139.4±8.4 for +0mm glenosphere, 143.9±8.4 mm for +5mm and 148.4±9.1mm for +10mm ($p<0.01$ for all pair comparisons, Fig.3). The inferior attachment also resulted in the significantly longer SSc length (143.9±8.3 mm, $p=0.001$).

Discussion: Lateralization of glenosphere had no effect on SSc moment arms in either abduction or internal rotation. However, it did increase the length of the muscle more than its anatomical length, which can create a passive tension. The latter in combination with the adductive moment arm of the SSc after RSA can counteract the deltoid and weaken shoulder strength. The results of the study suggest that a superior attachment site for SSc repair on RSA can improve SSc function, by decreasing its adductive action and shortening its length.

Significance: Excessive lateralization should be avoided when SSc is repaired in RSA. We also suggest a more superior attachment site than the native SSc insertion for improving its biomechanical function.

Paper #7 OUTCOMES OF TOTAL SHOULDER ARTHROPLASTY FOR INSTABILITY ARTHROPATHY WITH A PRIOR CORACOID TRANSFER PROCEDURE: A RETROSPECTIVE REVIEW AND COMPARATIVE COHORT

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Introduction: As coracoid transfers for shoulder instability become more prevalent, so will the eventual reconstructions for instability arthropathy that may develop. Concerns exist amongst surgeons regarding the difficulty and feasibility of performing anatomic total shoulder arthroplasty for instability arthropathy following these coracoid transfer procedures. Many question whether the loss of the coracoid and conjoined tendon as a landmark will increase the rate of complications, and if the splitting of the subscapularis compromises the muscle and thereby prohibits the use of an anatomic replacement or could lead to early failures.

Goal: The purpose of this study was to evaluate minimum 2 year outcomes following anatomic total shoulder arthroplasty for instability arthropathy with a prior coracoid transfer procedure and compare them to a matched cohort of patients following total shoulder arthroplasty for primary osteoarthritis.

Methods: A retrospective review was performed on a prospectively collected shoulder arthroplasty database from 2004-2018 by a single surgeon at a high-volume shoulder arthroplasty center. Patients with a diagnosis of instability arthropathy were identified and a chart review and radiographic review was performed to identify a subset of 14 patients with a prior coracoid transfer (Latarjet or Bristow procedure) that underwent subsequent anatomic total shoulder arthroplasty. 11 of the patients met criteria for minimum of 2 year clinical follow up, but 1 patient did not have his final follow up data as he was revised for deep infection to a different implant prior to the 2 year follow up of his index procedure. A matched cohort of patients was identified that underwent an anatomic total shoulder arthroplasty for primary osteoarthritis to serve as a comparative group. Cases were matched with 3 control subjects utilizing propensity scoring and matching according to age, gender, BMI and dominant shoulder with a nearest neighbor technique utilized for surgery date to account for changes in surgical technique over time. A matched linear, mixed model was used to test for differences between cases and matched controls for subject characteristics, ASES, and SANE scores. Chi-square tests were used to evaluate patient satisfaction.

Results: There were no significant differences between the coracoid transfer cohort and primary osteoarthritis cohort in regards to age (56.6 ± 4.4 vs 56.8 ± 5.1) gender (10M:1F vs 30M:3F), BMI (30.1 ± 5.6 vs 29.7 ± 4.6), shoulder dominance (6 [55%] vs 19 [58%]) or final follow up (49.5mo ± 31.2 vs 47.2 ± 27.5; $p=0.948$). The coracoid transfer cohort had significant improvement in ASES score (43 ± 20.0 to 94.4 ± 4.6; $p<0.001$), ASES pain score (20.0 ± 14.1 to 50.0 ± 0; $p<0.001$), SANE score (31.6 ± 19.6 to 94.4 ± 6.6; $p<0.001$), and patient satisfaction ($p<0.001$). The coracoid transfer cohort had statistically better final outcome scores than the primary osteoarthritis cohort in regards to ASES score (94.4±4.6 vs 82.2± 23.4; $p=0.018$), ASES pain score (50.0 ± 0 vs 40.6 ± 13.9; $p<0.001$), and SANE score (94.4 ± 6.6 vs 66.8 ± 34.5; $p=0.023$). However, these statistical differences in final outcome scores are likely not significant as the mean improvement from preoperative to postoperative scores were similar between cohorts as the primary osteoarthritis cohort had worse preoperative values (ASES score $p=0.373$, ASES pain score $p=0.683$, SANE score $p=0.076$). There was no significant difference in patient satisfaction between the cohorts at final follow up ($p=0.544$). The difference in revision rate (18.2% [2/11] vs 6.1% [2/33]) did not reach statistical significance ($p=0.545$).

Conclusions: At early to mid-term follow-up, anatomic total shoulder arthroplasty performed for instability arthropathy after a coracoid transfer demonstrated good results with significant improvements in all outcome measures. In this subset of patients, there appears to be equivalent results to total shoulder arthroplasty performed for primary osteoarthritis. Longer term follow up of these patients and larger patient cohorts will provide further insights into this problem and highlight any potential differences in outcomes or revision rate.

TABLES

Subject Characteristics at Baseline

	Coracoid Transfers	Primary OA	p
Patients	11	33	
Age	56.5 ± 4.4	56.8 ± 5.1	0.848
Gender (M:F)	30 : 3	10 : 1	>0.99
BMI	30.1 ± 5.6	29.7 ± 4.6	0.822
Dominant Shoulder	6 (55%)	19 (58%)	>0.99
Follow Up (months)	49.5 ± 31.2	47.2 ± 27.5	0.948

Matched analysis

	Coracoid Transfers		Primary OA	
	Preoperative	Postoperative	Preoperative	Postoperative
ASES	43.1 ± 20.0	94.4 ± 4.6	36.3 ± 15.6	82.2 ± 23.4
ASES – Pain	20.0 ± 14.1	50.0 ± 0	8.4 ± 5.9	40.6 ± 13.9
SANE	31.6 ± 19.6	94.4 ± 6.6	28.2 ± 23.2	66.8 ± 34.5

	Preop to final FU differences	CCTF vs control differences	Pre/ postGroup
	p	p	p
ASES	<0.001	0.018	0.373
ASES – Pain	<0.001	<0.001	0.683
SANE	<0.001	0.023	0.076

Patient satisfaction

	Coracoid Transfers		Primary OA	
	Preoperative	Final	Preoperative	Final
Very Dissatisfied	6 (54.5%)	0 (0%)	25 (75.8%)	1 (3%)
Dissatisfied	5 (45.5%)	0 (0%)	8 (24.2%)	5 (15%)
Satisfied	0 (0%)	2 (20%)	0 (0%)	6 (18%)
Very Satisfied	0 (0%)	8 (80%)	0 (0%)	21 (64%)