Arthroscopic Rotator Ruff Repair with Side-to-Side Sutures for Full Thickness Transtendinous Supraspinatus Tears Yields Excellent Outcomes and Low Re-tear Rates Similar to Traditional Tendon-to-Bone Fixation at Mean Follow Up of 4 Years

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INTRODUCTION:
Full thickness, transtendinous supraspinatus tears involve a large portion of the tendon that remains attached to the footprint that often leaves insufficient medial tissue for tension free footprint restoration with traditional suture anchor repair. The aim of this study was to determine outcomes and failures rates for arthroscopic side to side suture repair for transtendinous tears compared to traditional double row repair for more commonly encountered tendon avulsions. We hypothesized poorer objective and subjective outcomes as well as higher re-tear rates for side-to-side suture repair.

METHODS:
This was a retrospective cohort study of 18 consecutive patients with full thickness transtendinous supraspinatus tears repaired with arthroscopic side-to-side sutures (Group 1) compared to 36 matched controls with classic tendon avulsion from the footprint repaired with double row knotless transosseous equivalent repairs (Group 2). All procedures were performed by a single surgeon with a minimum of 2-year follow up. Demographics and prospectively collected patient reported outcomes (PROs) were collected including postoperative active range of motion (AROM), American Shoulder and Elbow Surgeons (ASES) score, Visual analog scale (VAS) for pain, and Subjective Shoulder Value (SSV). Failure defined as a symptomatic re-tear diagnosed on MRI or need for revision surgery was also determined. Preoperative tear size and Goutallier stage were recorded from MRIs.

RESULTS:
There were no significant differences between Group 1 and Group 2 regarding mean follow-up (49 months vs 52.4 months, p=0.640) and age (68.7 ± 6.8 vs 67.1 ± 9.6, p=0.550). With respect to clinical outcomes and PROs, there were no differences in postoperative VAS pain score (1 ± 1.54 vs 1.5 ± 2.1, p=0.537), SSV score (92.2 ± 9.1 vs 87.1 ± 10.9, p=0.086), or ASES score (90.8 ± 9.9 vs 83.1 ± 23.9, p=0.377). No differences were identified for postoperative AROM FF (153 ± 14 vs 156 ± 16, p= 0.670), external rotation (53 ± 6 vs 51 ± 9, p= 0.498) and internal rotation score (6.4 ± 1.8 vs 7.2 ± 1.2, p=0.244). There was no statistically significant difference in failure rates between cohorts (11.1% vs 2.7%, p=0.255). Regarding preoperative tear characteristics, fatty infiltration of the supraspinatus (1.2 ± 1 vs 1.5 ± 0.7, p= 0.307) and anteroposterior tear size were similar (21.3 ± 9.3 vs 24 ± 8, p=0.322), although lower grades of fatty infiltration in the infraspinatus was present in Group 1 (0.3 ± 0.6 vs 1.1 ± 0.7, p< 0.001).

DISCUSSION:
Arthroscopic side-to-side suture repair for transtendinous full thickness supraspinatus tears yields excellent outcomes with low failure rates comparable to tendon-to-bone double suture anchor repair for typical avulsion type tears. Retention of the large tendon stump on the greater tuberosity with side-to-side repair also allows restoration of anatomy without undue tension in this uncommon scenario.

SIGNIFICANCE:
Arthroscopic side-to-side suture repair for transtendinous full thickness supraspinatus demonstrates excellent outcomes and low failure rates.