Influence of Acromioclavicular Joint Arthritis on Outcomes After Reverse Total Shoulder Arthroplasty

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INTRODUCTION

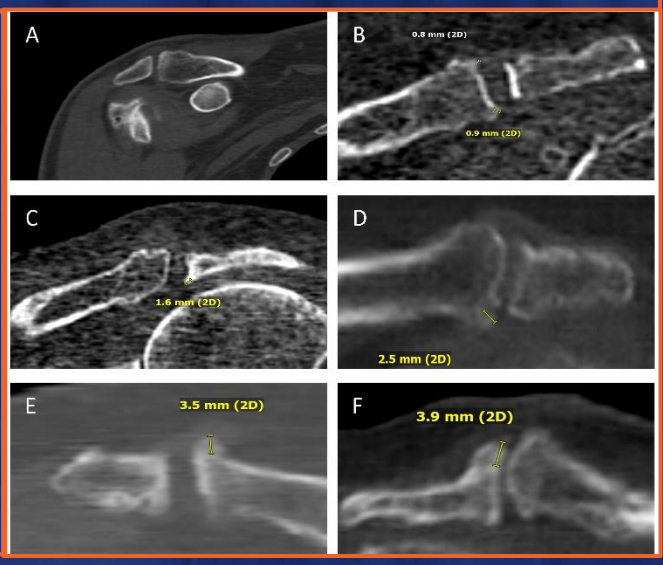
- Reverse Total Shoulder Arthroplasty (rTSA) reliably reduces pain and restores function in patients with glenohumeral arthritis and rotator cuff arthropathy
- Significant motion occurs across the Acromioclavicular joint (ACJ)
- Not much is known about how ACJ arthritis affects shoulder range of motion following rTSA
- ACJ pathology could alter shoulder kinematics following arthroplasty
- Hypothesis: ACJ pathology would not prohibit a successful outcome after rTSA, but patients with more severe preoperative ACJ pathology would have poorer outcomes.

METHODS

- Retrospective review of a prospectively collected shoulder arthroplasty database.
- Subjects underwent primary rTSA with minimum 2-year clinical follow-up.
- Imaging studies (XR, CT, MR) were evaluated for ACJ Pathology.
- Severity based on size and location of osteophytes, as well as narrowest ACJ space.
- Range of motion and clinical outcome scores (ASES, Constant, SPADI, SST, UCL scores) were assessed preoperatively and at latest follow-up. These were then compared between subjects with varying severity of ACJ arthritis

A 6 scale ACJ arthritis grading scale was developed to assess severity:

- Grade 1: no ACJ arthritis or capsular distention on advanced imaging.
- Grade 2: mild joint space narrowing with or without small osteophytes (<1mm).
- Grade 3: joint space narrowing with or without moderate-sized osteophytes (1-2mm).
- Grade 4: large osteophytes or large heterotopic ossifications/loose bodies between 2-3mm.
- Grade 5: large osteophytes or large heterotopic ossifications/loose bodies >3mm, but that are not spanning the ACJ.
- Grade 6: includes large articulating or spanning osteophytes, irregular joint borders on both sides of the ACJ, or complete fusion/arthrosis of the ACJ



RESULTS

No differences in ROM postoperatively based on ACJ arthritis severity. However, severe arthritis (osteophytes ≥2mm) was associated with poorer SPADI scores (greater pain).

Comparison of range of motion and outcome scores at preoperative and latest postoperative follow-up based on the King classification of ACJ arthritis.

Outcome measure	Grade 1 (n=6)	Grade 2 (n=16)	Grade 3 (n=45)	Grade 4 (n=61)	Grade 5 (n=79)	Grade 6 (n=134)	*P*
Preoperative							
SPADI score	66.5 ± 2.9	69.4 ± 12.3	66.3 ± 14.7	70.4 ± 14.7	67.1 ± 13.7	66.9 ± 16.1	.674
SST score	3.5 ± 2.5	3.3 ± 2.8	3.9 ± 2.6	3.7 ± 2.2	4.0 ± 2.6	4.1 ± 2.6	.859
ASES score	35.0 ± 8.1	36.0 ± 11.5	38.8 ± 16.0	36.2 ± 15.4	37.6 ± 14.5	38.2 ± 16.7	.920
UCLA score	14.5 ± 1.9	12.7 ± 3.1	14.4 ± 3.8	13.5 ± 3.7	13.9 ± 4.1	13.7 ± 3.8	.672
Constant score	35.0 ± 6.2	38.2 ± 13.2	41.5 ± 15.9	37.3 ± 15.0	40.8 ± 14.9	39.9 ± 15.1	.540
Active ER (°)	23 ± 22	20 ± 18	26 ± 21	16 ± 23	23 ± 20	17 ± 21	.131
Active FE (°)	93 ± 23	84 ± 31	82 ± 31	77 ± 31	87 ± 33	82 ± 32	.511
Active IR score	3 ± 1	3 ± 2	4 ± 2	3 ± 2	3 ± 2	3 ± 2	.059
Active Abduction (°)	89 ± 23	84 ± 30	77 ± 32	75 ± 30	84 ± 34	79 ± 31	.586
Postoperative							
SPADI score	12.7 ± 11.5	18.5 ± 19.6	17.9 ± 17.6	29.4 ± 26.1	24.9 ± 21.9	25.0 ± 21.3	**.031**
SST score	10.5 ± 2.3	9.2 ± 2.8	9.7 ± 2.7	8.4 ± 3.6	9.1 ± 2.8	9.2 ± 3.0	.343
ASES score	85.6 ± 16.1	83.1 ± 16.0	81.7 ± 18.7	71.7 ± 24.7	76.9 ± 19.5	77.1 ± 20.0	.161
UCLA score	32.7 ± 2.5	31.2 ± 4.8	29.1 ± 6.2	28.9 ± 6.0	29.2 ± 5.0	28.9 ± 5.3	.282
Constant score	87.1 ± 6.3	78.5 ± 18.6	71.9 ± 18.5	75.1 ± 17.5	73.3 ± 15.3	72.8 ± 17.0	.059
Active ER (°)	45 ± 5	32 ± 24	32 ± 19	36 ± 17	29 ± 21	31 ± 21	**.009**
Active FE (°)	140 ± 15	128 ± 33	124 ± 29	127 ± 26	126 ± 23	125 ± 24	.749
Active IR score	5 ± 2	5 ± 1	4 ± 2	5 ± 2	5 ± 2	4 ± 2	.461
Active Abduction (°)	122 ± 10	124 ± 37	116 ± 30	116 ± 28	114 ± 27	117 ± 27	.895

ACJ, acromioclavicular joint; ASES, American shoulder and elbow surgeons; ER, external rotation; FE, forward elevation; IR, internal rotation; SPADI, shoulder pain and disability index; SST, simple shoulder test; UCLA, University of California, Los Angeles.
Values represent mean ± standard deviation unless otherwise noted. Bold indicates statistical significance.

CONCLUSION

- ACJ arthritis severity is not associated with poorer ROM and outcome scores following rTSA.
- Patients with Severe ACJ arthritis can expect similar outcomes to those without ACJ arthritis. However, they may experience greater pain postoperatively.
- Future studies may investigate removing osteophytes of the ACJ to reduce patient pain and improve the patient experience.