

# Synthetic Polytetrafluoroethylene (PTFE) Interposition Patches for Irreparable Rotator Cuff Tears: How Are They Doing?

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## INTRODUCTION:

Treating massive and irreparable rotator cuff tears are problematic. Several studies have reported that polytetrafluoroethylene (PTFE) patches demonstrated excellent construct integrity, positive clinical and patient outcomes. However, these studies either had small sample sizes or short follow-up periods. The purpose of our study is to determine the survivorship, efficacy and medium-term (2-19 years) outcomes of PTFE patch repairs.

**METHODS:** This retrospective study used prospectively collected data to establish the medium-term outcomes of PTFE interposition patch repairs for massive rotator cuff tears that could not be repaired by the standard technique. Patients included those who met the  $\geq 2$ -year follow-up criteria post repair. Standardised assessments of patient-ranked shoulder pain and function, shoulder strength and passive range of motion (ROM) were performed pre-operatively and at follow-up visits. Radiographs and ultrasonography were used to evaluate repair integrity, measure proximal humeral head migration and determine glenohumeral arthritis scores.

**RESULTS:** 41 shoulders formed the study cohort at a mean follow-up period of 5 years (range: 2-19 years). The mean age of this group was 72 (SD: 10; range: 50-88) and had 14 cm<sup>2</sup> tears at surgery. 25 of 41 (61%) PTFE interposition patch repairs remained intact at 5 years post-repair. Thirteen patches failed at the patch-tendon junction, one was removed, and two patients underwent reverse total shoulder replacement (Figure 1). Patient-ranked shoulder stiffness ( $P<0.05$ ), frequency of pain during activity and sleep ( $P<0.001$ ), pain levels during overhead activity and rest ( $P<0.001$ ) and overall shoulder function significantly improved from bad preoperatively to fair at the 5-year post-operative visit ( $P<0.001$ ). No significant improvements were demonstrated in dynamometer-measured shoulder strength maneuvers and passive ROM at 5-years. 44% of intact repairs and 56% of non-intact repairs demonstrated proximal humeral head migration on shoulder radiographs. Failed repairs were associated with higher mean pre-operative glenohumeral arthritis grades compared to intact repairs (Grade 2 in failed repairs compared to Grade 1 in intact repairs) ( $P<0.01$ ).

## DISCUSSION AND CONCLUSION:

PTFE interposition patch repairs for massive and irreparable tears had good construct integrity and clinical outcomes at 2 years. These outcomes were not maintained. PTFE patch repairs often failed at the patch-tendon junction at 4 years and beyond and were ineffective in: (1) preventing proximal humeral head migration (2) progression of glenohumeral arthritis (3) improving shoulder strength and ROM.

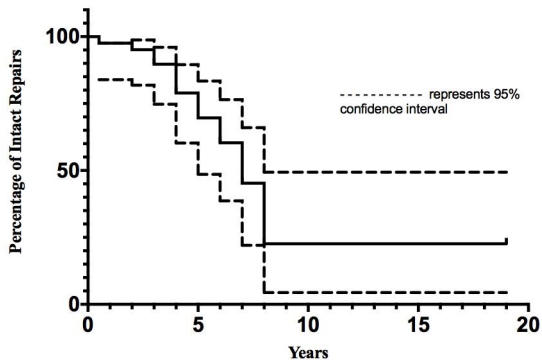


Figure 1: Kaplan-Meier Analysis on Percentage of Intact PTFE Patch Repairs In-Situ