A Prospective Randomized Trial of Functional Outcomes Following Rotator Cuff Repair With and Without Acromioplasty: Minimum 2-Year Follow-up


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RTC tear most common cause of shoulder pain in patients over 50

Impingement has been proposed as an etiology contributing to symptoms
  - External compression
  - CA arch narrowed

Recent literature challenges classic outlet impingement theory
Acromioplasty

- Address extrinsic impingement contributing to pathology seen in rotator cuff disease.
- Recent data calls into question the role of external impingement in RCT
  - No relationship between shape and RCT (Zuckerman)
  - Type 3 acromion and AC DJD may only be age-related
  - Most partial tears are articular-sided
  - RCR without acromioplasty reportedly demonstrate no differences in outcome
• **Purpose**: to report the clinical outcomes of patients undergoing an arthroscopic RCR with and without acromioplasty

• **Hypothesis**: there is no difference in short-term clinical outcomes between arthroscopic rotator cuff repair with or without acromioplasty
Inclusion Criteria
• Full thickness tear
• Written informed consent

Exclusion Criteria
• Revision surgery
• Subscapularis tear requiring repair
• Irreparable tear
• Open procedure
• Partial tear

Methods
• Arthroscopic RCR performed by senior authors
• Patients randomly assigned to study groups using sealed envelopes
• Standard rehab protocol
• Acromioplasty performed using a “cutting block” technique, creating a flat acromion when viewed from the lateral portal
Methods

- Pre/post-operative evaluation:
  - ASES/SST/VAS Score
  - Constant score
  - Range of motion

- Intra-operative data:
  - Tear size
  - Repair configuration
  - Concomitant procedures

- Imaging
  - Acromial morphology (Bigliani)
  - Acromial angle (Tuite)
  - Lateral angulation (Groups A/B) (Macgillivray)

![Types of Shoulder Injury](image1)

<table>
<thead>
<tr>
<th>Group A</th>
<th>Group B</th>
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<tbody>
<tr>
<td>0°-10°</td>
<td>&gt;10°</td>
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</table>
• 95 patients
  – acromioplasty (53)
  – non-acromioplasty (43)

• Average follow-up 2.7 yrs (all minimum 2 year follow-up)

• 26 patients had concomitant procedures

• Five patients had revision procedures
  – Revision RCR (2)
    • Non-acromio x 2
  – Total Shoulder Arthroplasty (1)
    • Acromio
  – Capsular release/Lysis of adhesions (2)
    • Acromio, Non-acromio
## Intraoperative Evaluation

<table>
<thead>
<tr>
<th></th>
<th>Acromio</th>
<th>Non-Acromio</th>
</tr>
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<tbody>
<tr>
<td>Avg # of Tendons Involved</td>
<td>1.4±0.6</td>
<td>1.3±0.5</td>
</tr>
<tr>
<td>Avg degree of tendon retraction (mm)</td>
<td>12.3±11.9</td>
<td>12.5±10.4</td>
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<tr>
<td>Avg Tear Size (mm)</td>
<td>25.8±10.8</td>
<td>25.8±8.5</td>
</tr>
<tr>
<td>Avg # of anchors/case</td>
<td>2.9±1.2</td>
<td>3.3±1.5</td>
</tr>
<tr>
<td>Double Row/TOE</td>
<td>26</td>
<td>31</td>
</tr>
<tr>
<td>Single Row</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>Side to Side</td>
<td>3*</td>
<td>0</td>
</tr>
<tr>
<td>Concomitant Biceps Tenodesis/Tenotomy</td>
<td>23</td>
<td>17</td>
</tr>
<tr>
<td>Concomitant Distal Clavicle Excision</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

* P < 0.05
Acromio vs. Non-acromio – No Difference in Function Between Groups Post-Op
Results

- No differences in outcomes/ROM based on acromial morphology ($p > 0.05$)

- No difference in outcomes/ROM based on lateral downslope ($p > 0.05$)
• Arthroscopic acromioplasty has no effect on subjective and functional outcome after arthroscopic RCR in the short term

• Consistent with findings from similar study of rotator cuff tear with and without SAD
  – Gartsman: 93 patients/15.6 months
  – Milano: 80 patients/24 months
  – No significant affect on outcome of RCR
Limitations

- Preliminary results of long-term study
  - Smaller sample size
  - Limited number of Type III acromion
  - Short follow-up
  - Uneven non-matched groups
- No follow-up imaging to assess healing
- Further follow-up needed to determine if long term pain relief and function associated with acromioplasty
Conclusions

• Acromioplasty provides no additional short term benefit with regard to clinical outcome in patients undergoing arthroscopic RCR regardless of acromial morphology.

• Future study is needed to determine if acromioplasty may influence structural healing or long term functional/subjective outcome following arthroscopic RCR before a determination can be made regarding the role of acromioplasty following cuff repair.
References


