

Treatment of irreparable rotator cuff tears with an autologous interposition hamstring tendon patch (TEAR-Patch)

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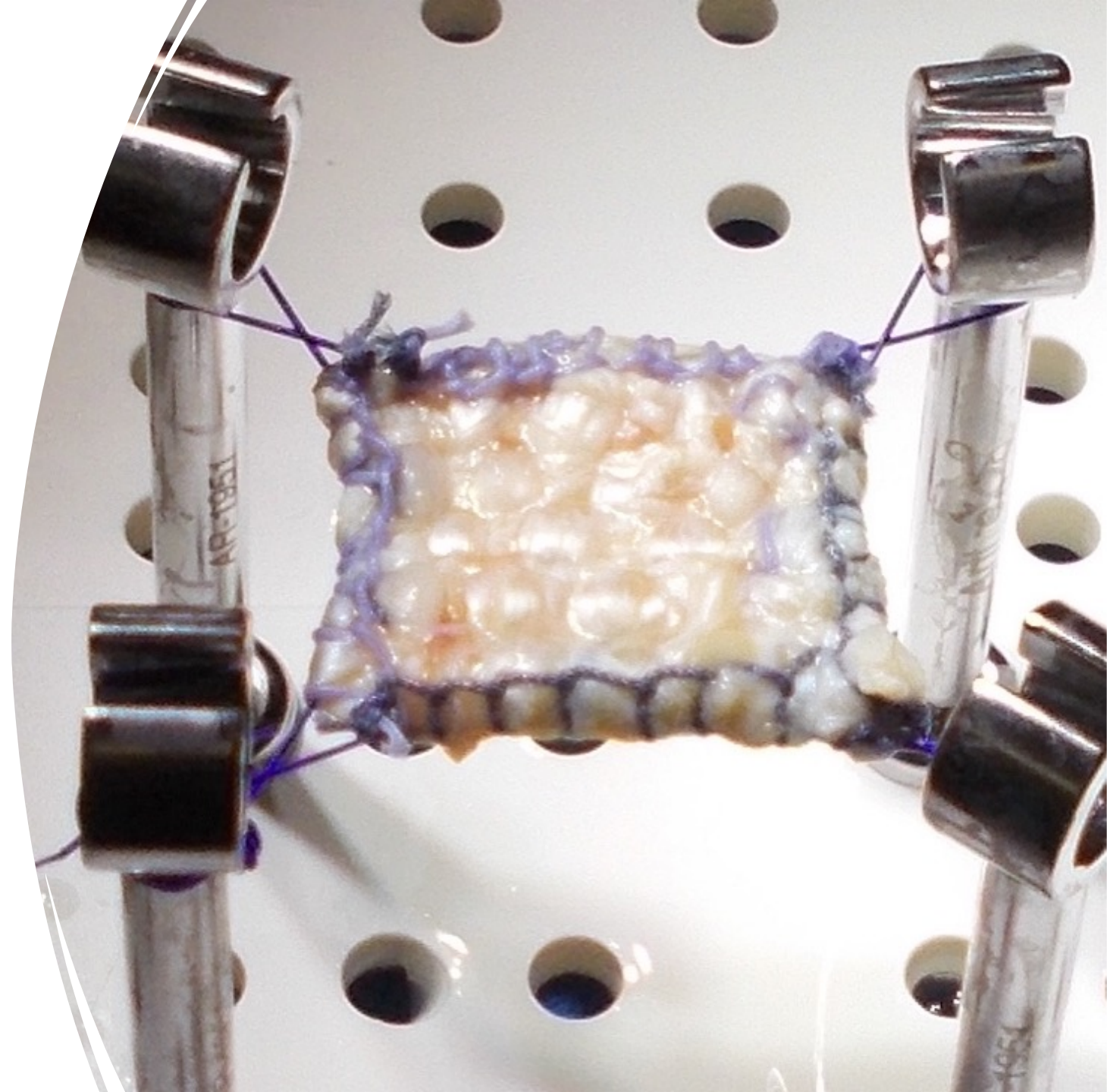
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Conflict of Interest

- All authors declare that they have no conflict of interest

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Introduction

- Massive rotator cuff tears (RCT) are frequently accompanied by a tendon defect that is not amenable to repair.
- The use of patches consisting of various materials is one of several treatment options that have been described. An autologous hamstring tendon patch (TEAR patch) has been shown to be of excellent biomechanical properties in terms of load to failure¹.

¹Kircher J, Schmidt F, Hawellek T, Hubert J, Hedtmann A, Puschel K, Hahn M, Niemeier A. Autologous bridging of rotator cuff tears with a hamstring tendon patch. A cadaver feasibility study and biomechanical testing. *Clin Biomech (Bristol, Avon)* 2018;56:36-9

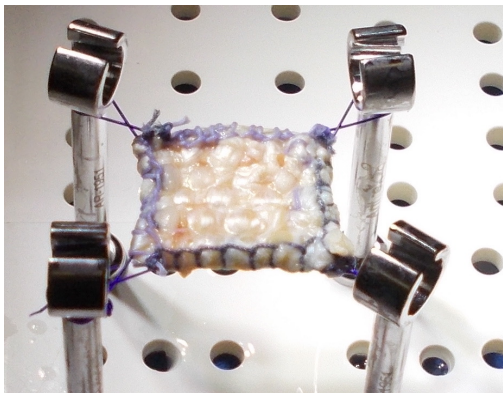


Figure 1. TEAR patch preparation

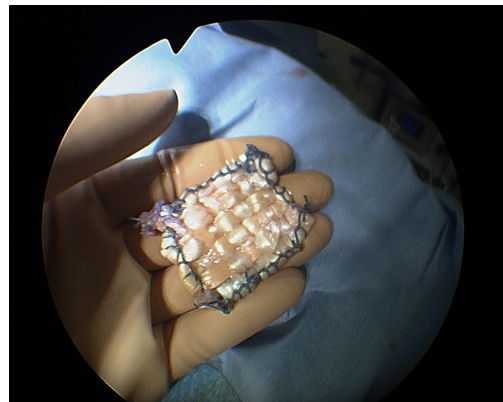


Figure 2. TEAR patch before implantation

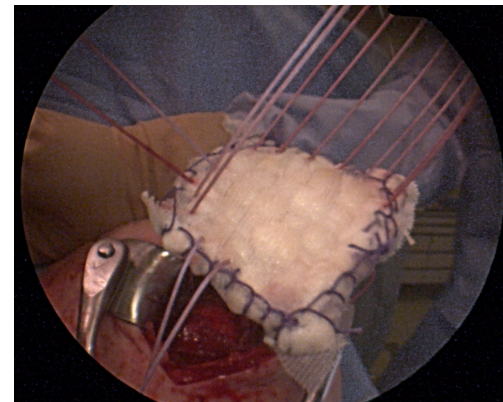


Figure 3. TEAR patch intra-operativ

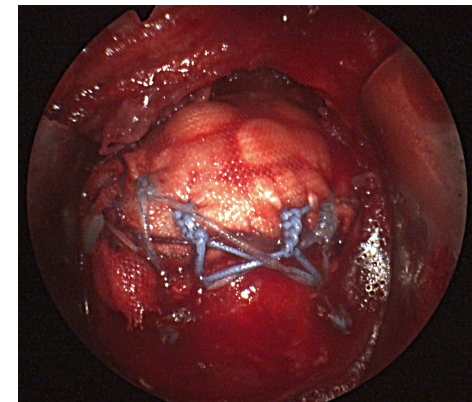


Figure 4. TEAR patch intra-operativ

Objective of this study

To assess the clinical and radiological results after treatment of irreparable rotator cuff tears with a TEAR patch and to monitor complication and failure rates.

Methods

- **Study design:** retrospective, single-center single-surgeon therapeutic study, 2015-2019
- **Inclusion criteria:** Adult patients who underwent interposition of RCT using TEAR patch (n=45; n=17 female) with a minimum follow-up of 24 months.
- **Exclusion criteria:** advanced osteoarthritis, muscular atrophy grade 3 or fatty degeneration > grade 3 of rotator cuff (RC) tendons.
- **Pre- and postoperative comparison:** ROM, Constant Score (CS), DASH score, Simple Shoulder Test (SST) and Value (SSV).
- **Imaging:** Assessment of repaired RC by ultrasound (n=45) and/or MRI (n=28).

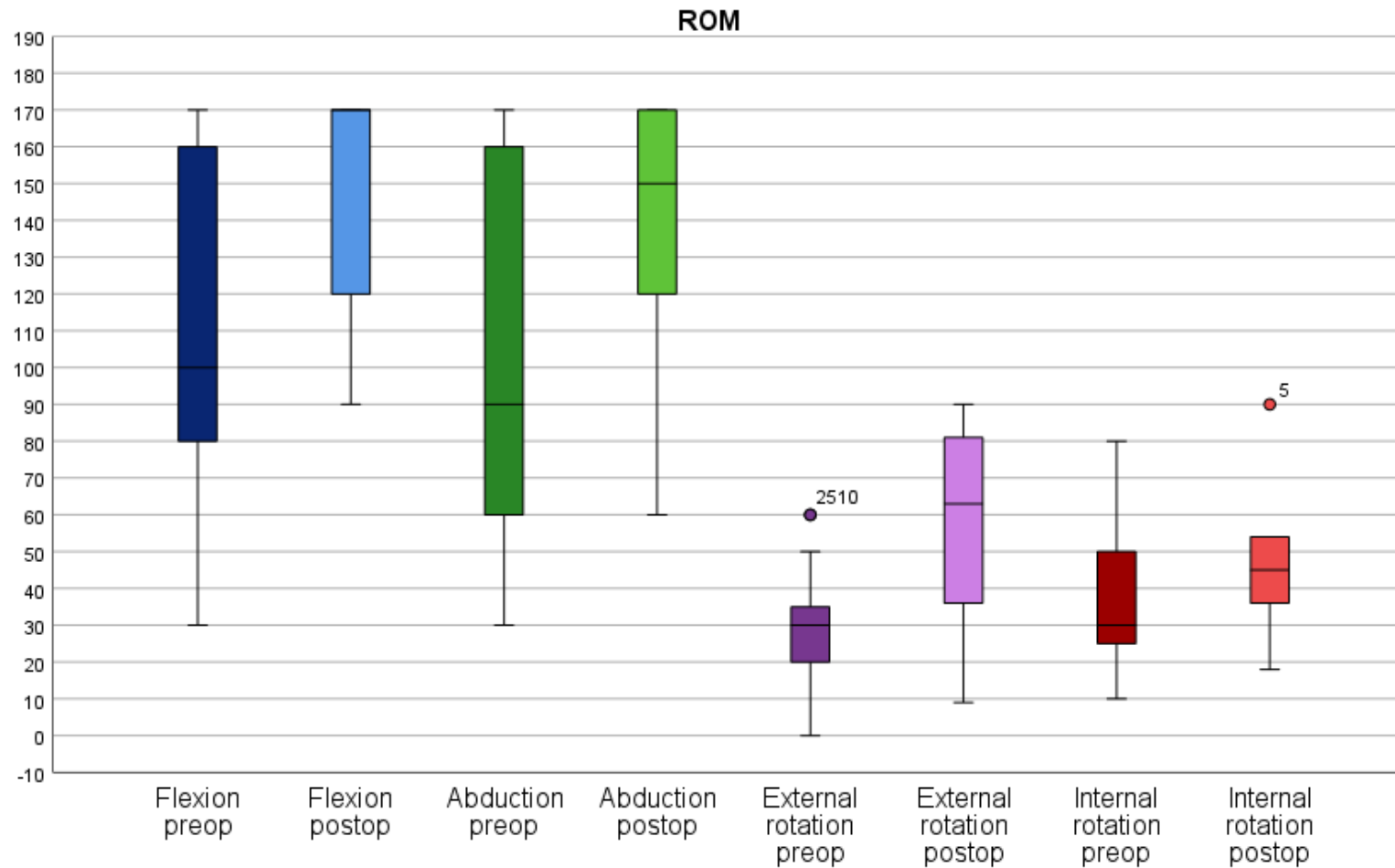
Results

- **Mean age** of the patients 60 years (48-76); (male 59; female 62)
- 8 (18%) patients were lost to follow-up; **mean Follow-up** 4,3 years (2-6)
- The mean **number of previous operations** was 1 (0-4)
- N=17 (38%) had a **relevant SCP lesion** (\geq F/R II) which did not affect outcome
- 4 (9%) patients underwent **revision surgery** (one conversion to reverse shoulder arthroplasty) and 3 (7%) had an infection
- 33 (73%) of the patients would have **undergone the operation again** and were very satisfied (mean satisfaction points 12,3 of 15).

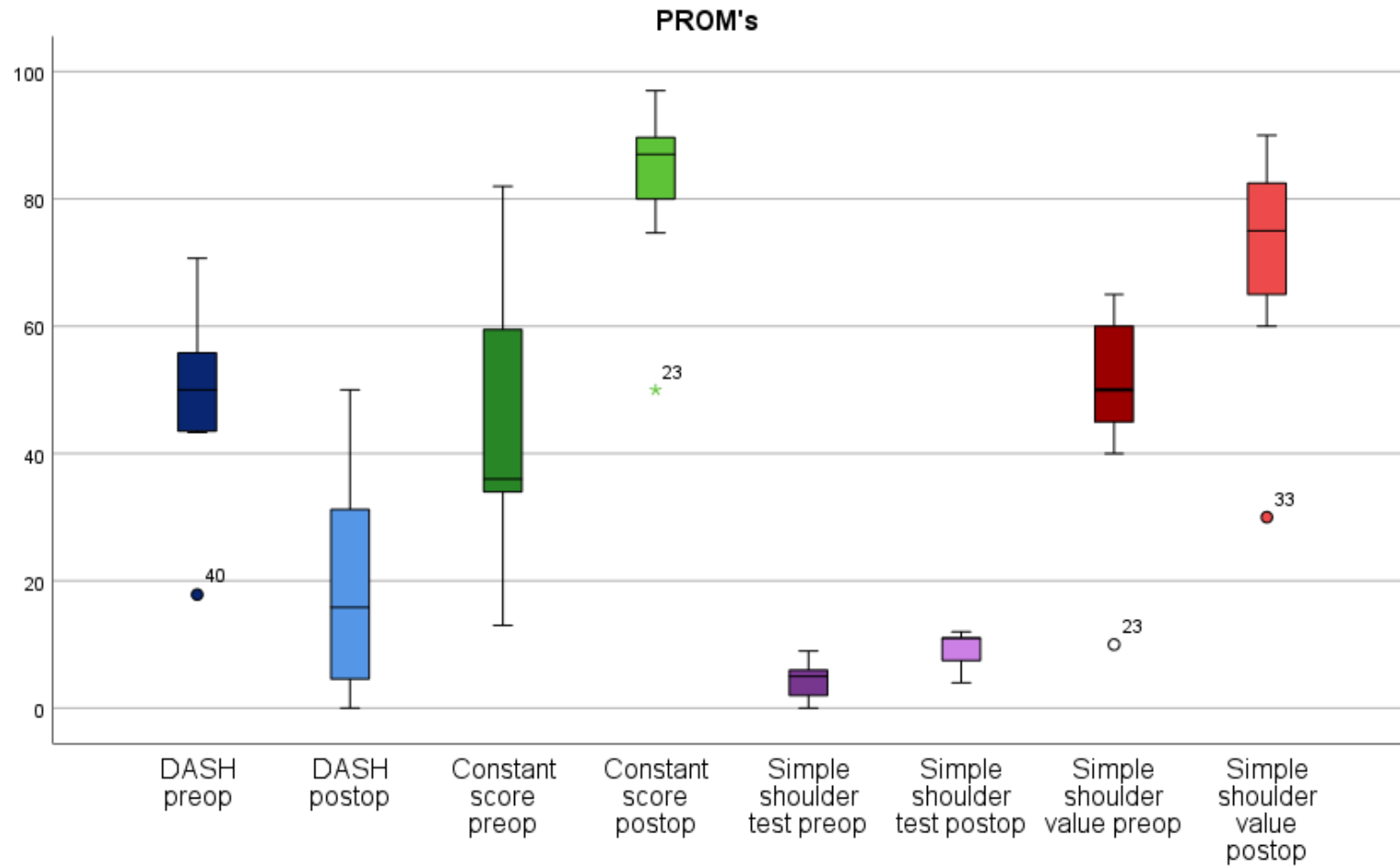
Results

- **Tendon integrity** of the patch varied
 - perfect integration n=30 (67%)
 - small gap n=7 (16%)
 - re-tear n=3 (7%)
 - complete failure n=5 (11%)
- Graft integrity was strongly correlated with the postoperative AHD ($r=0.599$, $p=0.001$) and the gain in AHD ($r=0.599$, $p=0.001$) but not with ROM or PROM's or patient satisfaction.
- The mean preop and **postop Acromio-Humeral Distance** were 6.5 mm (2.7-11.6; SD 2.19) and 10.2 (5.8-17.1; SD 2.47) ($p=0.001$) respectively; the mean gain in AHD was 4.1 mm (0.8-7.9; SD 1.91).
- **Age or BMI** did not significantly affect any outcome parameter

Results

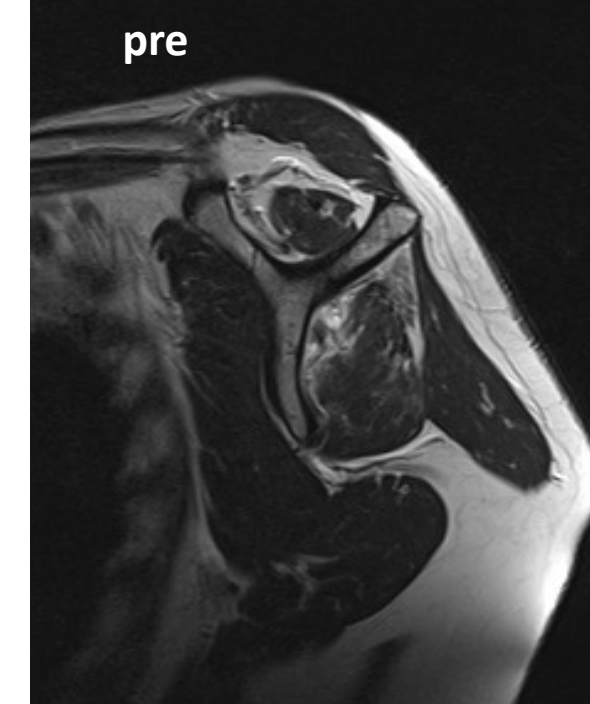
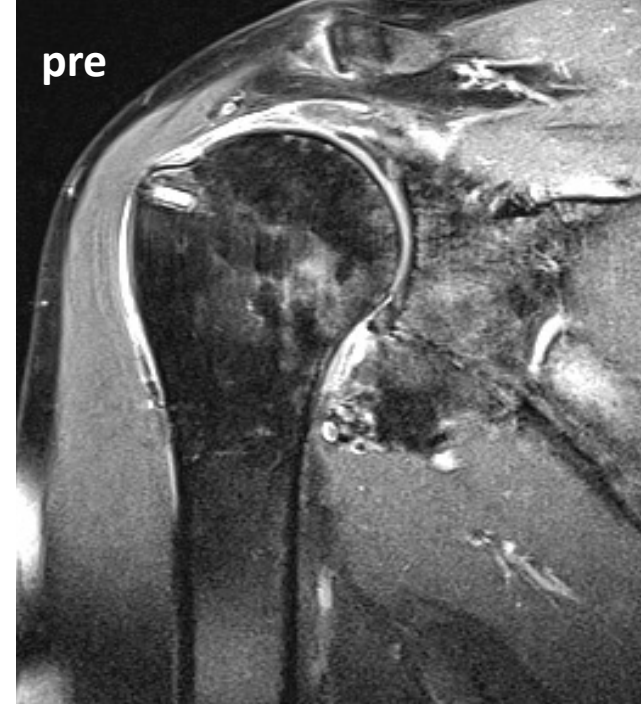


Results

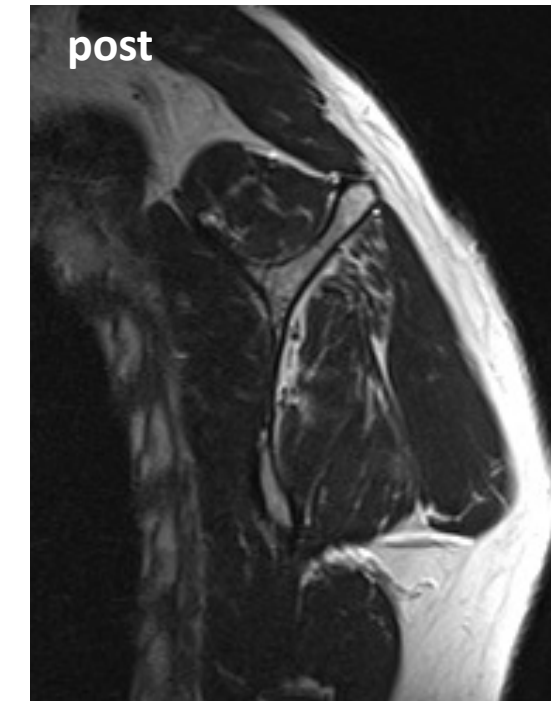
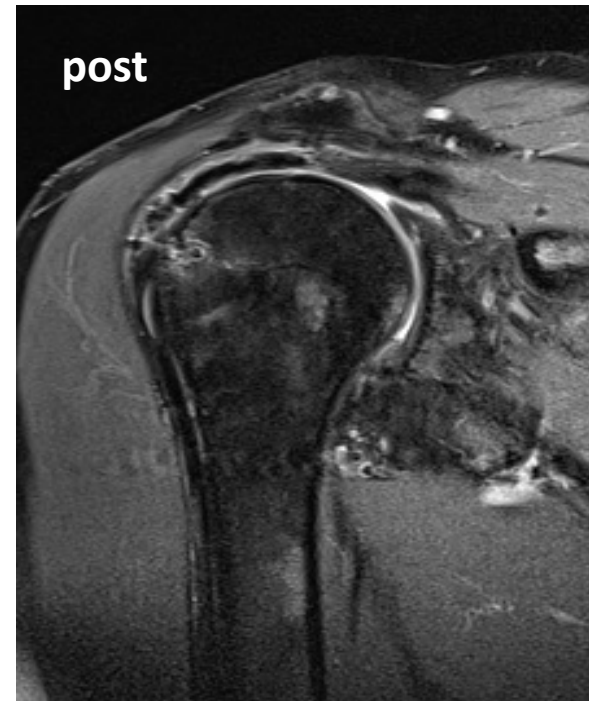


Case Study

Preoperative MRI



18m postoperative MRI



Conclusion

- The treatment of massive cuff tears with TEAR patch proved to be **successful** in many patients with **good clinical results** even in the presence of small gaps or partial retears. Tendon integrity plays an important role for PROM's but not for ROM.
- Complication and revision rates appear to be **acceptable given the therapeutic dilemma** and the amount of impairment in this specific patient group

Thank you for your attention

