 yr (6 mo–10 yr)</td>
<td>Drug name: NR</td>
<td>Pain: NR</td>
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<td>Nonoperative vs. operative</td>
<td>Type of tear: FTT</td>
<td>Duration of treatment: NR</td>
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<td>Questions:</td>
<td>Tendon(s) torn: IS</td>
<td>Treatment Regime: NR</td>
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<td>Q4, Q5</td>
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<td>Degree of supervision: NR</td>
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<td>Questions:</td>
<td>Exclusion criteria: No other FTT of RC, no bilateral disease</td>
<td>Treatment provider: NR</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: isolated IS rupture and characteristic edema pattern of IS muscle on MRI</td>
<td>GROUP 2</td>
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<tr>
<td>NOS: 5*/8*</td>
<td></td>
<td>Surgical approach: open</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Type of surgery: repair</td>
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<td>Questions:</td>
<td>Followup duration, mean (range): 4.2 yr (2–6.6 yr)</td>
<td>Additional procedures: NR</td>
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<td>Funding: NR</td>
<td>Inclusion criteria:</td>
<td>Duration of immobilization: NR</td>
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<tr>
<td>NOS: 5*/8*</td>
<td>isolated IS rupture and characteristic edema pattern of IS muscle on MRI</td>
<td>Duration of rehab: NR</td>
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<td></td>
<td>Exclusion criteria: No other FTT of RC, no bilateral disease</td>
<td>Rehab components: NR</td>
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<td>Questions:</td>
<td></td>
<td>Rehab regime: NR</td>
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<td>Funding: NR</td>
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<td>PRE-OP TREATMENT: yes</td>
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<tr>
<td>NOS: 5*/8*</td>
<td></td>
<td>Duration: (mean/range) 2.3 injections/0–5 injection</td>
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<td></td>
<td></td>
<td>Type of treatment: injections</td>
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</table>

**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 group 1

*NR: Not reported*
<table>
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<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Maier D, 2007</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 21</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: Germany</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 21</td>
<td>Surgical approach: open</td>
<td>Function:</td>
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<tr>
<td>Treatment category: Operative</td>
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<td>Withdrawals: 0</td>
<td>Type of surgery: repair and debridement</td>
<td>● CMS</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): 2.4 yr (2–4.5 yr)</td>
<td>Duration since symptom onset, mean (range): 6.2 wk (3–9 wk)</td>
<td>Additional procedures (N): NR</td>
<td>● subjective shld function</td>
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<td>Funding: No funding</td>
<td>Inclusion criteria: (1) written informed consent, (2) instability of gross intact LHB tendon, (3) FTT of SC tendon, (4) &gt;24 mo followup</td>
<td>Type of tear: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td>Pain: NR</td>
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<td>BA Quality: Consecutive: U</td>
<td>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</td>
<td>Tendon(s) torn: SS, SC</td>
<td>Duration of rehab: 3 mo</td>
<td>ROM: NR</td>
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<td>Followup: Y</td>
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<td>GROUP 1</td>
<td>Rehab components: passive stretching (day 1); active-assisted stretching (individualized); active stretching (wk 6); strengthening (≥wk 6)</td>
<td>Strength: NR</td>
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<td>Outcome assessment: Y</td>
<td></td>
<td>N: 21</td>
<td>Rehab regime: NR</td>
<td>Other: NR</td>
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<td></td>
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<td>Age, mean±SD (range): 51 yr (30–70 yr)</td>
<td>PRE-OP TREATMENT: NR</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>-----------------------------------------------------------------------------------</td>
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<tr>
<td>Mallon WJ,</td>
<td>Recruitment dates:</td>
<td>Enrolled: 224</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Non-smokers undergoing RCR have greater improvement of pain and better functional results than smokers.</td>
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<tr>
<td>2004</td>
<td>Jan 1990 to May 1993</td>
<td>Analyzed: 224</td>
<td>Surgical approach: open</td>
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<tr>
<td>Country: USA</td>
<td>Study design: retrospective cohort treated as before-and-after</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
<td>● UCLA</td>
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<td>Treatment category: Operative</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: 4–6 wk</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>Pain: ● VAS</td>
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<td>Questions: Q2, Q6</td>
<td>Type of tear: FTT</td>
<td>Duration of rehab: 12 mo</td>
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<td>ROM: NR</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: open repair of chronic FTT</td>
<td>Rehab components: passive stretching (day 3–wk 6); active-assisted stretching (wk 6); strengthening (3 mo–1 yr)</td>
<td>Other: NR</td>
<td>Strength: NR</td>
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<td></td>
<td>Enrolled consecutively: yes</td>
<td>GROUP 2</td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
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<td>Followup duration, (minimum): 1 yr</td>
<td>N: 129</td>
<td>Duration of immobilization: 4–6 wk</td>
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<td>Inclusion criteria: open repair of chronic FTT</td>
<td>Age, mean±SD (range): 53.1±9 yr (NR)</td>
<td>Duration of rehab: 12 mo</td>
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<td>Exclusion criteria: chronic mass tears</td>
<td>Males %: NR</td>
<td>Rehab components: passive stretching (day 3–wk 6); active-assisted stretching (wk 6); strengthening (3 mo–1 yr)</td>
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<td></td>
<td>Cause of tear: NR</td>
<td>Rehab regime: NR</td>
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<td></td>
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<td>Tear size: NR</td>
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<td></td>
<td>Dominant shoulder %: NR</td>
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<td></td>
<td></td>
<td>Comorbidities: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Marc T, 2009</td>
<td>Recruitment dates: 2004</td>
<td>Studies design: Retrospective cohort</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Functional outcome was the same for inpatient and outpatient rehab; pain reduction was greater for patients with outpatient rehab.</td>
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<td>Country: France</td>
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<td></td>
<td>Surgical approach: NR</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Type of surgery: repair</td>
<td>● CMS</td>
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</tr>
<tr>
<td>Treatment category: Post-op rehabilitation</td>
<td></td>
<td></td>
<td>Additional procedures (N): NR</td>
<td>Pain:</td>
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<td>Questions:</td>
<td>Inclusion criteria: (1) FT RC repair by one of the authors (2) seen ≥2 years postoperatively</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: 3–8 wk, depending on surgical intervention</td>
<td>Rom:</td>
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<td>Funding: NR</td>
<td>Exclusion criteria: NR</td>
<td>Type of tear: FTT</td>
<td>Duration of rehab: 4–10 wk</td>
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<td>NOS: 6*/8*</td>
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<td>Tendon(s) torn: SS, IS, SC</td>
<td>Rehab components: kinébalnéotherapie; kinésithérapie; ergothérapie; physical therapy</td>
<td>Other:</td>
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<tr>
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<td></td>
<td>Age, mean±SD (range): 61 yr (36–80)</td>
<td>Rehab regime: NR</td>
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<td></td>
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<td>Males %: 61</td>
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<tr>
<td>GROUP 1</td>
<td>Surgical approach: NR</td>
<td>N: 26</td>
<td>Duration of immobilization: 3–8 wk, depending on surgical intervention</td>
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<td>Type of surgery: repair</td>
<td>Age, mean±SD (range): NR</td>
<td>Duration of rehab: 3–4 mo</td>
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<td>Additional procedures (N): NR</td>
<td>Males %: NR</td>
<td>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 for elevating humeral head and rotation cuff muscles</td>
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<tr>
<td></td>
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<td>Cause of tear: NR</td>
<td>Rehab regime: NA</td>
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<tr>
<td></td>
<td></td>
<td>Tear size: NR</td>
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<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
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<td></td>
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<td>Comorbidities: NR</td>
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<td>GROUP 2</td>
<td>Surgical approach: NR</td>
<td>N: 38</td>
<td>Duration of immobilization: 3–8 wk, depending on surgical intervention</td>
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<td>Type of surgery: repair</td>
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<td>Duration of rehab: 3–4 mo</td>
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<td>Additional procedures (N): NR</td>
<td>Males %: NR</td>
<td>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 for elevating humeral head and rotation cuff muscles</td>
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<td>Cause of tear: NR</td>
<td>Rehab regime: NA</td>
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<td></td>
<td>Tear size: NR</td>
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<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: NR</td>
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<td>GROUP 3</td>
<td>Surgical approach: NR</td>
<td>N: 16</td>
<td>Duration of immobilization: 3–8 wk, depending on surgical intervention</td>
<td></td>
<td></td>
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<td></td>
<td>Type of surgery: repair</td>
<td>Age, mean±SD (range): NR</td>
<td>Rehabilitation: Initially, following Group 1 protocol; subsequently, received CGE following Group 2 treatment protocol.</td>
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<tr>
<td></td>
<td>Additional procedures (N): NR</td>
<td>Males %: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
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</table>
Marc T, 2009 (continued)  
PRE-OP TREATMENT: yes  
Duration: NR  
Type of treatment: exercise
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Country: Austria</td>
<td>Study design: prospective cohort</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>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</td>
<td>Function: ● CMS Pain: NR ROM: NR Strength: NR Other: ● cuff integrity</td>
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<td>Treatment category: Operative technique</td>
<td>Enrolled consecutively: No</td>
<td>Type of tear: FTT (NR); PTT (NR) Tendon(s) torn: SS, IS</td>
<td>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</td>
<td>PRE-OP TREATMENT: NR Duration: NR Type of treatment: NR</td>
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<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): GROUP 1 26.8 mo (5–59 mo); Group 2: 14.3 mo (5–33 mo)</td>
<td>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</td>
<td>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</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: (1) SS and IS tendon tears (total, PTT), (2) &lt;75 yr old, (3) mobilized tendon</td>
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<td>NOS: 4*/8*</td>
<td>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 &gt;75 yr</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Country: Scotland</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 53</td>
<td>Surgical approach: all-arthroscopic</td>
<td>• SF-36</td>
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<td>Treatment category: Operative</td>
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<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
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<td>Questions: Q2, Q5, Q6</td>
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<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N):</td>
<td>• ASES</td>
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<td>Funding: NR</td>
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<td>Type of tear: FTT</td>
<td>acromioplasty (all); labral repair (33);</td>
<td>• CMS</td>
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<td>BA Quality: Consecutive: U Followup: Y</td>
<td>Enrolled consecutively: NR</td>
<td>Tendon(s) torn: NR</td>
<td>biceps tenotomy/tenodesis (1); distal clavicle resection (NR)</td>
<td>Pain: NR</td>
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<td>Outcome assessment: U</td>
<td></td>
<td>GROUP 1</td>
<td>Duration of immobilization: 3 wk</td>
<td>ROM: NR</td>
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<tr>
<td></td>
<td></td>
<td>N: 53</td>
<td>Duration of rehab: NR</td>
<td>Strength: NR</td>
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<tr>
<td></td>
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<td>Age, mean±SD (range): 51 yr (23–74 yr)</td>
<td>Rehab components: passive stretching (wk 3); active stretching and strengthening (wk 6); physical therapy (6 mo)</td>
<td>Other: NR</td>
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<td></td>
<td>Males %: 71.7</td>
<td>Rehab regime: NR</td>
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<td></td>
<td>Cause of tear: NR</td>
<td>PRE-OP TREATMENT: yes</td>
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<tr>
<td></td>
<td></td>
<td>Tear size: sm/med, lg/mass, mean: 2.5 cm</td>
<td>Duration: 6 mo (min)</td>
<td></td>
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<td></td>
<td>Dominant shoulder %: 62.3</td>
<td>Type of treatment: physical therapy</td>
<td>NOS, cortisone injection, NSAID</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
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<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 61</td>
<td>Surgical approach: open</td>
<td>● SF-36</td>
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<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 35</td>
<td>Type of surgery: repair</td>
<td>Function:</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): bursectomy (all)</td>
<td>Duration of immobilization: NR</td>
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<td>Funding: No funding</td>
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<td>Duration of rehab: NR</td>
<td>Rehabilitation components: NR</td>
<td>ROM:</td>
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<td>BA Quality: Consecutive: Y</td>
<td>Tendon(s) torn: SS, SS+IS, SS+IS+SC</td>
<td>Rehab regime: NR</td>
<td>PRE-OP TREATMENT: NR</td>
<td>Strength:</td>
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<td>Followup: N</td>
<td>GROUP 1</td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
<td>Other:</td>
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<td>Outcome assessment: N</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>McIntyre LF, 2006</td>
<td>Recruitment dates: Jan 2001 to Feb 2002</td>
<td>Enrolled: 105</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>No statistical difference in post operative UCLA score between the 2 groups.</td>
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<td>Country: USA</td>
<td>Study design: retrospective cohort</td>
<td>Analyzed: 87</td>
<td>Surgical approach: mini-open</td>
<td>Function:</td>
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<td>Treatment category: Operative technique</td>
<td>Duration since symptom onset, mean (range): Group 1: 9.9 mo (1 mo–3 yr); Group 2: 10.4 mo (1 mo–3 yr)</td>
<td>Withdrawals: 18</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
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<td>Questions: Q2, Q5</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: NR</td>
<td>Additional procedures (N):</td>
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<td>Funding: NR</td>
<td>Followup duration, mean (range): 2.3 yr (18 mo–3.3 yr)</td>
<td>Tendon(s) torn: NR</td>
<td>acromioplasty (all); biceps tenotomy/tenodesis (4); glenohumeral arthritis debridement (1); SLAP lesion excision (1); calcified tendonitis excision (1); arthroscopic capsular release (1)</td>
<td>Strength: NR</td>
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<td>NOS: 4*/8*</td>
<td>Exclusion criteria: NR</td>
<td>GROUP 1</td>
<td>Technique: metallic suture anchor; monofilament stitch and tendon to bone closure</td>
<td>Other: NR</td>
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<td>Inclusion criteria: NR</td>
<td>N: 50</td>
<td>Duration of immobilization: 3 wk</td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 55.7 yr (37–78 yr)</td>
<td>Duration of rehab: NR</td>
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<td></td>
<td></td>
<td>Males %: 58</td>
<td>Rehab components: passive stretching (wk 1); active stretching (wk 4–6)</td>
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<td>Cause of tear: degenerative (26), traumatic (24)</td>
<td>Rehab regime: NR</td>
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<td>Tear size: mean: 3.4 cm; range:1–6 cm</td>
<td>GROUP 2</td>
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<td>Dominant shoulder %: 62</td>
<td>Surgical approach: mini-open</td>
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<td>Comorbidities: adhesive capsulitis</td>
<td>Type of surgery: repair</td>
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<td>GROUP 2</td>
<td>Additional procedures (N): acromioplasty (all)</td>
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<tr>
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<td></td>
<td>N: 55</td>
<td>Technique: hand tied knots; braided polyester suture; simple stitch</td>
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<td>Age, mean±SD (range): 54.7 yr (17–78 yr)</td>
<td>Duration of immobilization: 3 wk</td>
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<td></td>
<td></td>
<td>Males %: 69.1</td>
<td>Duration of rehab: NR</td>
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<td>Cause of tear: degenerative (30), traumatic (25)</td>
<td>Rehab components: passive stretching (wk 1); active stretching (wk 4–6)</td>
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<td>Tear size: mean: 3.0 cm; range: 1–6 cm</td>
<td>Rehab regime: NR</td>
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<td>Dominant shoulder %: 65.5</td>
<td>PRE-OP TREATMENT: NR</td>
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<td>Comorbidities: NR</td>
<td>Duration: NR</td>
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<td>Other: NR</td>
<td>Type of treatment: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Michael JWP, 2005</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 61</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Postoperative tx of FTT with combined CPM and physical therapy protocol provided a significantly earlier ROM than physical therapy alone.</td>
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<td>Country: Germany</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 55 Withdrawals: 6</td>
<td>Surgical approach: open (19); mini-open (14); other (1)</td>
<td>Function: CMS</td>
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<td>Treatment category: Post-op rehabilitation</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair</td>
<td>Type of surgery: repair</td>
<td>Pain: VAS (100 points)</td>
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<td>Followup duration (endpoint): 56 days</td>
<td>Duration of immobilization: NR</td>
<td>Additional procedures (N):</td>
<td>Duration of immobilization: NR</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Duration of rehab: 90 days</td>
<td>manipulation (4); setting fractures (1)</td>
<td>Duration of rehab: 90 days</td>
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<td>Funding: Industry</td>
<td>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</td>
<td>Rehab regime: Frequency–CPM, 5x/day; PT 2x/wk; Intensity–CPM, 20 min. each; PT, 30 min/session</td>
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<td>Other: German</td>
<td>ROB: High</td>
<td>Exclusion criteria: (1) previous surgery, (2) shid comorbidity, (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</td>
<td>GROUP 2</td>
<td>Strength: NR</td>
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<td>Inclusion criteria: (1) 30–70 yr, (2) FTT of SS, (3) acromiohumeral space &gt;7 mm, (4) attend followup visits, (5) consent</td>
<td>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</td>
<td>Surgical approach: open (12); mini-open (9); all-arthroscopic (4)</td>
<td>Other: time away from work</td>
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<td>GROUP 2</td>
<td>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</td>
<td>Type of surgery: repair</td>
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<td>Additional procedures (N): manipulation (1); setting fractures (1)</td>
<td>Duration of rehab: 90 days</td>
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<td>Duration of immobilization: 4 wk</td>
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<td>Rehabilitation 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</td>
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<td></td>
<td>Rehabilitation regime: Frequency–2x/wk; Intensity–30 min/session</td>
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<td>PRE-OP TREATMENT: NR</td>
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<td></td>
<td></td>
<td></td>
<td>Duration: NR</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Type of treatment: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Milano G, 2007</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 80</td>
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<td>HRQL: NR</td>
<td>At short-term followup subacromial decompression did not seem to significantly affect the outcome of arthroscopic RCR.</td>
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<td>Country: Italy</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 71</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
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<td>Treatment category: Operative approach</td>
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<td>Followup duration (endpoint): 2 yr</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N):</td>
<td>- DASH</td>
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<td>Questions: Q2, Q6</td>
<td>Type of tear: FTT</td>
<td>acromioplasty (all); biceps tenotomy (7); tenodesis (14)</td>
<td>- Work-DASH</td>
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<td>Funding: NR</td>
<td>Tendon(s) torn: SS, SS+IS+SC</td>
<td>Duration of immobilization: 3 wk.</td>
<td>Pain: NR</td>
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<tr>
<td>ROB: High</td>
<td>Inclusion criteria:</td>
<td></td>
<td>Duration of rehab: NR</td>
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<tr>
<td></td>
<td>(1) repairable FTT,</td>
<td>Rehabs components: stretching</td>
<td>ROM: NR</td>
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<tr>
<td></td>
<td>(2) type 2 or 3 acromion</td>
<td>(passive, active, active-assisted) (wk 4–8); strengthening (wk 9–12); open kinetic</td>
<td>Strength: NR</td>
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<tr>
<td></td>
<td>Exclusion criteria:</td>
<td>chain exercise, proprioception and polymetric exercises, postural rehab of kinetic chain (wk 13–16)</td>
<td>Other: NR</td>
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<td></td>
<td>(1) PTT or irreparable tear; (2) labral pathology amenable to surgical repair; (3) type 1 acromion, os acromiurn, degenerative arthritis of glenohumeral joint; (4) symptomatic arthritis of AC joint; (5) RC arthropathy; (6) previous surgery; (7) WCB claim</td>
<td>Rehabs regime: NR</td>
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<td>GROUP 1</td>
<td>N: 40</td>
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<td></td>
<td></td>
<td>Age, mean±SD (range): 61±7 yr (NR)</td>
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<td></td>
<td></td>
<td>Males %: 50</td>
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<td>Cause of tear: NR</td>
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<td></td>
<td></td>
<td>Tear size: NR</td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 57.5</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: pathology of LHB (12)</td>
<td></td>
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<tr>
<td></td>
<td>GROUP 2</td>
<td>N: 40</td>
<td>Surgical approach: all-arthroscopic</td>
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<td>Age, mean±SD (range): 59.7±9.7 yr (NR)</td>
<td>Type of surgery: repair</td>
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<td></td>
<td></td>
<td>Males %: 47.5</td>
<td>Additional procedures (N): biceps tenotomy (15); tenodesis (5); subacromial bursectomy (all)</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: NR</td>
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<td>Dominant shoulder %: 60</td>
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<td>Comorbidities: pathology of LHB (20)</td>
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<td></td>
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<td>Duration of immobilization: 3 wk.</td>
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<td></td>
<td></td>
<td>Duration of rehab: NR</td>
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<tr>
<td></td>
<td></td>
<td>Rehab components: stretching</td>
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<td>(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)</td>
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<td></td>
<td></td>
<td>Rehab regime: NR</td>
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PRE-OP TREATMENT: NR
Duration: NR
Type of treatment: NR
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<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: (1) symptomatic RC tears</td>
<td>Funding: Industry</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>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</td>
<td></td>
<td>NOS: 7*/8*</td>
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<td></td>
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<td>Enrolled: 159 Analyzed: 87 Withdrawals: 72</td>
<td>Type of tear: FTT Tendon(s) torn: NR</td>
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<td></td>
<td></td>
<td>Followup duration, mean (range): 2 yr</td>
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<tr>
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<td>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</td>
<td>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</td>
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<tr>
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<td></td>
<td>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</td>
<td>Technique: knotted</td>
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<td>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</td>
<td>Additional procedures (N): acromioplasty (all)</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Type of surgery: repair and debridement</td>
<td>Pain: At rest (0–4) At night (0–4)</td>
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<td></td>
<td></td>
<td>ROM: flexion abduction external rotation</td>
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<td></td>
<td></td>
<td>Strength: supraspinatus external rotation lift off</td>
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<td></td>
<td></td>
<td>Other: cuff integrity</td>
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</table>

**HRQL:** NR

- ASES (1°)
- Overall shoulder function
- RC Functional Index
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
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tr>
<td>Milroy DR, 2008</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 67 Analyzed: NR Withdrawals: NR</td>
<td>GROUP 1 Surgical approach: NR Type of surgery: repair Additional procedures: NR</td>
<td>HRQL:</td>
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<tr>
<td>Country: USA</td>
<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean (range): NR Type of tear: NR Tendon(s) torn: NR</td>
<td>Duration of immobilization: NR Duration of rehab: NR Rehab components: NR Rehab regime: NR</td>
<td>Tx of patients with a standardized care process following RCR resulted in greater functional improvement and utilized fewer physical therapy visits.</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Other: Abstract</td>
<td></td>
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<tr>
<td>Other:</td>
<td></td>
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<tr>
<td>NOS: 3<em>8</em></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Country: USA</td>
<td>Study design: retrospective cohort treated as before-and-after</td>
<td>Enrolled consecutively: yes Followup duration, mean (range): 3.8 yr (2–5.7 yr)</td>
<td>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 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</td>
<td>Workers compensation patients had poorer functional and return to work results than patients not receiving compensation, with the exception of the active ROM results.</td>
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<tr>
<td>Treatment category: Operative</td>
<td></td>
<td></td>
<td>Surgical approach: open Type of surgery: repair Additional procedures (N): acromioplasty (all) Duration of OP treatment: yes Duration: 3 mo (mean) Type of treatment: exercise, physical therapy NOS, cortisone injection</td>
<td></td>
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<tr>
<td>Questions: Q2, Q6</td>
<td></td>
<td></td>
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<tr>
<td>Funding: No funding</td>
<td>Inclusion criteria: (1) operative RCR, (2) active with no serious medical illness, (3) no response to nonoperative</td>
<td></td>
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<td></td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: U</td>
<td>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</td>
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<td>Mohtadi NG, 2008</td>
<td>Recruitment dates: 1999 to 2004</td>
<td>Enrolled: 73</td>
<td>GROUP 1</td>
<td>HRQL:</td>
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<td>Country: Canada</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 60</td>
<td>Surgical approach: open</td>
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<td>Treatment category: Operative approach</td>
<td>Duration since symptom onset, mean (range): &gt;3 mo (NR)</td>
<td>Withdrawals: 14</td>
<td>Type of surgery: repair</td>
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<td>Questions: Q2, Q5, Funding: Government, academic, foundation</td>
<td>Type of tear: FTT</td>
<td>Additional procedures (N): acromioplasty (all)</td>
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<td>ROB: High</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td></td>
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<tr>
<td>Exclusion criteria: (1) unremitting pain, (2) ≥3 mo nonoperative, (3) weakness, (4) &gt;18 yr, (5) FTT, (6) English speaking</td>
<td>Group 1</td>
<td>Duration of rehab: NR</td>
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<tr>
<td>Inclusion criteria:</td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (immediately); active stretching (wk 6); CPM (≥wk 8)</td>
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<td></td>
<td>Age, mean±SD (range): 56.2 yr (44–77 yr)</td>
<td>Rehab regime: NR</td>
<td>No difference in outcomes at 1 and 2 years between mini-open and open acromioplasty.</td>
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<tr>
<td></td>
<td>Males %: 59.5</td>
<td></td>
<td>Statistically and clinically significant improvement in quality of life was found in mini-open patients at 3 mo vs. open RCR pts.</td>
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<td>Cause of tear: NR</td>
<td>Pain: NR</td>
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<tr>
<td></td>
<td>Tear size: all sizes</td>
<td>Function:</td>
<td></td>
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<td>Dominant shoulder %: 43.2</td>
<td>Shoulder Rating Questionnaire</td>
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<td>Comorbidities: NR</td>
<td>ROM:</td>
<td>- flexion</td>
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<td></td>
<td>GROUP 2</td>
<td>external rotation at side</td>
<td></td>
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<td></td>
<td>N: 36</td>
<td>external rotation at 90° abduction</td>
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<td>Age, mean±SD (range): 57 yr (33–82 yr)</td>
<td>internal rotation</td>
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<td>Males %: 55.6</td>
<td>Strength:</td>
<td>- Function Shoulder Elevation Test</td>
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<td>Cause of tear: NR</td>
<td>Other: NR</td>
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<td>Tear size: all sizes</td>
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<td></td>
<td>Dominant shoulder %: 66.7</td>
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<td>Comorbidities: NR</td>
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<td>Author conclusions</td>
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<td>Montgomery TJ, 1994</td>
<td>Recruitment dates: Jan 1987 to Mar 1990</td>
<td>Enrolled: 106 (shld: 107) Analyzed: 87 (shld: 88) Withdrawals: 19</td>
<td>GROUP 1 Surgical approach: open Type of surgery: repair Additional procedures (N): acromioplasty (all)</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design (trial type): CCT (parallel)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: NR</td>
<td>Function: NR</td>
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<td>Treatment category: Operative approach</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: FTT Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
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<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): NR (2–5 yr)</td>
<td>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</td>
<td>Rehab components: passive stretching–day 10–30; active rehabilitation &gt;1 mo Rehab regime: NR</td>
<td>ROM: NR</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: (1) failure of nonoperative tx, (2) FTT</td>
<td>Group 1 S: 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</td>
<td>Group 2 Surgical approach: all-arthroscopic Type of surgery: debridement Additional procedures (N): acromioplasty (all); abrasion of the greater tuberosity (NR)</td>
<td>Strength:</td>
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<td>ROB: High</td>
<td>Exclusion criteria: NR</td>
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<td>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</td>
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<td>Duration of immobilization: NR</td>
<td>Other: NR</td>
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<td>Duration of rehab: NR</td>
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<td>Rehab components: passive stretching (day 10–30); active rehabilitation (&gt;1 mo)</td>
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<td></td>
<td></td>
<td>Rehab regime: NR</td>
<td></td>
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<td>PRE-OP TREATMENT: yes Duration: 3 mo (min)</td>
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<td></td>
<td></td>
<td>Type of treatment: exercise, physical therapy NOS, cortisone injection, NSAID, avoidance of pain inducing activities</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Moosemayer S, 2010</td>
<td>Recruitment dates: Sept 2004 to Oct 2007</td>
<td>Enrolled: 103 Analyzed: 102 Withdrawals: 1</td>
<td>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)</td>
<td>HRQL: • SF-36</td>
<td>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.</td>
</tr>
<tr>
<td>Norway</td>
<td>Study design: RCT (parallel)</td>
<td>Type of tear: FTT Tendon(s) torn: SS, SS+IS, SS+SC</td>
<td>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</td>
<td>Function: • ASES • CMS Pain: NR ROM: NR Strength: NR Other: • cuff integrity</td>
<td></td>
</tr>
<tr>
<td>Nonoperative vs. operative</td>
<td>Enrolled consecutively: NR</td>
<td>GROUP 1 Duration since symptom onset, mean±SD: 12.3±18.7 N: 51</td>
<td>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</td>
<td>Drug name: NR</td>
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</tr>
<tr>
<td>Questions: Q1, Q4, Q5</td>
<td>Followup duration, mean (range): 12 mo</td>
<td>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</td>
<td>GROUP 2 Intervention: PT – stretching, strengthening and joint mobilization exercise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>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 &lt;3 cm confirmed by MRI or US, (5) muscle atrophy &lt;stage 2 on MRI, (6) traumatic and atraumatic tears</td>
<td>GROUP 2 Duration since symptom onset, mean±SD: 9.8±9.8 N: 51</td>
<td>Degree of supervision: direct (1:1) Treatment provider: PT</td>
<td></td>
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</tr>
<tr>
<td>ROB: High</td>
<td>Exclusion criteria: (1) age &lt;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</td>
<td>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</td>
<td>GROUP 3 Initial mean of 24 sessions (range 15–34 session) of nonoperative treatment – see “Group 2” After failed improvement – see “Group 1”</td>
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<tr>
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<td></td>
<td>GROUP 3 N: 9 Age, mean±SD (range): NR Males %: NR Cause of tear: NR Tear size: sm, med Dominant shoulder %: NR Comorbidities: NR</td>
<td>PRE-OP TREATMENT: NR Duration: NR Type of treatment: NR</td>
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E-100
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Country: USA</td>
<td></td>
<td>Analyzed: NR</td>
<td>Surgical approach: open</td>
<td></td>
<td></td>
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<tr>
<td>Treatment category: Operative approach</td>
<td>Study design: retrospective cohort</td>
<td>Withdrawals: NR</td>
<td>Type of surgery: repair (group 1 and 2); debridement (group 3)</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td></td>
<td></td>
<td>Additional procedures (N): acromioplasty (NR)</td>
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<td></td>
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<tr>
<td>Funding: NR</td>
<td>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</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: NR</td>
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<td></td>
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<tr>
<td>NOS: 3*/8*</td>
<td></td>
<td>Type of tear: FTT</td>
<td>Duration of rehab: &gt;3 mo</td>
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<tr>
<td></td>
<td></td>
<td>Tendon(s) torn: NR</td>
<td>Rehab components: passive stretching (day 1–wk 6); active stretching (wk 6–3 mo); strengthening (≥3 mo)</td>
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<tr>
<td></td>
<td>Enrolled consecutively: NR</td>
<td>ALL GROUPS N: 21 (group 1), 11 (group 2), 6 (group 3)</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Followup duration (endpoint): 2 yr</td>
<td>Age, mean±SD (range): all groups: 62.6 yr (33–81 yr)</td>
<td>PRE-OP TREATMENT: yes</td>
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<tr>
<td></td>
<td></td>
<td>Males %: 73.7 (all)</td>
<td>Duration: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Type of treatment: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: mass</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 63.6 (all)</td>
<td></td>
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<tr>
<td></td>
<td>Exclusion criteria: NR</td>
<td>Comorbidities: NR</td>
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</table>

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

NR: Not reported.
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<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
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<tbody>
<tr>
<td>Mullett H, 2006</td>
<td>Recruitment dates: Dec 2004 to Jun 2006</td>
<td>Enrolled: 210</td>
<td>GROUP 1&lt;br&gt;Surgical approach: all-arthroscopic&lt;br&gt;Type of surgery: debridement&lt;br&gt;Additional procedures (N): NR</td>
<td>HRQL: NR</td>
<td>The results of the study support arthroscopic RCR compared to decompression alone in patients with small and medium rotator cuff tears.</td>
</tr>
<tr>
<td></td>
<td>Country: UK</td>
<td>Analyzed: NR&lt;br&gt;Withdrawals: NR</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Function: CMS</td>
<td></td>
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<tr>
<td></td>
<td>Treatment category: Operative approach</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of tear: FTT&lt;br&gt;Tendon(s) torn: NR</td>
<td>Pain: VAS</td>
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<tr>
<td></td>
<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): 3 yr (12 mo–NR)</td>
<td>GROUP 1&lt;br&gt;N: 114&lt;br&gt;Age, mean±SD (range): NR&lt;br&gt;Males %: NR</td>
<td>ROM: NR</td>
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<tr>
<td></td>
<td>Funding: NR</td>
<td>Exclusion criteria: NR</td>
<td>Cause of tear: NR&lt;br&gt;Tear size: sm, med&lt;br&gt;Dominant shoulder %: NR&lt;br&gt;Comorbidities: NR</td>
<td>Strength: strength (NR)</td>
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<tr>
<td></td>
<td>NOS: 6*/8*</td>
<td>NR</td>
<td>GROUP 2&lt;br&gt;N: 96&lt;br&gt;Age, mean±SD (range): NR&lt;br&gt;Males %: NR</td>
<td>Other: NR</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Cause of tear: NR&lt;br&gt;Tear size: sm, med&lt;br&gt;Dominant shoulder %: NR&lt;br&gt;Comorbidities: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Nam SC, 2008</td>
<td>Recruitment dates: Apr 2000 to Sep 2004</td>
<td>Enrolled: 45</td>
<td>GROUP 1</td>
<td>HRQL:</td>
<td>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.</td>
</tr>
<tr>
<td>Country: South Korea</td>
<td>Study design: prospective cohort treated as before-and-after</td>
<td>Analyzed: 45</td>
<td>Surgical approach: all-arthroscopic</td>
<td>• SST</td>
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<td>Treatment category: Operative</td>
<td>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)</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair and debridement</td>
<td>• CMS</td>
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<tr>
<td>Questions: Q2, Q6</td>
<td>Type of tear: FTT</td>
<td>Additional procedures (N): acromioplasty (all); manipulation (all)</td>
<td>Duration of immobilization: NR</td>
<td>• UCLA</td>
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<td>Funding: No funding</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
<td>Duration of rehab: NR</td>
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<tr>
<td>BA Quality:</td>
<td></td>
<td>Rehab components: passive stretching (1–6 mo); active-assisted stretching (wk 6); strengthening (wk ≥6)</td>
<td>Rehab components: NR</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td>Consecutive: U</td>
<td></td>
<td>Rehab regime: Frequency–daily; Intensity–3x10 rounds/day</td>
<td>Rehab regime: Frequency–daily; Intensity–3x10 rounds/day</td>
<td>• VAS (active motion)</td>
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<tr>
<td>Followup: Y</td>
<td></td>
<td></td>
<td></td>
<td>• VAS (at rest)</td>
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</tr>
<tr>
<td>Outcome assessment: Y</td>
<td></td>
<td></td>
<td></td>
<td>ROM:</td>
<td></td>
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<tr>
<td></td>
<td>Inclusion criteria:</td>
<td></td>
<td></td>
<td>• abduction</td>
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<tr>
<td></td>
<td>(1) arthroscopic RCR for RC tear with limited ROM; (2) AC group: crepitus heard during manipulation before RC repair</td>
<td></td>
<td></td>
<td>• forward flexion</td>
<td></td>
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<tr>
<td></td>
<td>Exclusion criteria:</td>
<td></td>
<td></td>
<td>• external rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(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</td>
<td></td>
<td></td>
<td>• internal rotation (pos.)</td>
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<td></td>
<td></td>
<td></td>
<td>• cross-body adduction</td>
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<tr>
<td>Followup duration, mean (range): 2.6 yr (16 mo–6.2 yr)</td>
<td></td>
<td></td>
<td></td>
<td>• forward flexion (kg)</td>
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<td></td>
<td></td>
<td>• external rotation (kg)</td>
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<td>GROUP 1</td>
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<td>• internal rotation (kg)</td>
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<td>Age, mean±SD (range): 59.8 yr (43–73 yr)</td>
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<td>Other: NR</td>
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<tr>
<td></td>
<td>Males %: 86.7</td>
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<td>Cause of tear: NR</td>
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<tr>
<td></td>
<td>Tear size: sm, med, lg</td>
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<tr>
<td></td>
<td>Dominant shoulder %: 66.7 (all)</td>
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<tr>
<td></td>
<td>Comorbidities: shld stiffness(all); DM (5)</td>
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<td>GROUP 2</td>
<td>N: 30</td>
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<td></td>
<td>Age, mean±SD (range): 56.1 yr (40–65 yr)</td>
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<td>Males %: 60</td>
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<td>Cause of tear: NR</td>
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<tr>
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<td>Tear size: sm, med, lg</td>
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<tr>
<td></td>
<td>Dominant shoulder %: see group 1</td>
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<td>Comorbidities: DM (1)</td>
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<tr>
<td>PRE-OP TREATMENT: NR</td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Country: USA</td>
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<td>Analyzed: 127</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
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<td>Treatment category: Operative</td>
<td>Withdrawals: 66</td>
<td>Type of surgery: repair and debridement</td>
<td>• ASES</td>
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<tr>
<td>Questions: Q2, Q6</td>
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<td>Additional procedures (N):</td>
<td>Pain: NR</td>
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<tr>
<td>Funding: NR</td>
<td>Type of tear: NR</td>
<td>acromioplasty (all); SLAP repair (1);</td>
<td>ROM:</td>
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</tr>
<tr>
<td>BA Quality: Consecutive: Y</td>
<td>Tendon(s) torn: SS, IS, SC,</td>
<td>biceps tenotomy/tenodesis (12)/(6); AC</td>
<td>• flexion</td>
<td></td>
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</tr>
<tr>
<td>Followup: N</td>
<td>TM (single, double, triple)</td>
<td>joint co-planing (28); distal clavicle excision (15)</td>
<td>• external rotation</td>
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<tr>
<td>Outcome assessment: U</td>
<td>Duration of immobilization: NR</td>
<td>Duration of rehab: NR</td>
<td>Strength:</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Inclusion criteria: (1) imaging consistent with RC tear, (2) failure of nonoperative tx, (3) corticosteroid injection</td>
<td>Duration of rehab: NR</td>
<td>• manual muscle testing</td>
<td></td>
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<tr>
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<td>Exclusion criteria: (1) RCR not performed, (2) revision RCR, (3) glenohumeral OA</td>
<td>Rehab components: Rehab regime: NR</td>
<td>• flexion</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Enrolled consecutively: yes</td>
<td></td>
<td>• external rotation</td>
<td></td>
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<tr>
<td></td>
<td>Followup duration, mean (range): 2.4 yr</td>
<td>GROUP 1 N: 193</td>
<td>Strength:</td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 58.6 yr</td>
<td>• manual muscle testing</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 39.9</td>
<td>• flexion</td>
<td></td>
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<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>• external rotation</td>
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<tr>
<td></td>
<td></td>
<td>Tear size: all sizes</td>
<td>Other:</td>
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<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>• cuff integrity</td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: SLAP lesion (36); biceps pathology (37)</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Ogilvie-DJ Harris, 1993</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 50</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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 sufficient, in which case the authors advise open repair.</td>
</tr>
<tr>
<td>Country: Canada</td>
<td>Study design (trial type): CCT (parallel)</td>
<td>Analyzed: 45</td>
<td>Type of surgery: open</td>
<td>Function:</td>
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<tr>
<td>Treatment category: Operative approach</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 5</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
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<td></td>
<td>Followup duration, mean (range): NR (2–5 yr)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>ROB: High</td>
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<tr>
<td>Questions: Q2</td>
<td>Inclusion criteria: (1) pre-op dx based on history, (2) physical exam and failed nonoperative tx, (3) confirmation of dx and appropriate tear size</td>
<td></td>
<td>Duration of immobilization: NR</td>
<td>Pain: NR</td>
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<td>Funding: No funding</td>
<td>Exclusion criteria: NR</td>
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<td>Duration of rehab: NR</td>
<td>ROM: NR</td>
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<tr>
<td>ROB: High</td>
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<td></td>
<td>Rehab components: passive stretching (wk 1–3); active-assisted stretching (wk 3–6); strengthening (6 wk–6 mo)</td>
<td>Strength: NR</td>
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<td></td>
<td></td>
<td></td>
<td>Rehab regime: NR</td>
<td>Other: NR</td>
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**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
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oh JH, 2008</td>
<td>Recruitment dates:</td>
<td>Enrolled: 125 (shld: 127)</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Moderate pre-operative shoulder stiffness does not affect clinical outcomes of RC repair if arthroscopic capsular release is added to the index procedure.</td>
</tr>
<tr>
<td></td>
<td>Jan 2004 to Dec 2005</td>
<td>Analyzed: 125 (shld: 127)</td>
<td>Surgical approach: open (21); all-arthroscopic (9)</td>
<td>Function:</td>
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<td>Country:</td>
<td>Study design:</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair and debridement</td>
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<tr>
<td>South Korea</td>
<td>prospective cohort</td>
<td>Duration since symptom</td>
<td>Additional procedures (N):</td>
<td>• CMS</td>
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<td>Treatment</td>
<td>treated as before-</td>
<td>onset, mean±SD (range):</td>
<td>acromioplasty (all); biceps</td>
<td>• SST</td>
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<td>category:</td>
<td>and-after</td>
<td>Group 1: 28.5±52.2 (NR)</td>
<td>tenotomy/tenodesis (12); manipulation</td>
<td>Pain:</td>
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<td>Q2, Q6</td>
<td>Enrolled</td>
<td>Group 2: 41.2±52 (NR)</td>
<td>(all); capsular release (all); clavicle resection (1)</td>
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<td>Questions:</td>
<td>consecutively: yes</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization:</td>
<td>ROM:</td>
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<td>Funding:</td>
<td>Followup duration,</td>
<td>Tendon(s) torn: NR</td>
<td>sm tears: 4 wk; med tears: 5 wk; lg and mass tears: 6–7 wk</td>
<td>• forward elevation</td>
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<tr>
<td>No funding</td>
<td>mean (range): 15.1</td>
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<td>Duration of rehab: NR</td>
<td>• external rotation</td>
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<td>BA Quality:</td>
<td>mo. (12 mo–2.7 yr)</td>
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<td>Rehab components: sm/med: passive stretching (immediate); lg/med: passive stretching (wk 2–4); active stretching once brace weaned; strengthening (wk 9–12)</td>
<td>• internal rotation</td>
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<td>Consecutive</td>
<td>Inclusion criteria:</td>
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<td>Rehab regime: NR</td>
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<tr>
<td></td>
<td>symptomatic FTT with/without shld stiffness</td>
<td></td>
<td></td>
<td>NR</td>
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<td></td>
<td>Exclusion criteria:</td>
<td></td>
<td></td>
<td>Other:</td>
<td></td>
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<tr>
<td></td>
<td>(1) previous shld surgery, (2) revision repair, (3) irreparable tear, (4) existence of instability or cuff tear arthropathy</td>
<td></td>
<td>• cuff integrity</td>
<td></td>
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PRE-OP TREATMENT: NR
Duration: NR
Type of treatment: NR
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<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pai VS, 2001</td>
<td>Recruitment dates: 1994 to 1997</td>
<td>Enrolled: 60</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Acromioplasty and RCR can improve pain and shld function in patients with FTT.</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Followup duration, mean (range): 34 mo (NR)</td>
<td>Withdrawals: 6</td>
<td>Type of surgery: repair</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Inclusion criteria: FTT</td>
<td>Duration since symptom onset, mean (range):</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenodesis (3); distal clavical excision (11); repair of coracoacromial ligament (6)</td>
<td>ROM: NR</td>
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<td>Funding: NR</td>
<td>Exclusion criteria: inadequate followup</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 6 wk</td>
<td>Strength: NR</td>
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<td>BA Quality:</td>
<td>GROUP 1</td>
<td>Tendon(s) torn: SS, SS+IS, SS+SC, SS+IS+SC</td>
<td>Duration of rehab: NR</td>
<td>Other: NR</td>
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<td>Consecutive: Y</td>
<td>N: 60</td>
<td></td>
<td>Rehab components: passive stretching (day 1–wk 6); active stretching (≥wk 6); strengthening when active motion was comfortable</td>
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<td>Followup: Y</td>
<td>Age, mean±SD (range): 65 yr (32–82 yr)</td>
<td>Rehab regime: NR</td>
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<td>Outcome assessment: Y</td>
<td>Males %: 56.7</td>
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<td></td>
<td>Cause of tear: degenerative (11), traumatic (47)</td>
<td></td>
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<td></td>
<td>Tear size: all sizes</td>
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<td></td>
<td>Dominant shoulder %: 66.7</td>
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<tr>
<td></td>
<td>Comorbidities: dislocated shld (1); biceps tendon rupture (7); OA; sclerosis of greater tuberosity; cystic changes; squaring; decreased AC space</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
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<td>Author conclusions</td>
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<tr>
<td>Park JY, 2008</td>
<td>Recruitment dates: May 2002 to May 2004</td>
<td>Enrolled: 85</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: South Korea</td>
<td>Study design: prospective cohort</td>
<td>Analyzed: 78</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
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<td>Treatment category: Operative technique</td>
<td>Withdrawals: 7</td>
<td>Type of surgery: repair and debridement</td>
<td>● ASES</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>● CMS</td>
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<tr>
<td>Funding: No funding</td>
<td>Type of tear: FTT</td>
<td>Technique: double-row knot tying</td>
<td>Pain: NR</td>
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<td>NOS: 7*/8*</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of immobilization: 5–8 wk</td>
<td>ROM: NR</td>
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<tr>
<td>Inclusion criteria: FTT</td>
<td>GROUP 1</td>
<td>Duration of rehab: NR</td>
<td>Strength:</td>
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<tr>
<td>Exclusion criteria: (1) incomplete repair, (2) RC tears after shld fracture or dislocation</td>
<td>N: 42</td>
<td>Rehab components: passive stretching; active stretching (wk 5); strengthening (wk 8–10)</td>
<td>● Shoulder Strength Index</td>
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<td></td>
<td>Age, mean±SD (range): 54.4 yr (28–76 yr)</td>
<td>Rehab regime: NR</td>
<td>Other: NR</td>
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<td>Males %: 52.4</td>
<td>GROUP 2</td>
<td>PRE-OP TREATMENT: NR</td>
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<tr>
<td></td>
<td>Cause of tear: NR</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Duration: NR</td>
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<td></td>
<td>Tear size: sm/med, lg/mass</td>
<td>Type of surgery: repair and debridement</td>
<td>Type of treatment: NR</td>
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<td></td>
<td>Dominant shoulder %: NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
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<td></td>
<td>Comorbidities: NR</td>
<td>Technique: single-row</td>
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<td></td>
<td>GROUP 2</td>
<td>Duration of immobilization: 5–8 wk</td>
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<td></td>
<td>N: 43</td>
<td>Duration of rehab: NR</td>
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<td></td>
<td>Age, mean±SD (range): 57 yr (39–78 yr)</td>
<td>Rehab components: passive stretching; active stretching (wk 5); strengthening (wk 8–10)</td>
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<td>Males %: 46.5</td>
<td>Rehab regime: NR</td>
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<td>Tear size: sm/med, lg/mass</td>
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<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: NR</td>
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<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Park JY, 2004</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 42</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
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<td>Country: South Korea</td>
<td>Study design: Prospective cohort treated as before-and-after</td>
<td>Analyzed: 42</td>
<td>Surgical approach: all-arthroscopic</td>
<td>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.</td>
<td></td>
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<tr>
<td>Treatment category: Operative</td>
<td>Duration since symptom onset, mean (range): 2.5 yr (1 mo–20 yr)</td>
<td>Withdrawals: 0</td>
<td>Type of surgery: repair</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Type of tear: FTT (20); PTT (22)</td>
<td>Duration of immobilization: 6 wk</td>
<td>Additional procedures (N):</td>
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<td>Funding: NR</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: NR</td>
<td>acromioplasty (all); biceps tenotomy (3)</td>
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<td>BA Quality:</td>
<td>Followup duration, mean (range): 2.8 yr (2–5.2 yr)</td>
<td>Type of rehab:</td>
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<td>Consecutive: Y</td>
<td>Inclusion criteria: PTT (&gt;50% tears), FTT</td>
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<td>Followup: Y</td>
<td>Exclusion criteria: (1) tears of thickness &lt;6mm, (2) open RCR of mass RC tear</td>
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<td>Outcome assessment: U</td>
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<td>N: 22</td>
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<td>Age, meansSD (range): all groups: 55 yr (NR)</td>
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<td>Males %: NR</td>
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<td>Cause of tear: degenerative (15), traumatic (7)</td>
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<td>Tear size: NR</td>
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<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: LHB tears (3); OA of AC joint (2)</td>
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<td>GROUP 2</td>
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<td>N: 20</td>
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<td>Age, meansSD (range): see group 1</td>
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<td>Males %: NR</td>
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<tr>
<td>Cause of tear: degenerative (10), traumatic (10)</td>
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<td>Tear size: all sizes</td>
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<tr>
<td>Dominant shoulder %: NR</td>
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<td>Comorbidities: OA (1)</td>
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<td>Duration: NR</td>
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<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Pearsall AW, 2007</td>
<td>Recruitment dates: 1999 to 2003</td>
<td>Enrolled: 54</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>Country: USA</td>
<td>Analyzed: 52</td>
<td>Surgical approach: mini-open</td>
<td>Function:</td>
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<td>Treatment category: Operative approach</td>
<td>Withdrawals: 2</td>
<td>Type of surgery: repair</td>
<td>• UCLA</td>
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<td></td>
<td>Questions: Q2, Q6</td>
<td>Duration since symptom onset, mean (range): 5.7 (3–16) mo</td>
<td>Additional procedures (N): acromioplasty (23); distal clavicle excision (14); biceps tenotomy/tenodesis (NR); debridement of any exposed bone on humerus or glenoid (NR)</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Funding: Government</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 6 wk</td>
<td>• VAS</td>
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<tr>
<td></td>
<td>NOS: 8*/8*</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of rehab: 3 mo</td>
<td>ROM:</td>
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</tr>
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<td>Inclusion criteria:</td>
<td></td>
<td>Rehab components: passive stretching (1–6 wk); active stretching &amp; strengthening exercises (6 wk–3 mo)</td>
<td>• active flexion</td>
<td></td>
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<tr>
<td></td>
<td>(1) tear size between 1–5 cm, (2) minimum followup</td>
<td></td>
<td>Rehab regime: NR</td>
<td>• active abduction</td>
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<td></td>
<td></td>
<td>• internal rotation at 90°</td>
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<td>• glenohumeral elevation</td>
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<td>• external rotation at 0°</td>
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<td>• external rotation at 90°</td>
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<td></td>
<td>Strength: NR</td>
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<td>Other:</td>
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<td></td>
<td></td>
<td>• Short Shoulder Test Improvement</td>
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<td></td>
<td>Exclusion criteria:</td>
<td></td>
<td></td>
<td>Other:</td>
<td></td>
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<tr>
<td></td>
<td>(1) massive RCTs, (2) acute tear repaired within 3 mo of injury, (3) &lt;24 mo of followup; radiographic evidence of glenohumeral joint arthritis, (4) WCB</td>
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<td>Other:</td>
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<td>Other:</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Country: Singapore</td>
<td>Study design: retrospective cohort treated as before-and-after</td>
<td>Analyzed: 34 (shld: 36)</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
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<tr>
<td>Treatment category: Operative</td>
<td>Duration since symptom onset, mean (range): Group 1: 18 mo (NR); Group 2: 12.5 mo (NR)</td>
<td>Withdrawals: NR</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
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<tr>
<td>Questions: Q2, Q6</td>
<td>Type of tear: FTT (8); PTT (20)</td>
<td></td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>ROM: NR</td>
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<tr>
<td>Funding: NR</td>
<td>Tendon(s) torn: NR</td>
<td></td>
<td>Duration of immobilization: NR</td>
<td>Strength: NR</td>
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<tr>
<td>BA Quality: Consecutive: U</td>
<td>Follow up duration (mean / range): group 1: 18 mo (6 mo–2.5 yr); group 2: 20 mo (6 mo–2.5 yr)</td>
<td></td>
<td>Duration of rehab: NR</td>
<td>Other:</td>
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<tr>
<td>Follow up: U</td>
<td>Inclusion criteria: (1) chronic impingement syndrome, (2) arthroscopic subacromial decompression</td>
<td>Group 1 N: 26</td>
<td>Rehab components: active-assisted and active stretching (≥day 1)</td>
<td>number of pts with improved UCLA</td>
<td></td>
</tr>
<tr>
<td>Outcome assessment: N</td>
<td>Exclusion criteria: NR</td>
<td>Age, mean±SD (range): 52 yr (51–71 yr)</td>
<td>Rehab regime: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 62.5</td>
<td>Duration of immobilization: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration of rehab: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Tear size: all sizes</td>
<td>Rehab components: active-assisted and active stretching (≥day 1)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 100</td>
<td>Rehab regime: NR</td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: see group 1</td>
<td>PRE-OP TREATMENT: yes</td>
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<td></td>
<td></td>
<td>Duration: 6 mo (min)</td>
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<td></td>
<td>Type of treatment: NR</td>
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<td>Study</td>
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<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Porcellini G, 2006</td>
<td>Recruitment dates: Jan 2000 to May 2002</td>
<td>Enrolled: 100, Analyzed: 100, Withdrawals: 0</td>
<td>GROUP 1 Surgical approach: all-arthroscopic, Type of surgery: repair, Additional procedures (N): NR</td>
<td>HRQL: NR</td>
<td>RC tears and glenohumeral instability are closely related and may affect outcome. Authors recommend arthroscopic RCR.</td>
</tr>
<tr>
<td><strong>Country:</strong> Italy</td>
<td><strong>Treatment category:</strong> Operative</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: 3 wk, Duration of rehab: NR</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>** QUESTIONS:** Q2, Q6</td>
<td><strong>Funding:</strong> NR</td>
<td>Type of tear: FTT (100); PTT (6 – in group 1)</td>
<td>Rehab components: passive stretching (wk 3–8); passive and active stretching (wk 5); strengthening (8wk 8); Modalities–pool</td>
<td>Pain: NR, ROM: NR, Strength: NR</td>
<td></td>
</tr>
<tr>
<td><strong>BA Quality:</strong> Consecutive: Y, Followup: Y, Outcome assessment: Y</td>
<td><strong>Followup duration, mean (range): 3 yr (2–4.3 yr)</strong></td>
<td>Tendon(s) torn: SS, IS, SC, SS+IS, SS+IS+SC, SS+SC, IS+TM</td>
<td>Rehab regime: NR</td>
<td>Other: NR</td>
<td></td>
</tr>
<tr>
<td><strong>Inclusion criteria:</strong> All: (1) 40–60 yr, (2) no dislocation 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) positive cuff signs on pre-operative examination, (2) cuff signs, (3) complete RC tear with ≥1 tendon</td>
<td>GROUP 1 N: 50, Age, meansSD (range): 47.5±6.36 yr (NR), Males %: 64, Cause of tear: NR, Tear size: NR, Dominant shoulder %: NR, Comorbidities: NR</td>
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<tr>
<td></td>
<td><strong>Duration:</strong> NR, Type of treatment: NR</td>
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<td><strong>Type of treatment:</strong> NR</td>
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<td><strong>Type of treatment:</strong> NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Porcellini G, 2006 (continued)</td>
<td>Group 1: negative RC signs, (2) no sign of RC tear, (3) intact RC cuff or fraying of the articular side of cuff</td>
<td>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</td>
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</tbody>
</table>

**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
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prasad N, 2005</td>
<td>Recruitment dates: 2000 to 2003</td>
<td>Enrolled: 42</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: UK</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 40</td>
<td>Surgical approach: open</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: yes</td>
<td>Withdrawals: 2</td>
<td>Type of surgery: repair</td>
<td>● CMS</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 1.2 yr (12 mo–4.2 yr)</td>
<td>Duration since symptom onset, mean (range): 4.7 yr (6 mo–15 yr)</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>Pain:</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Study BA Quality: Consecutive: Y Followup: Y Outcome assessment: Y</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: NR</td>
<td>● VAS</td>
<td></td>
</tr>
<tr>
<td>Inclusion criteria: NR</td>
<td>Exclusion criteria: NR</td>
<td>Tendon(s) torn: SS, SS+IS, SC, SS+IS+SC</td>
<td>Duration of rehab: NR</td>
<td>ROM: NR</td>
<td></td>
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<tr>
<td>GROUP 1</td>
<td>N: 42</td>
<td>Duration of rehab components: NR</td>
<td>Rehab regime: NR</td>
<td>Strength: NR</td>
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<tr>
<td></td>
<td>Age, mean±SD (range): 63 yr (22–82 yr)</td>
<td>PRE-OP TREATMENT: yes</td>
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<td>Other: NR</td>
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<tr>
<td></td>
<td>Males %: 71.4</td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
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<tr>
<td></td>
<td>Cause of tear: degenerative (26), traumatic (16)</td>
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<td></td>
<td>Tear size: all sizes</td>
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<td></td>
<td>Dominant shoulder %: 90.5</td>
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<td></td>
<td>Comorbidities: NR</td>
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<tr>
<td>Country: USA</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>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</td>
<td>Function:</td>
<td>CPM had a beneficial effect on ROM for all pt, and pain relief in female pts and pts ≥60 yr.</td>
</tr>
<tr>
<td>Treatment category: Post operative rehabilitation</td>
<td>Recruitment dates: Dec 1992 to Jan 1994</td>
<td>Enrolled consecutively: yes, Type of tear: FTT (24); PTT (2), Tendon(s) torn: NR</td>
<td>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</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration (endpoint): 3 mo</td>
<td>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</td>
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<tr>
<td>Funding: NR</td>
<td>Exclusion criteria: NR</td>
<td>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</td>
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<tr>
<td>ROB: High</td>
<td></td>
<td>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</td>
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<td></td>
<td>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</td>
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<td></td>
<td>PRE-OP TREATMENT: NR, Duration: NR, Type of treatment: NR</td>
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</table>

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.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randelli PS, 2008</td>
<td>Recruitment dates: Jan to May 2004</td>
<td>Enrolled: 14  Analyzed: 13  Withdrawals: 1</td>
<td>GROUP 1  Surgical approach: all-arthroscopic  Type of surgery: repair and debridement  Duration since symptom onset, mean (range): NR  Type of tear: FTT  Tendon(s) torn: NR</td>
<td>Preliminary results indicate that the application of platelet rich plasma during RCR is safe and effective.</td>
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<tr>
<td>Country: UK</td>
<td>Study design: before-and-after</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: NR</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Followup duration (endpoint): 24 mo</td>
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<tr>
<td>Funding: NR</td>
<td>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 &gt;150,000, (6) min pre-operative hemoglobin of 11.0g/dl, (7) no infectious disease or any disease to limit followup, (8) unilateral RC tear</td>
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<tr>
<td>BA Quality</td>
<td>Exclusion criteria: (1) tear involving SC or biceps tendons, (2) previous RCR, (3) moderate to severe glenohumeral OA, (4) &gt;20° loss of passive flexion compared to contralateral shld,</td>
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<tr>
<td>Consecutive: U</td>
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<tr>
<td>Followup: Y</td>
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<tr>
<td>Outcome assessment: U</td>
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</tbody>
</table>
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) uncooperative/difficulty with directions,
(10) vascular insufficiency, muscular atrophy, or neuromuscular diseases of the affected arm.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roddey TS, 2002</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 129</td>
<td><strong>GROUP 1</strong></td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design (trial type): RCT (NR)</td>
<td>Analyzed: 108</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function: PENN, SPADI</td>
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<tr>
<td>Questions: Q2</td>
<td>Followup duration (endpoint): 52 wk</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): all groups: acromioplasty (all); manipulation (3); SLAP repair (5); biceps tear repair (1); Bankart repair (1)</td>
<td>ROM: NR</td>
<td></td>
</tr>
<tr>
<td>Funding: Foundation</td>
<td>Exclusion criteria: (1) RA, (2) previous surgery on involved shld</td>
<td>Enrolled consecutively: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td>ROB: High</td>
<td>Inclusion criteria: (1) FTT, (2) arthroscopic RCR</td>
<td>Followup duration (endpoint): 52 wk</td>
<td>Duration of rehab: 52 wk</td>
<td>Other: NR</td>
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</tr>
<tr>
<td></td>
<td>Type of tear: FTT</td>
<td>Recruitment dates: NR</td>
<td>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)</td>
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<tr>
<td></td>
<td>Tendon(s) torn: NR</td>
<td>Type of treatment: repair</td>
<td>Rehab regime: NR</td>
<td></td>
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<tr>
<td></td>
<td>GROUP 1</td>
<td>Additional procedures (N): see group1</td>
<td>Duration of immobilization: 6 wk</td>
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<tr>
<td></td>
<td>N: 54</td>
<td>Duration of rehab: 52 wk</td>
<td>Duration of rehab: 52 wk</td>
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<tr>
<td></td>
<td>Age, mean±SD (range): 58.7±10.6 yr (34.6–78.0 yr)</td>
<td>Rehab components: passive stretching (day 1); active stretching (≥wk 6); strengthening (3 mo); free-weight exercise and weight bearing exercise (6 mo onward)</td>
<td>Rehab regime: Frequency–NR; Intensity–15 min./phase</td>
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<tr>
<td></td>
<td>Males %: 66.7</td>
<td>Group 2</td>
<td>PRE-OP TREATMENT: NR</td>
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<tr>
<td></td>
<td>Cause of tear: NR</td>
<td>N: 54</td>
<td>Duration: NR</td>
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<tr>
<td></td>
<td>Tear size: mean: 2.5 cm, range: 1.5–5 cm, mass tears n=4</td>
<td>Age, mean±SD (range): 57.2±9.1 yr (40.0–75.8 yr)</td>
<td>Duration: NR</td>
<td></td>
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<tr>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>Males %: 61.1</td>
<td>Type of treatment: NR</td>
<td></td>
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<tr>
<td></td>
<td>Comorbidities: For all groups: biceps tear (5); SLAP lesion (5); Bankart lesion (1)</td>
<td>Cause of tear: NR</td>
<td></td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tr>
<tr>
<td>Rokito AS, 1999</td>
<td>Recruitment dates: Jun 1989 to Jul 1993</td>
<td>Enrolled: 30</td>
<td>Group 1</td>
<td>HRQL: NR</td>
<td>Large or massive RC tears can have satisfactory outcomes with operative RCR but more than one year is needed for restoration of strength.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 30</td>
<td>Surgical approach: open</td>
<td>Function: ● UCLA</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair</td>
<td>Pain: NR</td>
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<tr>
<td>Questions: Q2, Q5</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>ROM: NR</td>
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<tr>
<td>Funding: No funding</td>
<td>Followup duration, mean (range): 65 mo (46–93 mo)</td>
<td>Tendon(s) torn: NR</td>
<td>Duration of immobilization: 6 wk</td>
<td>Strength: ● isokinetic strength (flexion, abduction, external rotation)</td>
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<tr>
<td>BC Quality: Consecutive: Y Followup: Y Outcome assessment: Y</td>
<td>Inclusion criteria: Ig or mass, reparable chronic tear of RC</td>
<td>GROUP 1</td>
<td>Duration of rehab: NR</td>
<td>Other: NR</td>
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<tr>
<td></td>
<td>Exclusion criteria: (1) irreparable tears, (2) previous procedure involving the shld, (3) symptoms in the contralateral shld</td>
<td>N: 30</td>
<td>Rehab components: passive stretching (≥day 1); active stretching (≥wk 6–8); strengthening (≥wk12)</td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 57 yr (39–78 yr)</td>
<td>Rehab regime: NR</td>
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<td></td>
<td></td>
<td>Males %: 70</td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration: 6 mo (min)</td>
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<tr>
<td></td>
<td></td>
<td>Tendon size: Ig, mass</td>
<td>Type of treatment: exercise, NSAID</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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</tbody>
</table>
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 | 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 design: retrospective cohort | Duration since symptom onset, mean (range): NR |                  |                  |                    |
|            | Enrolled consecutively: yes | Type of tear: FTT Tendon(s) torn: NR |                  |                  |                    |
|            | Followup duration, mean (range): Group 1: 33 mo (18–48 mo); Group 2: 19 mo (13–26 mo) | 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 |                  |                  |                    |
|            | Inclusion criteria: (1) FTT, (2) followup ≥ 1 yr | 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 |                  |                  |                    |
<p>|            | Exclusion criteria: NR |                  |                  |                  |                    |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Country: Germany</td>
<td>Study design: before-and-after</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenodesis (18); AC joint resection (9)</td>
<td>Function:</td>
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<tr>
<td></td>
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<td>Type of tear: FTT Tendon(s) torn: SS, SS+IS, SS+SC, SS+IS+SC</td>
<td>Duration of immobilization: 4 wk</td>
<td>CMS</td>
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<td></td>
<td>GROUP 1</td>
<td>Duration of rehab: NR</td>
<td>SST</td>
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<td></td>
<td></td>
<td>N: 23</td>
<td>Rehab components: passive stretching (wk 1–6); active-assisted and active stretching (2wk 6)</td>
<td>Pain: NR</td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 59.7 yr (44–71 yr)</td>
<td>Rehab regime: NR</td>
<td>ROM: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Males %: 69.6</td>
<td>PRE-OP TREATMENT: NR</td>
<td>Strength: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration: NR</td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: med, lg, mass</td>
<td>Type of treatment: NR</td>
<td>• cuff integrity</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 73.9</td>
<td>Comorbidities: ectopic ossification in SS tendon (4); biceps pathology (19); controlled hypertension (5); DM type II (1); chronic bronchitis (1)</td>
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</table>

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

Funding: NR

BA Quality: Consecutive: U Followup: Y Outcome assessment: U

Recruitment dates: May 2003 to May 2004

Followup duration, mean (range): 14.4 mo (12–21 mo)

Enrolled consecutively: 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)
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scheibel M, 2004</td>
<td>Recruitment dates: Apr 1997 to Sept 2000</td>
<td>Enrolled: 23</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Reversed arthroscopic subacromial decompression with tenotomy of the LHB tendon offers a less invasive tx strategy for massive RC tears while preserving the integrity of the coracoacromial arch.</td>
</tr>
<tr>
<td>Country: Germany</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 22</td>
<td>Surgical approach: all-arthroscopic</td>
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<tr>
<td>Treatment category: Operative</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 1</td>
<td>Type of surgery: debridement</td>
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<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 3.3 yr (20 mo–4.8 yr)</td>
<td>Duration since symptom onset, mean (range): 12 mo (3–48 mo)</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy/tenodesis (NR); tubero-plasty (NR)</td>
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<tr>
<td>Funding: NR</td>
<td>Inclusion criteria: (1) mass defect of RC, (2) 3 mo conservative therapy</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 24 hr</td>
<td></td>
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<tr>
<td>BA Quality: Consecutive: U</td>
<td>Followup: Y</td>
<td>Tendon(s) torn: SS+IS, SS+IS+SC, SS+SC</td>
<td>Duration of rehab: 3 mo</td>
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<tr>
<td>Outcome assessment: U</td>
<td>Exclusion criteria: previous surgery on the shld</td>
<td>GROUP 1</td>
<td>Rehab components: passive stretching (immediately–wk 2); active stretching (wk 2–3 mo); strengthening (wk 2–3 mo)</td>
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<td></td>
<td></td>
<td>N: 23</td>
<td>Rehab regime: NR</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Age, mean±SD (range): 69 yr (60–81 yr)</td>
<td>PRE-OP TREATMENT: yes</td>
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<tr>
<td></td>
<td></td>
<td>Males %: 78.3</td>
<td>Duration: 3 mo (min)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Cause of tear: degenerative (14), traumatic (8)</td>
<td>Type of treatment: physical therapy</td>
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<tr>
<td></td>
<td></td>
<td>Tear size: mass</td>
<td>NOS, cortisone injection, NSAID</td>
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<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: 65.2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: biceps patholoy (16); OA (3)</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Country: Germany</td>
<td>Study design: Before-and-after</td>
<td>Analyzed: 24</td>
<td>Intervention: active ROM, strengthening, soft tissue massage, posture control, active shld support with bandage</td>
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<tr>
<td>Treatment category: Nonoperative</td>
<td>Follow-up duration (endpoint): 25 days</td>
<td>Withdrawals: 5</td>
<td>Drug name: NR</td>
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<tr>
<td>Questions: Q3</td>
<td></td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of treatment: 25 days</td>
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<tr>
<td>Funding: Industry</td>
<td>Inclusion criteria: RC rupture</td>
<td>Type of tear: NR</td>
<td>Treatment Regime: NR</td>
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<tr>
<td>Other: German BA Quality: Consecutive: U Follow-up: Y Outcome assessment: U</td>
<td>Exclusion criteria: (1) complete loss of function and resistant to conservative therapy, (2) long-term ruptures</td>
<td>Tendon(s) torn: NR</td>
<td>Degree of supervision: direct one-to-one</td>
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<tr>
<td></td>
<td></td>
<td>Group 1</td>
<td>Treatment provider: PT</td>
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<td></td>
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<td>N: 29</td>
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<td></td>
<td></td>
<td>Age, mean±SD (range): NR</td>
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<td></td>
<td></td>
<td>Males %: NR</td>
<td></td>
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<td></td>
<td></td>
<td>Cause of tear: NR</td>
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<td></td>
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<td>Tear size: NR</td>
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<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
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<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
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</table>

Notes: Abduction, flexion, external rotation, extension, internal rotation.
<table>
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<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Country: USA</td>
<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean (range): Group 1: 10.8 mo (NR); Group 2: 15.7 mo (NR)</td>
<td>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</td>
<td>Function:</td>
<td></td>
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<td>Treatment category:</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: FTT (54); PTT (4) Tendon(s) torn: NR</td>
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<td>Pain: NR</td>
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<tr>
<td>Operative approach</td>
<td>Followup duration, mean (range): 3.7 yr (2–6.8 yr)</td>
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<td>ROM: NR</td>
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<tr>
<td>Questions:</td>
<td>Inclusion criteria: (1) FTT, (2) WCB cases</td>
<td></td>
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<td>Strength: NR</td>
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<td>Funding:</td>
<td></td>
<td></td>
<td></td>
<td>Other: NR</td>
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<tr>
<td>NOS: 4*/8*</td>
<td>Exclusion criteria: (1) other significant intra-articular pathology, (2) previous RC surgery, (3) mass RC tears, (4) neurological disorders</td>
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<tr>
<td>GROUP 1</td>
<td>N: NR (shld: 29) Age, mean±SD (range): 63.3 yr (NR)</td>
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<tr>
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<td>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)</td>
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<tr>
<td>GROUP 2</td>
<td>N: NR (shld: 35) Age, mean±SD (range): 58.7 yr (NR)</td>
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<tr>
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<td>Males %: 60 of shld Cause of tear: NR Tear size: sm, med, lg Dominant shoulder %: NR Comorbidities: see group 1</td>
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<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Shibata Y, 2001</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 78</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>Therapeutic efficacy in the sodium hyaluronate group was equivalent to that in the steroid group.</td>
</tr>
<tr>
<td>Country: Japan</td>
<td>Study design (trial type): RCT (parallel)</td>
<td>Analyzed: 78</td>
<td>Intervention (modality): strengthening, sodium hyaluronate injection (25 mg + 3ml of 1% lidocaine), heat</td>
<td>Function:</td>
<td>UCLA</td>
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<tr>
<td>Treatment category: Nonoperative</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 0</td>
<td>Drug name: loxoprofen (180mg/d)</td>
<td>Pain: NR</td>
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<tr>
<td>Questions: Q3, Q5, Q6</td>
<td>Followup duration (endpoint): 24 wk</td>
<td>Duration since symptom onset, mean±SD (range):</td>
<td>Duration of treatment: 5 wk</td>
<td>ROM:</td>
<td>abduction</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: 1) FTT</td>
<td>GROUP 1</td>
<td>Treatment Regime: Frequency–1/wk; Intensity–NR</td>
<td>Strength: NR</td>
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<tr>
<td>ROB: High</td>
<td>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</td>
<td>Group 1: 5.8±5.4 mo (NR)</td>
<td>Degree of supervision: NR</td>
<td>Other: NR</td>
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<td>Group 2: 4.7±5.7 mo (NR)</td>
<td>Treatment provider: NR</td>
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<td></td>
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<td>Type of tear: FTT</td>
<td>Additional comments: If pts were unsatisfied with tx &gt;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</td>
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<td>Tendon(s) torn: NR</td>
<td>GROUP 2</td>
<td></td>
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<td></td>
<td>Intervention (modality): strengthening, corticosteroid injection (2mg dexamethasone + 3ml of 1% lidocaine), heat/cold</td>
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<td></td>
<td>Drug name: loxoprofen (180mg/d)</td>
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<td></td>
<td>Duration of treatment: 5 wk</td>
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<td></td>
<td>Treatment Regime: Frequency–1/wk; Intensity–NR</td>
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<td>Degree of supervision: NR</td>
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<td>Treatment provider: NR</td>
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<td></td>
<td>Additional comments: see group 1</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Sugaya H, 2007</td>
<td>Recruitment dates: Apr 2001 to May 2003</td>
<td>Enrolled: 106, Analyzed: 86</td>
<td>GROUP 1 Surgical approach: all-arthroscopic</td>
<td>HRQL: NR</td>
<td>Arthroscopic RCR has demonstrated improved repair integrity compared with traditional open or mini-open RCR. Retear rate with large and massive tears was still higher than that for small tears.</td>
</tr>
<tr>
<td>Country: Japan</td>
<td>Study design: before-and-after</td>
<td>Withdrawals: 20</td>
<td>Type of surgery: repair and debridement</td>
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<td>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.</td>
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<td>Technique: double-row mattress fashion sliding knot; side to side stitches if longitudinal/ U-shaped tears</td>
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<tr>
<td>Cause of tear: NR</td>
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<tr>
<td>Tear size: all sizes</td>
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<tr>
<td>Dominant shoulder %: NR</td>
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<tr>
<td>Comorbidities: NR</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
</tr>
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<td>---------------------------------------------------------------------------</td>
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<tr>
<td>Tashjian RZ, 2006</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 125 (shld: 125)</td>
<td>GROUP 1</td>
<td>HRQL:</td>
<td>Pts with more medical comorbidities have a worse general health status after RC repair; although they have greater improvement in overall shoulder pain, function and quality of life scores compared with pre-operative scores.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 125 (shld: 125)</td>
<td>Surgical approach: open (26); mini-open (62); all-arthroscopic (37)</td>
<td>SF-36, VAS-QOL</td>
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<td>Treatment category:</td>
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<td>Followup duration, (endpoint): 1 yr</td>
<td>Duration since symptom onset, mean±SD (range): 16±25.9 mo (3 mo–18 yr)</td>
<td>Additional procedures (N): NR</td>
<td>DASH, SST, VAS function</td>
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<tr>
<td>Questions: Q2, Q6</td>
<td>Inclusion criteria: (1) chronic FTT (symptoms ≥ 3 mo), (2) failure of nonoperative tx</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: NR</td>
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<td>Tendon(s) torn: NR</td>
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<td>Outcome assessment: N</td>
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<td>Duration: 3 mo (min)</td>
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<td>Type of treatment: physical therapy</td>
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<td></td>
<td></td>
<td>NOS, cortisone injection</td>
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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: 1–4 cm
Dominant shoulder %: NR
Comorbidities: number of comorbidities: 1.9±1.5 / 0-6 (mean/range)
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td>Tauro JC, 2006</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 74</td>
<td>ALL GROUPS</td>
<td>HRQL: NR</td>
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<tr>
<td>Country: USA</td>
<td>Study design: Retrospective cohort treated as before-and-after</td>
<td>Analyzed: 72</td>
<td>Surgical approach: all-arthroscopic</td>
<td>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.</td>
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<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures: NR</td>
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<tr>
<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: U</td>
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<td>Tendon(s) torn: Group 1 and 2: SS, IS, SC; Group 3: SS, IS</td>
<td>Duration of rehab: NR</td>
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<td>GROUP 1</td>
<td>Rehab components: passive stretching and strengthening (up to wk 5/6); active stretching (≥wk 5/6)</td>
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<td>Enrolled consecutively: yes</td>
<td></td>
<td>N: 42</td>
<td>Rehab regime: NR</td>
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<tr>
<td>Followup duration, mean (range): 2 yr (NR)</td>
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<td>Age, mean±SD (range): 70 yr (NR)</td>
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<td>Inclusion criteria: (1) FTT, (2) arthroscopic RCR</td>
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<td>Males %: NR</td>
<td>Duration: 4.4 mo (2–8 mo)</td>
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<td>Cause of tear: NR</td>
<td>Type of treatment: physical therapy NOS, cortisone injection</td>
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<tr>
<td>GROUP 2</td>
<td></td>
<td>Tear size: mean: 3.7 cm</td>
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<td>N: 24</td>
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<td>Age, mean±SD (range): 70 yr (NR)</td>
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<td>Comorbidities: (all groups): hypertension; heart disease; DM</td>
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<td>Cause of tear: NR</td>
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<td>Tear size: mean: 7.7 cm</td>
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<td>Dominant shoulder %: NR</td>
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<tr>
<td>Comorbidities: see group 1</td>
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<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Tauro JC, 2006 (continued)</td>
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<td>Age, mean±SD (range): 70 yr (NR)</td>
<td>Males %: NR</td>
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<td>Cause of tear: NR</td>
<td>Tear size: mean: 12.3 cm</td>
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<td>Duration since symptom onset, mean (range): 12.4 mo (2–5 yr) Type of tear: NR Tendon(s) torn: SS, SS+IS</td>
<td>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</td>
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<td>Enrolled consecutively: yes</td>
<td>GROUP 1 N: 42 (shld: 43) Age, meansSD (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</td>
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<td>Inclusion criteria: Ig contracted tears, not adequately mobilized without a rotator interval release</td>
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<td>Exclusion criteria: significant SC tears requiring open RCR</td>
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<tr>
<td>Study</td>
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<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Torrens C, 2003</td>
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<td>HRQL: NR</td>
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<td>Country: Spain</td>
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<td>Treatment category: Operative approach</td>
<td>Enrollment: 42</td>
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<td>Questions: Q2, Q5</td>
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<td>Additional procedures (N):</td>
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<td>Funding: NR</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>acromioplasty (all)</td>
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<td>ROB: High</td>
<td>Exclusion criteria: NR</td>
<td>Duration of immobilization: NR</td>
<td>Strength: NR</td>
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<td></td>
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<td>Duration of rehab: NR</td>
<td>Other: NR</td>
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<td>Rehab components: NR</td>
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<td>Rehab regime: NR</td>
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<td>Surgical approach: open</td>
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<td></td>
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<td>Duration of immobilization: NR</td>
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<td></td>
<td></td>
<td>Duration of rehab: NR</td>
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<td></td>
<td></td>
<td>Rehab components: NR</td>
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<td>Rehab regime: NR</td>
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<td>PRE-OP TREATMENT: yes</td>
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<td>Duration: 3 mo (min)</td>
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<td>Type of treatment: NR</td>
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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.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>Country: Australia</td>
<td>Analyzed: 75</td>
<td>Surgical approach: open</td>
<td>Function: NR</td>
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<td>Study design: case-control treated as before-and-after</td>
<td>Withdrawals: 0</td>
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<td>Pain:</td>
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<td>Duration since symptom onset, mean (range):</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>- frequency of activity pain</td>
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<td></td>
<td>Questions: Q2, Q6</td>
<td>Group 1: 22 mo (13 mo–2.6 mo)</td>
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<td>- external rotation (passive)</td>
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<td>Funding: No funding</td>
<td>Group 2: 13 mo (6–20 mo)</td>
<td>Duration of immobilization: 2 days</td>
<td>- abduction (passive)</td>
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<td>BA Quality: Consecutive: Y Followup: Y Outcome assessment: U</td>
<td>Type of tear: FTT (67); PTT (8)</td>
<td>Duration of rehab: 3 mo</td>
<td>- hand behind back (passive)</td>
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<td>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</td>
<td>Tendon(s) torn: NR</td>
<td>Rehab components: home exercise regimen; Modalities--cold Rehab regime: NR</td>
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<td></td>
<td></td>
<td>Exclusion criteria: (1) incomplete repair of RC tears, (2) previous RC repair of involved shld/ additional procedure at the time of symptoms</td>
<td>GROUP 2</td>
<td>Strength:</td>
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<td>Surgical approach: open</td>
<td>- isometric muscle force for internal/external rotation and flexion</td>
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<td>Other: NR</td>
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<td>Additional procedures (N): acromioplasty (all)</td>
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<td></td>
<td>Duration of immobilization: 2 days</td>
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<td></td>
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<td>Duration of rehab: 3 mo</td>
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<td>Rehab components: home exercise regimen; Modalities--cold Rehab regime: NR</td>
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<td>PRE-OP TREATMENT: NR</td>
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<td></td>
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<td>Duration: NR</td>
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<td>Type of treatment: NR</td>
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</table>

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.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vad VB, 2002</td>
<td>Recruitment dates: 1990 to 1995</td>
<td>Enrolled: 108</td>
<td>GROUP 1 Intervention: PT NOS, NSAIDs</td>
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<td>Country: USA</td>
<td>Study design: retrospective cohort</td>
<td>Analyzed: 108</td>
<td>Drug name: NR</td>
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<td>Treatment category: Non-operative vs. operative</td>
<td>Followup duration, mean (range): 3.2 yr (2–7 yr)</td>
<td>Withdrawals: 0</td>
<td>Duration of treatment: 8.2 wk (1–22 wk)</td>
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<td>Questions: Q2, Q4, Q6</td>
<td>Inclusion criteria: (1) chronic atraumatic, FTT of ≥2 tendons, (2) mass tear</td>
<td>Duration since symptom onset, mean (range): 6.3 mo (1–17 mo)</td>
<td>Treatment Regime: Frequency–NR; Intensity– 1.6 (1–4) injections</td>
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<td>Exclusion criteria: history of surgery on shld</td>
<td>Type of tear: FTT Tendon(s) torn: NR</td>
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<td>NOS: 5*/8*</td>
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<td>GROUP 1</td>
<td>Intervention: PT NOS, NSAIDs</td>
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<td>GROUP 2 Intervention: PT NOS, NSAIDs, corticosteroid injection</td>
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<td>Cause of tear: degenerative (40)</td>
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<td>Tear size: mass</td>
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<td>Surgical approach: NR</td>
<td>N: 36</td>
<td>Treatment Regime: NR</td>
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<td>Age, mean±SD (range): 59.4 yr (46–85 yr)</td>
<td>Type of surgery: repair</td>
<td>Males %: see group 1</td>
<td>Degree of supervision: NR</td>
<td></td>
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<tr>
<td>Cause of tear: degenerative (36)</td>
<td>Additional procedures (N): NR</td>
<td>Tear size: mass</td>
<td>Treatment provider: PT</td>
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<tr>
<td>GROUP 4</td>
<td>Surgical approach: all-arthroscopic</td>
<td>N: 32</td>
<td>GROUP 3 Surgical approach: NR</td>
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<tr>
<td>Age, mean±SD (range): 62.9 yr (46–85 yr)</td>
<td>Type of surgery: debridement</td>
<td>Males %: see group 1</td>
<td>Type of surgery: NR</td>
<td></td>
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<tr>
<td>Cause of tear: degenerative (32)</td>
<td>Additional procedures (N): NR</td>
<td>Tear size: mass</td>
<td>Duration of immobilization: NR</td>
<td></td>
<td>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 &lt;3.</td>
</tr>
<tr>
<td>GROUP 3</td>
<td>Surgical approach: NR</td>
<td>N: 36</td>
<td>Duration ofreatment: 10.3 wk (2–24 wk)</td>
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<tr>
<td>Age, mean±SD (range): 59.4 yr (46–85 yr)</td>
<td>Type of surgery: repair</td>
<td>Males %: see group 1</td>
<td>Treatment Regime: NR</td>
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<tr>
<td>Cause of tear: degenerative (36)</td>
<td>Additional procedures (N): NR</td>
<td>Tear size: mass</td>
<td>Degree of supervision: NR</td>
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<tr>
<td>GROUP 4</td>
<td>Surgical approach: all-arthroscopic</td>
<td>N: 32</td>
<td>Treatment provider: PT</td>
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<tr>
<td>Age, mean±SD (range): 62.9 yr (46–85 yr)</td>
<td>Type of surgery: debridement</td>
<td>Males %: see group 1</td>
<td>Duration of immobilization: NR</td>
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<td>Cause of tear: degenerative (32)</td>
<td>Additional procedures (N): NR</td>
<td>Tear size: mass</td>
<td>Duration of rehabilitation: NR</td>
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<td>Pre-OP TREATMENT: yes</td>
<td>Duration: 6 mo (min)</td>
<td>Duration: 6 mo (min)</td>
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<td>Other: NR</td>
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<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>Vaz S, 2000</td>
<td>Recruitment dates: Mar 1994 to 1996</td>
<td>Enrolled: 14</td>
<td>Group 1</td>
<td>HRQL: NR</td>
<td>The CMS was satisfactory in 86% of cases.</td>
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<td>Country: France</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 14</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
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<td>Treatment category: Operative</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Pain: NR</td>
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<td>Questions: Q2, Q6</td>
<td>Followup duration, mean (range): 3.1 yr (12 mo–4 yr)</td>
<td>Type of tear: FTT (8); PTT (6)</td>
<td>Duration of rehab: NR</td>
<td>ROM: NR</td>
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<td>Funding: NR</td>
<td>Inclusion criteria: sub-acromial impingement alone or impingement with PTT/FTT</td>
<td>Tendon(s) torn: NR</td>
<td>Rehab components: NR</td>
<td>Strength: NR</td>
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<td>BA Quality: Consecutive: U Followup: Y Outcome assessment: Y</td>
<td>Exclusion criteria: NR</td>
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<td>PRE-OP TREATMENT: yes</td>
<td>Other:</td>
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<td>N: 14</td>
<td>Duration: 6 mo (min)</td>
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<td>Type of treatment: physical therapy NOS</td>
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<td>Verma NN, 2006</td>
<td>Recruitment dates: Jan 2000 to May 2002</td>
<td>Enrolled: 127</td>
<td>GROUP 1 Surgical approach: mini-open</td>
<td>HRQL: NR</td>
<td>No clinical differences were found in outcomes for mini-open RCR compared to arthroscopic RCR.</td>
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<td>Country: USA</td>
<td>Analyzed: 71</td>
<td>Type of surgery: repair</td>
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<td>Study design: retrospective cohort</td>
<td>Withdrawals: 56</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy (1)/tenodesis (2); clavicle excision (4); SLAP repair (9)</td>
<td>● ASES</td>
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<td>Treatment category: Operative approach</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of immobilization: 6 wk</td>
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<td></td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: FTT</td>
<td>Duration of rehab: NR</td>
<td>● SST</td>
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<td>Followup duration, mean (range): 3.2 yr (2–8.1 yr)</td>
<td>Tendon(s) torn: NR</td>
<td>Rehab components: passive stretching (wk 6–12); active stretching and strengthening (≥wk 12)</td>
<td>Pain:</td>
<td>● VAS</td>
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<td>GROUP 1 N: 58</td>
<td>Rehab regime: NR</td>
<td>ROM:</td>
<td>● forward flexion</td>
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<td>Funding: NR</td>
<td>Age, mean±SD (range): 60.7±10.4 yr (NR)</td>
<td>GROUP 2 Surgical approach: all-arthroscopic</td>
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<td>NOS: 6*/8*</td>
<td>Males %: 39.7</td>
<td>Type of surgery: repair</td>
<td>● internal rotation</td>
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<td>Exclusion criteria: (1) revision, (2) SC tear, (3) partial/irreparable tears, (4) open RCR</td>
<td>Cause of tear: NR</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy (3); clavicle excision (4); SLAP repair (6)</td>
<td>Strength: NR</td>
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<td></td>
<td></td>
<td>Tear size: sm/med, lg/mass</td>
<td>Duration of immobilization: 6 wk</td>
<td>Other:</td>
<td>● satisfaction</td>
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<td></td>
<td>Dominant shoulder %: 39.7</td>
<td>Duration of rehab: NR</td>
<td>● cuff integrity</td>
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<td>Comorbidities: NR</td>
<td>Rehab components: passive stretching (wk 6–12); active stretching and strengthening (≥wk 12)</td>
<td>Rehabilitation regime: NR</td>
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<td>Study design</td>
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<td>Treatment characteristics</td>
<td>Outcomes reported</td>
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<td>Vitale MA, 2007</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 87</td>
<td>GROUP 1</td>
<td>HRQL:</td>
<td>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.</td>
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<td>Country: USA</td>
<td>Study design: before-and-after</td>
<td>Analyzed: 87</td>
<td>Surgical approach: open</td>
<td>Function: NR</td>
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<td>Treatment category: Operative</td>
<td>Willingness to continue NR</td>
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<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
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<td>Funding: Foundation</td>
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<td>Duration of immobilization: NR</td>
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<td>BA Quality: Consecutive: U</td>
<td>Followup duration, mean (range): 1 yr (NR)</td>
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<td>Followup: Y</td>
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<td>Tendon(s) torn: NR</td>
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<td>Outcome assessment: N</td>
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<td>GROUP 1</td>
<td></td>
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<tr>
<td>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</td>
<td></td>
<td>N: 87</td>
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<td>Age, mean±SD (range): 62.5±9.5 yr (40.4–83.3 yr)</td>
<td>Type of treatment: physical therapy NOS, cortisone injection, NSAID</td>
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<td></td>
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<td>Males %: 54</td>
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<td>Author conclusions</td>
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<td>Country:</td>
<td>Study design: before-and-after</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): acromioplasty (NR); SLAP repairs (5); SC repair (1); AC joint resection (4)</td>
<td>Function: UCLA, Pain: VAS, ROM: NR, Strength: NR, Other: NR</td>
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<td>Switzerland</td>
<td>Enrolled consecutively: yes</td>
<td>Type of tear: PTT, Tendon(s) torn: SS</td>
<td>Duration of immobilization: 6 wk.</td>
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<td>Treatment</td>
<td>Follow-up duration, mean (range): 16 mo (11–22 mo)</td>
<td>GROUP 1, N: 22, Age, mean±SD (range): 45 yr (20–63 yr)</td>
<td>Type of treatment: NR</td>
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<td>Inclusion criteria:</td>
<td>Males %: 54.5, Cause of tear: degenerative (12), traumatic (10)</td>
<td>PRE-OP TREATMENT: NR</td>
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<tr>
<td>Operative</td>
<td>(1) partial articular-side SS tendon avulsions, (2) 30-70% of tendon cross section</td>
<td>Tear size: NR, Dominant shoulder %: NR</td>
<td>Duration: NR</td>
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<td>Questions:</td>
<td>Exclusion criteria:</td>
<td>Comorbidities: SLAP lesion (5); SC repair (1); acromial clavicular resection (4)</td>
<td>Type of treatment: NR</td>
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<td>Q2, Q5</td>
<td>(1) significant bursal side tendon lesion, (2) hidden FTT</td>
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<td>Funding:</td>
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<td>Outcome</td>
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<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>Country: Australia</td>
<td>Study design: retrospective cohort</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Duration of rehab: NR Rehab components: passive stretching–1-4 wks; active stretching &amp; strengthening exercises–&gt;4 wks Rehab regime: NR</td>
<td>GROUP 2</td>
<td>Surgical approach: open Type of surgery: repair and debridement Additional procedures (N): acromioplasty Technique: side-to-side suture &amp; tendon-to-bone reattachment Duration of immobilization: 4 wks Dur</td>
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<td>Treatment category: Operative augmentation</td>
<td>Enrolled consecutively: no Followup duration, mean (range): 24 mo.</td>
<td>Type of tear: FTT Tendon(s) torn: NR</td>
<td>Duration of rehab: NR Rehab components: passive stretching–1-4 wks; active stretching &amp; strengthening exercises–&gt;4 wks Rehab regime: NR</td>
<td>PRE-OPERATIVE TREATMENT: NR Duration: NR Type of treatment: NR</td>
<td>Other: • Participation in sports • Cuff integrity</td>
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<td>Questions: Q2, Q5</td>
<td>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</td>
<td>Duration: NR</td>
<td>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.</td>
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<td>Funding: No funding</td>
<td>Exclusion criteria: NR</td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
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<tr>
<td>NOS: 6*/8*</td>
<td></td>
<td>Duration: NR</td>
<td>Type of treatment: NR</td>
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Pre-Operative Treatment: NR Duration: NR Type of treatment: NR

The use of the orthobiologic implant is not recommended.
<table>
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<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
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<th>Author conclusions</th>
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<tbody>
<tr>
<td></td>
<td>Country: USA</td>
<td>Analyzed: 21</td>
<td>Surgical approach: mini-open</td>
<td>No difference was found in outcomes between arthrosopic 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.</td>
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<td>Study design: retrospective cohort</td>
<td>Withdrawals: 0</td>
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<td>Duration since symptom onset, mean±SD (range):</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy (1); capsular release (1)</td>
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<td>Questions: Q2, Q5</td>
<td>Group 1: 9±4 mo. (NR)</td>
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<td>Rehab components: passive stretching (wk 1–4); active stretching (wk 5–11); strengthening (≥12)</td>
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<td>Tendon(s) torn: SS</td>
<td>Rehab regime: NR</td>
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<td>Inclusion criteria: (1) no previous surgery, (2) pain refractory &gt;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</td>
<td>GROUP 1</td>
<td>GROUP 2</td>
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<td>Exclusion criteria: (1) prior surgery, (2) extension of tear to SC or IS, (3) concomitant stiffness</td>
<td>Age, mean±SD (range): 55±8 yr. (NR)</td>
<td>Surgical approach: all-arthroscopic</td>
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<td>Males %: 66.7</td>
<td>Type of surgery: repair and debridement</td>
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<td>Cause of tear: degenerative (6), traumatic (6)</td>
<td>Additional procedures (N): acromioplasty (all); biceps tenotomy (3)</td>
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<td>Duration of immobilization: 4 wk</td>
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<td>Dominant shoulder %: NR</td>
<td>Duration of rehab: NR</td>
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<td>Comorbidities: SLAP lesion (4); Bankart (0)</td>
<td>Rehab components: passive stretching (wk 1–4); active stretching (wk 5–11); strengthening (≥wk 12)</td>
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<td>GROUP 2</td>
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<td>Age, mean±SD (range): 53±10 yr. (NR)</td>
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<td>Type of treatment: cortisone injection</td>
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<td>Treatment characteristics</td>
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<td>Author conclusions</td>
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<tr>
<td>Wilson F, 2002</td>
<td>Recruitment dates: Feb 1986 to May 1994</td>
<td>Enrolled: 100</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>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.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: retrospective cohort</td>
<td>Analyzed: 100</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category: Operative technique</td>
<td>Withdrawals: 0</td>
<td>Duration since symptom onset, mean (range):</td>
<td>Type of surgery: repair and debridement</td>
<td>● UCLA</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5</td>
<td>Followup duration, mean (range): 5 yr (2–14 yr)</td>
<td>Group 1: 11 mo (1 wk–6.0 yr)</td>
<td>Additional procedures (N): acromioplasty (26)</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Enrollment consecutively: NR</td>
<td>Group 2: 10.6 mo (2 wk–6.0 yr)</td>
<td>Technique: staple fixation</td>
<td>ROM: NR</td>
<td></td>
</tr>
<tr>
<td>NOS: 5*/8*</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 3 wk</td>
<td>Duration of rehab: NR</td>
<td>Strength: NR</td>
<td></td>
</tr>
<tr>
<td>Inclusion criteria: (1) FTT, pain, failed nonoperative tx</td>
<td>Tendon(s) torn: NR</td>
<td>Rehab components: passive stretching and physical therapy NOS (wk 3 or 4); strengthening (wk 6)</td>
<td>Rehab regime: NR</td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td>Exclusion criteria: (1) PTT &gt;5 cm, (2) major organ system disease</td>
<td>GROUP 1</td>
<td>Surgical approach: all-arthroscopic</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>GROUP 2</td>
<td>N: 35</td>
<td>Type of surgery: repair and debridement</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Age, mean±SD (range): 52 yr (20–69 yr)</td>
<td>Additional procedures: acromioplasty (65); clavicle resection (58)</td>
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</tr>
<tr>
<td></td>
<td>Males %: 77.1</td>
<td>Technique: side-to-side suture anchor</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Cause of tear: degenerative (7), traumatic (28)</td>
<td>Duration of immobilization: 0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tear size: sm, med, lg</td>
<td>Duration of rehab: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>Rehab components: passive stretching and physical therapy NOS (wk 3/4); strengthening (wk 6)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comorbidities: NR</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROUP 2</td>
<td>N: 65</td>
<td>PRE-OP TREATMENT: yes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Age, mean±SD (range): 52 yr (32–70 yr)</td>
<td>Duration: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Males %: 58.5</td>
<td>Type of treatment: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cause of tear: degenerative (19), traumatic (46)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Tear size: sm, med, lg</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Dominant shoulder %: NR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Comorbidities: NR</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<td>-----------------------</td>
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<td>--------------------</td>
</tr>
<tr>
<td>Country: Japan</td>
<td>Study design: retrospective cohort</td>
<td>Analyzed: 40</td>
<td>Drug name: lidocaine (4 ml); dexamethasone (2 mg)</td>
<td>Function:</td>
<td></td>
</tr>
<tr>
<td>Treatment category:</td>
<td>Enrolled consecutively: NR</td>
<td>Withdrawals: 0</td>
<td>Duration of treatment: 15 injections (mean)</td>
<td>• JOA</td>
<td></td>
</tr>
<tr>
<td>Nonoperative vs.</td>
<td>Followup duration, mean (range): 4 yr (12 mo–23 yr)</td>
<td>Type of tear: FTT</td>
<td>Treatment Regime: Frequency–1-2 / wk; Intensity– NR</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>operative</td>
<td>Inclusion criteria: mass RC tears</td>
<td>Tendon(s) torn:</td>
<td>Degree of supervision: NR</td>
<td>ROM: NR</td>
<td></td>
</tr>
<tr>
<td>Questions: Q4, Q6</td>
<td>Exclusion criteria: NR</td>
<td>GROUP 1</td>
<td>Treatment provider: NR</td>
<td>Strength:</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>GROUP 1</td>
<td>N: 14</td>
<td>Surgical approach: open</td>
<td>• flexion and</td>
<td></td>
</tr>
<tr>
<td>NOS: 3*/8*</td>
<td></td>
<td>Age, mean±SD (range): 70 yr (55–81 yr)</td>
<td>Type of surgery: unclear</td>
<td>extension</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Males %: 64.3</td>
<td>Additional procedures (N): acromioplasty (26); tenorrhaphy (12); muscle transfer (6); muscle transfer of TM (3); LHB (2)</td>
<td>• internal and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>Duration of immobilization: NR</td>
<td>external rotation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: mass</td>
<td>Duration of rehab: NR</td>
<td>Other: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>Rehab components: passive stretching (day 3); active-assisted stretching (day 14–36); active stretching and strengthening (≥day 36)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>

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.
<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
<th>Participant characteristics</th>
<th>Treatment characteristics</th>
<th>Outcomes reported</th>
<th>Author conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youm T, 2005</td>
<td>Recruitment dates: Mar 1997 to Sep 2001</td>
<td>Enrolled: 95</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
<td>At 2 yr followup, arthroscopic and mini-open RCR produced similar results for small, medium and large RC tear with equivalent satisfaction rates.</td>
</tr>
<tr>
<td>Country: USA</td>
<td>Study design: Retrospective cohort</td>
<td>Analyzed: 84 (shld: 84)</td>
<td>Surgical approach: mini-open</td>
<td>Function:</td>
<td></td>
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<tr>
<td>Treatment category: Operative technique</td>
<td>Withdrawals: 11</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Type of surgery: repair and debridement</td>
<td>● ASES</td>
<td></td>
</tr>
<tr>
<td>Questions: Q2, Q5, Q6</td>
<td>Followup duration, mean (range): 3.0 yr (2–5.8 yr)</td>
<td>Type of tear: NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td>● UCLA</td>
<td></td>
</tr>
<tr>
<td>Funding: NR</td>
<td>Inclusion criteria: (1) ≥2 yr. followup, (2) surgically confirmed and repaired RC tear</td>
<td>Tendon(s) torn: NR</td>
<td>Technique: margin convergence sutures and anchors or bone tunnels</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td>NOS: 6*/8*</td>
<td>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</td>
<td>GROUP 1</td>
<td>Duration of immobilization: NR</td>
<td>ROM: NR</td>
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<tr>
<td></td>
<td></td>
<td>N: 42</td>
<td>Duration of rehab: NR</td>
<td>Strength: NR</td>
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<td>Age, mean±SD (range): 60 yr (NR)</td>
<td>Rehab components: passive stretching (immediately); active stretching (wk 4–6)</td>
<td>Other: NR</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Males %: NR</td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cause of tear: NR</td>
<td>GROUP 2</td>
<td>PRE-OP TREATMENT: NR</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Tear size: sm, med, lg</td>
<td>Surgical approach: all-arthroscopic</td>
<td>Duration: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dominant shoulder %: NR</td>
<td>Type of surgery: repair and debridement</td>
<td>Type of treatment: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Comorbidities: NR</td>
<td>Additional procedures (N): acromioplasty (all)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>TYPE OF TEAR: NR</td>
<td>Technique: suture lassoes and suture punches; anchors</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Duration of immobilization: NR</td>
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<tr>
<td></td>
<td></td>
<td>Duration of rehab: NR</td>
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<tr>
<td></td>
<td></td>
<td>Rehab components: passive stretching (immediately); active stretching (wk 4–6)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Rehab regime: NR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study</td>
<td>Study design</td>
<td>Participant characteristics</td>
<td>Treatment characteristics</td>
<td>Outcomes reported</td>
<td>Author conclusions</td>
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<tr>
<td>---------------</td>
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<td>-----------------------------</td>
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<td>-------------------</td>
<td>--------------------</td>
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<tr>
<td>Zumstein MA, 2008</td>
<td>Recruitment dates: NR</td>
<td>Enrolled: 27</td>
<td>GROUP 1</td>
<td>HRQL: NR</td>
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<tr>
<td></td>
<td>Country: Switzerland</td>
<td>Analyzed: 23</td>
<td>Surgical approach: open</td>
<td>Function:</td>
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<tr>
<td></td>
<td>Study design: before-and-after</td>
<td>Withdrawals: 4</td>
<td>Type of surgery: repair</td>
<td>CMS</td>
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<td>Treatment category: Operative</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Additional procedures (N): NR</td>
<td>subjective shld value</td>
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<tr>
<td></td>
<td>Questions: Q2, Q5, Q6</td>
<td>Type of tear: FTT</td>
<td>Duration of immobilization: 6 wk.</td>
<td>Pain: NR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Funding: No funding</td>
<td>Tendon(s) torn: SS+SC, SS+IS, SS+IS+SC</td>
<td>Duration of rehab: NR</td>
<td>ROM:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>BA Quality: Consecutive: Y Followup: Y</td>
<td>Duration since symptom onset, mean (range): NR</td>
<td>Rehab components: passive stretching (day 1–wk 6); active stretching (≥wk 6); strengthening (wk 12)</td>
<td>abduction</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outcome assessment: Y</td>
<td>Inclusion criteria: (1) open RCR of mass RC tears, (2) availability for followup</td>
<td>Rehab regime: NR</td>
<td>flexion</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Exclusion criteria: unavailability for follow</td>
<td>PRE-OP TREATMENT: NR</td>
<td>external rotation</td>
<td></td>
</tr>
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<td></td>
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<td></td>
<td>Duration: NR</td>
<td>internal rotation</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Type of treatment: NR</td>
<td>Strength:</td>
<td></td>
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<td></td>
<td></td>
<td>abduction</td>
<td></td>
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<td>Other:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>intramuscular fatty degeneration</td>
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<td></td>
<td></td>
<td></td>
<td>fatty infiltration</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>cuff integrity</td>
<td></td>
</tr>
</tbody>
</table>
Alphabetical List of Included Studies


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.


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)


96. Lohr JF, Uhthoff HK. Epidemiologie und pathophysiologie der rotatorenmanschettenrupturen [Epidemiology and pathophysiology of rotator cuff tears]. Orthopade 2007;36(9):788. (Ger).
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 (UKUFP trial), HTA ref 05/47/02, primary research (project) (brief record). 2008;ST.


Excluded – Published Before 1990 (N = 4)

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


Excluded – Enrolled ≤10 Participants (N = 34)

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


Excluded – No Baseline Data (N = 89)

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


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).


Excluded – Not Population of Interest (N = 15)

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

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.


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.


Excluded – Not Intervention of Interest (N = 47)

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


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.

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

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


Excluded – Non-English (N = 79)

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


19. Fabis J, Zwierzchowski H. Ocena punktowa Constan


55. Pechoucek J. Faktory ovlivňující operaci 
vysledky lečby roztrzene manzety rotátoru 
ramena [Factors affecting the surgical results 
of treatment of rotator cuff tears in the 
shoulder]. Acta Chir Orthop Traumatol Cech 

56. Postel JM. Les ruptures isolees du sous-
scapulaire: manifestations osteo-articulaires et 
(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 
subakromiální 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).

Ricostruzione artroscopica delle rotture 
complete di grandezza piccola e media del 
supraspinato: risultati a distanza di 2-6 anni 
[Arthroscopic repair of small to medium full 
thickness supraspinatus tears: outcome at 2 to 6 
(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 
Contribution to Surgery, Vol 3 Traumatology 
and Rehabilitation: I Locomotor Apparatus). 
Switzerland; 1991. p. 82-92. (Ger).

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 franaise 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 

Vergleich von 2 operationstechniken isolierter 
supraspinatusruptur [Comparison of 2 surgical 
techniques in isolated supraspinatus rupture: a 
mached-pair study]. Unfallchirurg 2001 

Decompressione sub-acromiale artrosocopica 
versus riparazione bilanciata artrosocopica nel 
tratamento 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 

49. Midorikawa K. [The arthroscopic surgery of 
the shoulder: a topological and clinical study]. 

tuttamento arthroscopico della capsulite adesiva 
di spalla [Arthroscopic treatment of adhesive 
capsulitis of the shoulder]. Artrosocopia 

51. Miyazaki AN, Doneux SP, Saito RY, et al. 
Acromioplastia artroscópia e reparo das lesões 
do manguito rotador por “minincisão” 
[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, Sadowsky P. Masivni ruptura 
rotátorové manzety: srovnání 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 

experience in the treatment of ‘painful 
shoulder’. Minerva Ortop Traumatol 
1994;45(9):399-402. (Ita).

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 

55. Pechoucek J. Faktory ovlivňující operaci 
vysledky lečby roztrzene manzety rotátoru 
ramena [Factors affecting the surgical results 
of treatment of rotator cuff tears in the 
shoulder]. Acta Chir Orthop Traumatol Cech 


Excluded – Multiple Publication (N = 13)

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


Unobtained Studies (N = 29)

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


