<h3 style="color: rgb(31, 55, 99); margin: 2pt 0cm 0cm; font-size: 12pt; font-family: "Calibri Light", sans-serif; font-weight: normal;"> Interposition Patches for Massive and Irreparable Rotator Cuff Tears: Helpful or Not? A Prospective Study of 164 Consecutive Interposition Polytetrafluoroethylene Patch Repairs</h3>

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INTRODUCTION: Massive and irreparable rotator cuff tears are difficult to manage and often result in proximal humeral migration and glenohumeral arthritis which can, in turn, be managed by reverse total shoulder arthroplasty. Interposition patches, such as polytetrafluoroethylene (PTFE) patches, are a potential solution for massive and irreparable rotator cuff tears. The aims of this study were to determine whether interposition PTFE patches inserted for massive and irreparable rotator cuff tears (1) improve patient pain and function, shoulder strength, and range of motion, (2) determine how long interposition PTFE patch repairs last and whether they (3) prevent glenohumeral arthritis, proximal humeral migration, and (4) progression to reverse total shoulder arthroplasty.

METHODS: We conducted a prospective cohort study of 164 consecutive patients who received interposition PTFE patch repairs for massive and irreparable rotator cuff tears with a mean follow-up time of 37 months. Patient-ranked pain and function, shoulder strength, and range of motion were assessed preoperatively, at six months, and at their most recent follow-up. Interposition PTFE patch integrity was assessed by ultrasound at six months and most recent follow-up. Shoulder radiographs were taken preoperatively and at most recent follow-up. Participants who underwent interposition PTFE patch removal +/- reverse total shoulder arthroplasty were recorded.

RESULTS:

No major adverse events were identified. Interposition PTFE patch repairs were effective at improving patient pain, function, shoulder strength and range of motion at an average of 37 months postoperatively. Post-hoc analysis demonstrated that patients with intact interposition PTFE patches on ultrasound showed better patient-ranked outcomes at 37 months in terms of the frequency of activity-related pain (P = 0.04), patient-ranked stiffness (P =0.008), level of difficulty reaching overhead (P = 0.01), and overall shoulder rating (P = 0.03) than non-intact interposition PTFE patches. Supraspinatus (P = 0.04), external rotation (P = 0.003) and internal rotation strength (P = 0.03) were 23% to 39% greater in patients with intact interposition PTFE patches compared to patients with non-intact patches at 37 months. Abduction was 20 degrees greater (P = 0.01) and internal rotation was 2 vertebral levels higher (P = 0.04) in intact interposition PTFE patches. Kaplan-Meier analysis estimated a mean functional failure time (the aggregate of participants whose patch had lost integrity on ultrasound or who underwent interposition PTFE patch removal ± reverse total shoulder arthroplasty) of 7 years (95% CI, 6 – 9 years). Furthermore, patients with intact interposition PTFE patch repairs exhibited 21% lower severity of glenohumeral arthritis (P =0.03) and a 46% lower incidence of proximal humeral migration (P <0.001) than patients with non-intact interposition PTFE patch repairs. Six (5%) of 122 intact interposition PTFE patch repairs and 5 (12%) of 42 non-intact interposition PTFE repairs progressed to reverse total shoulder arthroplasty at an average of 3 years. Kaplan-Meier analysis predicted a mean time of 16 years (95% CI, 13 – 18 years) for progression to reverse total shoulder arthroplasty following interposition PTFE patch repair.

DISCUSSION AND CONCLUSION: Interposition PTFE patch repairs inserted for massive and irreparable rotator cuff tears were effective at improving patient-ranked outcomes, shoulder strength, and range of motion. Interposition PTFE patches reduced the severity of glenohumeral arthritis and the incidence of proximal humeral migration, particularly if they remained intact. The functional survivorship of interposition PTFE patch repairs was limited to 7 years. However, the procedure delayed progression to reverse total shoulder arthroplasty by an average of 16 years.