Bariatric Surgery is Associated with Surgical Failure and Inferior Outcomes after Arthroscopic Rotator Cuff Repair Compared to a Matched Cohort

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INTRODUCTION:

Bariatric surgery (BS) is an effective tool for obesity treatment. The number of bariatric surgeries reported annually in the United States has continued to rise, despite just 1% of all patients indicated for the procedure moving forward with operative intervention. Post-operative healing deficiencies following bariatric surgery are well documented. This can impede recovery, particularly after orthopedic procedures that require tendon to bone healing. It has been demonstrated that patients with previous bariatric surgery had increased failure rates and inferior outcomes after rotator cuff repair (RCR) when compared to a RCR group with similar BMI at time of RCR without a history of BS. The purpose of this study was to compare failure rates and patient reported outcomes after RCR between patients with a history of BS and those who met criteria for BS but did not undergo the procedure prior to RCR.

METHODS:

Patients with a history of BS who underwent arthroscopic RCR for full-thickness supraspinatus tears between March 2013 and June 2022 were identified in a single institution. These patients were compared to a cohort of patients who underwent RCR and qualified for BS (qBS) but did not undergo this surgery. Minimum follow-up was 24 months. Primary outcome was surgical failure, defined as symptomatic retear confirmed on magnetic resonance imaging (MRI) or revision surgery. Secondary outcomes assessed included numeric rating scale (NRS) for pain, Single Assessment Numeric Evaluation (SANE), American Shoulder and Elbow Surgeons Shoulder Score (ASES) and need for secondary surgery other than revision repair.

RESULTS:

A total of 34 RCR patients with a history of BS (24 female, 10 male; age 56.4 ± 8 years; BMI 33.5 ± 7.2) and 35 individuals who qualified for, but did not undergo, bariatric surgery (25 female, 10 male; age 66.2 ± 9.5 years; BMI 40.25 ± 4.17) completed the electronic survey and met inclusion criteria. Average follow-up was 52.3 months in BS group and 69.8 months in the qBS group ($p = 0.018$). The BS group had significantly higher overall failure rates (20.6% vs. 0%) when compared to the qBS group. The BS group had higher post-operative NRS pain scores (3.85 vs. 1.36; $p = 0.0001$) and lower ASES scores (72.5 vs. 91.4; $p = 0.000$) at final follow up. There was no difference in SANE scores (77.7 vs. 80.3; $p = 0.348$), Need for revision was significantly higher in the BS group compared to the qBS group (11.8% vs 0%; $p = 0.04$). Reoperation for MUA (1 vs. 2, $p = 1.00$) and conversion to rTSA (2 vs. 0, $p = 0.208$) were not statistically significantly different.

DISCUSSION AND CONCLUSION:

BS is associated with increased failure rates, worse post-operative pain, and worse patient-reported outcomes after arthroscopic RCR, even when compared to patients who meet criteria for BS but did not undergo BS and maintained a higher BMI. Patients having undergone BS who are considering RCR should be counseled regarding the risk of inferior post operative outcomes. Preoperative nutrition work up and counseling may be beneficial to patients who have undergone BS, prior to arthroscopic RCR.

Table 1: Demographics: Bariatric vs. qualified for Bariatric	Bariatric (N = 34)	qualified for Bariatric (N =35)	p value
Age (Mean, SD)	56.4 ± 8.4	66.2 ± 9.5	p = 0.00
Gender (Male N, %)	10 (29.4%)	10 (25.0%)	p = 0.79
BMI (Mean, SD)	33.50 ± 7.17	40.25 ± 4.17	p = 0.00
Diabetes (Yes N, %)	6 (17.7%)	4 (12.5%)	p = 0.73
Smoker (Yes N, %)	9 (26.5%)	2 (6.3%)	p = 0.045
Osteoporosis (Yes N, %)*	1 (8.3%)	2 (16.7%)	p = 1.00

Table 2: Outcomes: Bariatric vs. qualified for Bariatric	Bariatric (N = 34)	qualified for Bariatric (N = 35)	p value
Failure (N, %)	7 (20.6%)	0 (0%)	p = 0.003
Post Op VAS (Mean, SD)	3.85 ± 3.3	1.36 ± 2.1	p = 0.0001
Post Op SANE (Mean, SD)	77.7 ± 24.1	80.3± 27.5	p = 0.348
Post Op ASES (Mean, SD)	72.5 ± 23.6	91.4± 15.5	p = 0.000
Revision Repair (Yes N, %)	4 (11.8%)	0 (0%)	p = 0.04
MUA (Yes N, %)	1 (2.9%)	2 (5.0%)	p = 1.00
rTSA (Yes N, %)	2 (5.8%)	0 (0%)	p = 0.208