Outcomes and Return to Sport After Pectoralis Major Tendon Repair: A Systematic Review

James Yu
Cindy Zhang
Nolan Horner, MD
Olufemi R. Ayeni, MD, PhD, FRCSC

Timothy Leroux, MD, Med, FRCSC
Bashar Alolabi, MD, MSc, FRCSC
Moin Khan MD, MSc, FRCSC
Disclosures

The authors have no financial conflicts to disclose
Pectoralis major tendon ruptures are becoming increasingly common due to the growing prevalence of active lifestyles. Without treatment, rupture can be a source of pain and disability in athletic individuals. Tendon repair is generally recommended with improved outcomes with regards to pain and function. No accepted prognosis for return to sport, time to return to activity, functional scores and general outcomes after surgery.
To systematically review the literature for clinical outcomes, patient satisfaction and rate of return to sport after isolated pectoralis major tendon repair
Methods

- Literature search of 4 databases (Medline, EMBASE, PubMed, and CINAHL)
- Inclusion criteria
  - Studies reporting on isolated use of pectoralis major tendon repair
  - Described post-operative outcomes
- Exclusion criteria
  - Studies using tendon reconstruction, combined repair with other surgical treatments
  - Case reports
  - Duplicate screening of studies and data extraction for patient demographics, surgical techniques, and clinical outcomes
  - All studies included in this systematic review were independently assessed for quality by 2 reviewers
Results

- 18 studies included (case series) with 536 patients underwent isolated pectoralis major tendon repair

- Median sample size of the included studies was 13.5 patients (range, 5-257 patients)
Results – Patient Characteristics

- Mean age was 28 ± 3 years
- 99% (535/536) of patients were male
- 48% of injuries in dominant extremity
- Half of pectoralis major ruptures were caused by bench press
- 11% (48/425) of patients reported anabolic steroid use
- This review included primarily amateur athletes (65%), with a small number of competitive athletes (8%)
Results

- **90%** (134/149) returned to sport at mean 6 months after surgery
- **74%** (95/128) returned to preinjury level of sport
- **95%** (269/284) returned to work at mean 7 months
- **81%** (83/102) had complete pain relief on final follow up (20.3 months)
- **81%** (88/109) had no cosmetic complaints on final follow up (20 months)
- **84%** (326/388) of patient outcomes were reported as “excellent” or “good”
Results

- Bone tunnels, suture anchors, and cortical button fixation were reported in the literature.
- Older studies more frequently used bone tunnels while recent studies more commonly reported cortical button fixation.
- Excellent results possible with all three techniques.

<table>
<thead>
<tr>
<th>Surgical technique</th>
<th>Bone tunnels</th>
<th>Suture anchors</th>
<th>Cortical button fixation</th>
<th>Suture repairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported %</td>
<td>36%</td>
<td>32%</td>
<td>20%</td>
<td>11%</td>
</tr>
</tbody>
</table>
18% of patients had postoperative complications
Mostly re-ruptures (4%) and wound infections (4%)
7% of patients required reoperation due to complications

While risk of complications was significant, patient outcomes following revision surgery were good
Unable to assess whether complications were more common with a particular surgical technique
4 studies reported **marginally better** functional outcomes after acute repairs compared to chronic repairs, but none were statistically significant.

While immediate repairs may be optimal in maximizing patient outcomes, a chronic injury can still be repaired with excellent results.

Of papers comparing surgery vs conservative treatment, 2 found improved pain relief, return to strength and satisfaction after surgical repair but results were inconsistent across papers.
The ability for young and middle-aged athletes to return to sport after pectoralis major tendon repair is good (90%) and many return to the same level of sport (74%)

Pain relief, and improved cosmetic appearance, albeit with a significant rate of complication (18%)

The evidence supporting all outcomes was limited by the rarity of the injury, the different surgical techniques, and variable outcome assessment criteria
References