Does Prior Acromioplasty Increase the Incidence of Acromial Fracture Following Reverse Total Shoulder Arthroplasty?: A Retrospective Matched Cohort Analysis

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Introduction

- **Background:**
  - Reverse total shoulder replacement (RTSA) effective treatment for rotator cuff arthropathy
    - Studies demonstrated significant clinical improvements in postop pain and function but a reported complication rate of 19-68%
  - Increasing use acromioplasty for the management of rotator cuff tears
    - Acromial modification may decrease risk of rotator cuff rupture

- **Rationale:**
  - Patient outcomes following RTSA with a prior acromioplasty remains poorly investigated

- **Objective:**
  - Investigate the clinical findings and clinical outcomes of patients who underwent RTSA following a history of prior acromioplasty.
Objective & Hypothesis

• Research Question
  – How do the post-operative clinical outcomes and incidence of acromial fracture in patients who received acromioplasty prior to RTSA compare those who did not undergo acromioplasty?

• Hypothesis
  – Patients with RTSA following acromioplasty will have significant functional improvement without an increased incidence of acromial fracture compared to patients without acromioplasty prior to RTSA
• Initial study design: Retrospective matched cohort
• Study population:
  – Rothman patients who underwent RTSA with prior history of acromioplasty from 2009 to 2017
    • with a minimum two-year follow-up date
  – Exclusion criteria from RTSA: underwent hemiarthroplasty, revision surgery and total shoulder arthroplasty (TSA)
  – Exclusion criteria from the acromioplasty procedure: concomitant rotator cuff repair
• Comparison group:
  – Rothman patients who underwent RTSA without a prior history of acromioplasty during the same time period
  – matched according to age, gender, date of surgery, BMI, hand dominance, comorbidities (RA)
• Outcome:
  – Postoperative incidence of acromial fracture
  – Clinical outcome scores: American Shoulder and Elbow Surgeons (ASES) questionnaire, the Visual Analog Scale (VAS) for pain, the Single Assessment Numeric Evaluation (SANE), and the Simple Shoulder Test (SST)
• Data source and collection
  – Rothman database query
    • Demographic info, pre-op/post-op ROM, RTSA postop complications, etc.
  – Email/call patients to administer clinical outcomes surveys
• Analysis:
  – Paired samples t-tests on clinical outcomes scores, ROM scores
    • P value <0.05 used to measure significance
## Results: in progress

### Study Group At follow-up vs Matched Cohort - Ongoing

<table>
<thead>
<tr>
<th>Metric</th>
<th>Study Group At follow-up</th>
<th>Matched Cohort - Ongoing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study population</td>
<td>n=46</td>
<td>n= 46</td>
</tr>
<tr>
<td>VAS score (pain)</td>
<td>2.4</td>
<td>-</td>
</tr>
<tr>
<td>SANE score (% of normal function)</td>
<td>60.6%</td>
<td>-</td>
</tr>
<tr>
<td>ASES (shoulder function)</td>
<td>71.6%</td>
<td>-</td>
</tr>
<tr>
<td>SST (shoulder function)</td>
<td>62.0%</td>
<td>-</td>
</tr>
</tbody>
</table>

*Matched cohort query and survey administration in progress*

*Will compare both functional outcomes and complication rates with paired t-tests*
Conclusions

- Functional improvements following RTSA consistent with current literature
  - 2018 systematic review of 9 studies on 1134 patients who underwent demonstrated that patients significantly improved from pre-operative baseline to 1-year post-op ASES (mean $\Delta 45.5$) and SST (mean $\Delta 3.9$)$^1$
  - 2011 Systematic review of 18 studies and 349 patients who underwent RTSA, mean pre-op ASES = 30 and mean post-op = 75.$^2$

- Need to complete study to draw conclusions on the incremental effect of prior-acromioplasty
Future Direction

- Complete the data collection for matched cohort and run statistical analysis – significant improvement in functional outcomes without an increased rate of complication (acromial fracture)?
- If results indicate a benefit of prior-acromioplasty future studies at larger scale could guide clinical recommendations
- Other areas of interest for future investigation:
  - Role of rheumatoid arthritis
Acknowledgements

Huge thank you to Chris Hadley and Dr. Brandon Erickson!