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Musculotendinous Junction Rotator Cuff Tear : Early functional outcomes and repair technique in a single-surgeon case series of 6 patients

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Aim of Study

- To evaluate early post-operative outcomes post-arthroscopic rotator cuff repair of musculotendinous junction cuff tears and to assess efficacy of our arthroscopy repair technique

Background

- Musculotendinous junction (MTJ) rotator cuff tears pose a challenging surgical case in the realm of arthroscopic rotator cuff repair surgery.
- These cuff tears are rare injuries in which the tendon fails medially.
- There is difficulty in striking a balance between restoring the length -tension relation of the cuff tendon while avoiding high suture tension at the site of repair.
- A large focus of the repair is dependent on soft tissue- to – soft tissue fixation of medial and lateral margins of the tear.

Background

- In view of the rare incidences of these tears, there is a paucity of literature on the functional outcomes and repair techniques.

- We seek to analyze the early post-operative outcomes in our patients with musculotendinous junction tears, and additionally share our novel surgical technique applied in a patient with a Type A musculotendinous junction tear.

Methods

- A retrospective analysis of patients undergoing arthroscopic rotator cuff repair by a single-surgeon between August 2019 to December 2021 was performed.

- Pre-operative and early post-operative outcomes were evaluated using Numerical Pain Rating Scale (NPRS), University of California Los Angeles Shoulder Score (UCLASS) and Oxford shoulder Score (OSS).

Methods

- 6 patients had MTJ tears of the supraspinatus tendons, which were repaired using a suture bridging technique and double-row construct, with margin convergence sutures to compress down and oppose the lateral tendon stump and medial muscular portion.

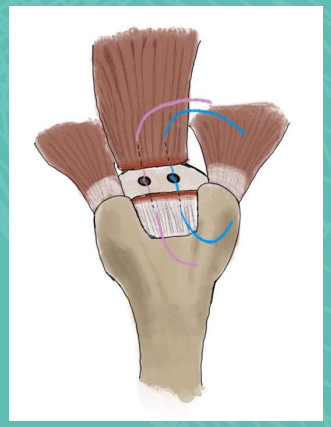

Fig 1. Schematic diagram of simple margin convergence sutures bringing the medial and lateral tear margins together. This forms part of a complex suture bridge repair of type A MTJ tear that is finalized with a double-row suture construct

Fig 2. Arthroscopic view of our complex suture bridge double-row repair on a patient with MTJ tear

Methods

- For 1 patient, we utilized mattress sutures in the lateral tendon stump, with the suture limbs then passed medially to engage the medial stump, before being fixed to a lateral row in a knotless fashion; Pulling on this particular suture will thus bring closer apposition of both medial and lateral tear margins in a dynamic convergence pattern.

Fig 3. Schematic diagram of sutures in dynamic convergence pattern with usage of mattress sutures placed on the lateral tendon stump.

Results

- Pre-operatively, average NPRS pain score was 5.7, which improved to 2.7 at 3 months.

- In terms of post-operative UCLASS and OSS scores, although no statistical significance was shown at this early post-operative stage, there was trend towards improvements for all 6 patients in both shoulder scores.

  - UCLASS scores improved from a pre-operative mean of 18 to 25.83 (p = 0.07) while OSS scores improved from pre-operative mean of 28.67 to 20.67 (p = 0.17)

Conclusion

- Early functional outcomes highlight improvements following arthroscopic rotator cuff repair and we recommend surgical intervention in these injuries.

- We believe our applied surgical technique is a safe and effective method of repairing musculotendinous junction tears and we propose a hybrid suture bridging technique involving a dynamic convergence pattern, with a double-row repair construct.

- Post-operative rehabilitation recovery may be gradual for these severe injuries and longer term outcome scores will need to be analyzed.

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Thank you

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