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Rotator Cuff Tear Progression in Professional Contact Athletes

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Background

- Full-thickness rotator cuff tears are rare injuries in contact athletes, accounting for 1.8% of all shoulder injuries at the NFL Combine.¹
- Most tears result from acute trauma and cause significant pain and dysfunction, necessitating acute surgical repair.²
- Paucity of data regarding the management of minimally symptomatic full-thickness rotator cuff tears in professional contact athletes.
- Progression of minimally symptomatic full-thickness rotator cuff tears in contact athletes has not been studied.

Purpose

To highlight the risk of rotator cuff tear progression in professional contact athletes by presenting the cases of 2 athletes (1 NHL & 1 NFL player) with minimally symptomatic, small full-thickness rotator cuff tears whose tears rapidly progressed in size once they returned to regular season play.

Case #1

A 32 year-old male professional football player presented with intermittent shoulder pain throughout the season. An MRI obtained during exit physicals demonstrated a small, full-thickness rotator cuff tear. Exam demonstrated full symmetric AROM and 5/5 rotator cuff strength testing. The player opted for non-operative management, a rotator cuff rehab program, and full-participation in offseason football activities with a modified lifting program. He also underwent treatment with intermittent NSAIDs and 1 steroid injection in the offseason.

Player was a full participant in training camp and preseason games. However, during the first regular season game, the player re-injured his shoulder. Repeat MRI demonstrated significant rotator cuff tear progression with moderate retraction. He then underwent arthroscopic rotator cuff repair and was placed on IR for the remainder of the season.

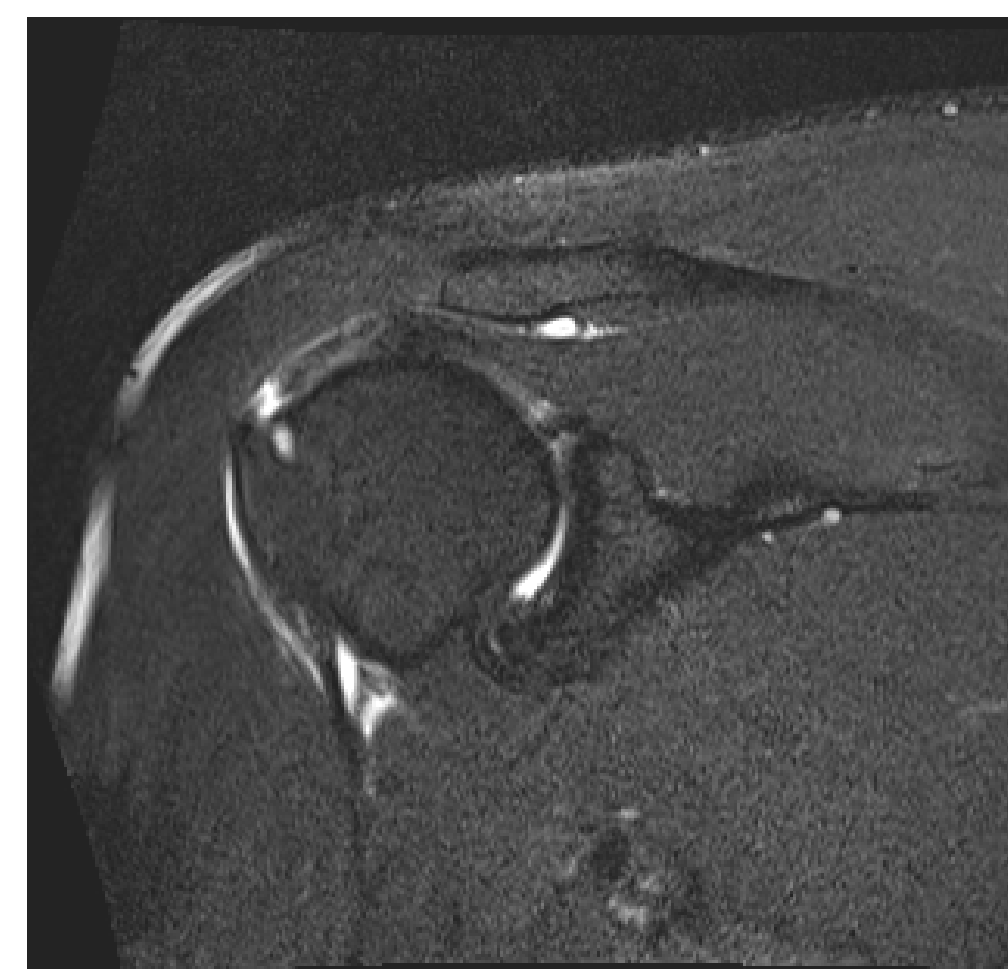


Figure 1A - Initial MRI
Small leading edge full thickness rotator cuff tear

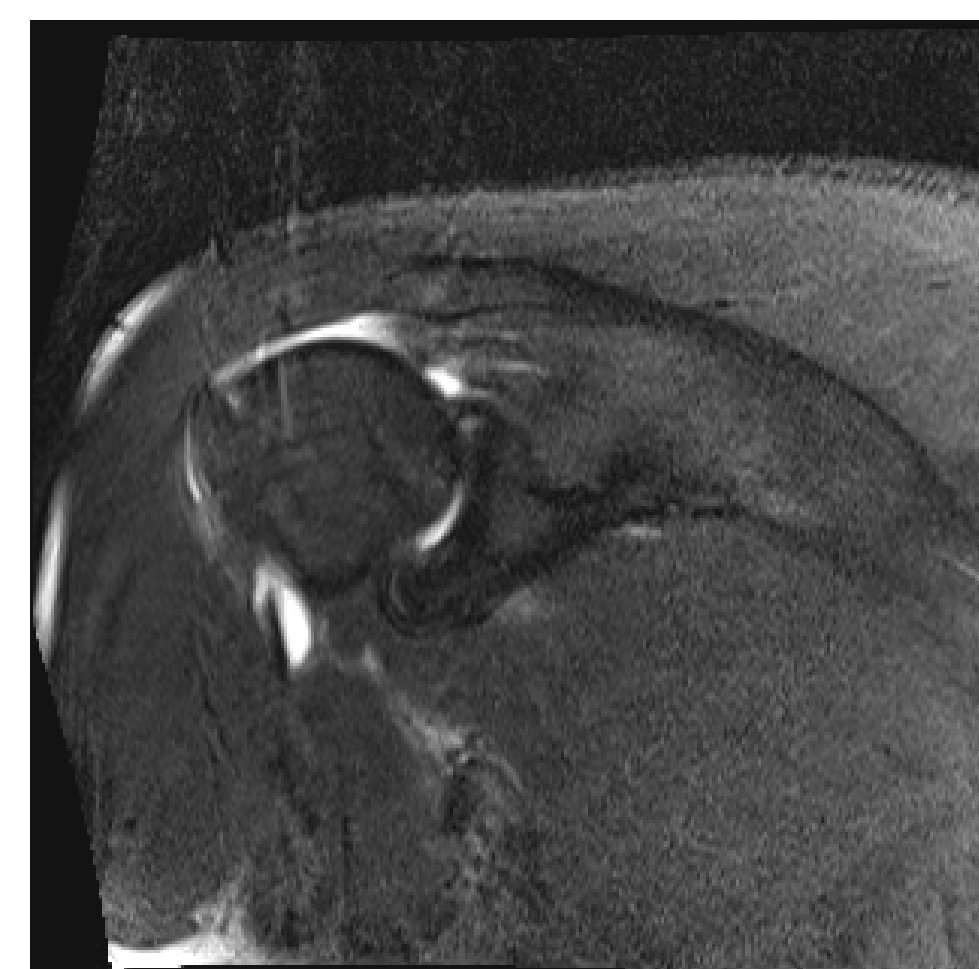


Figure 1B - Repeat MRI
Progression of full thickness retracted rotator cuff tear

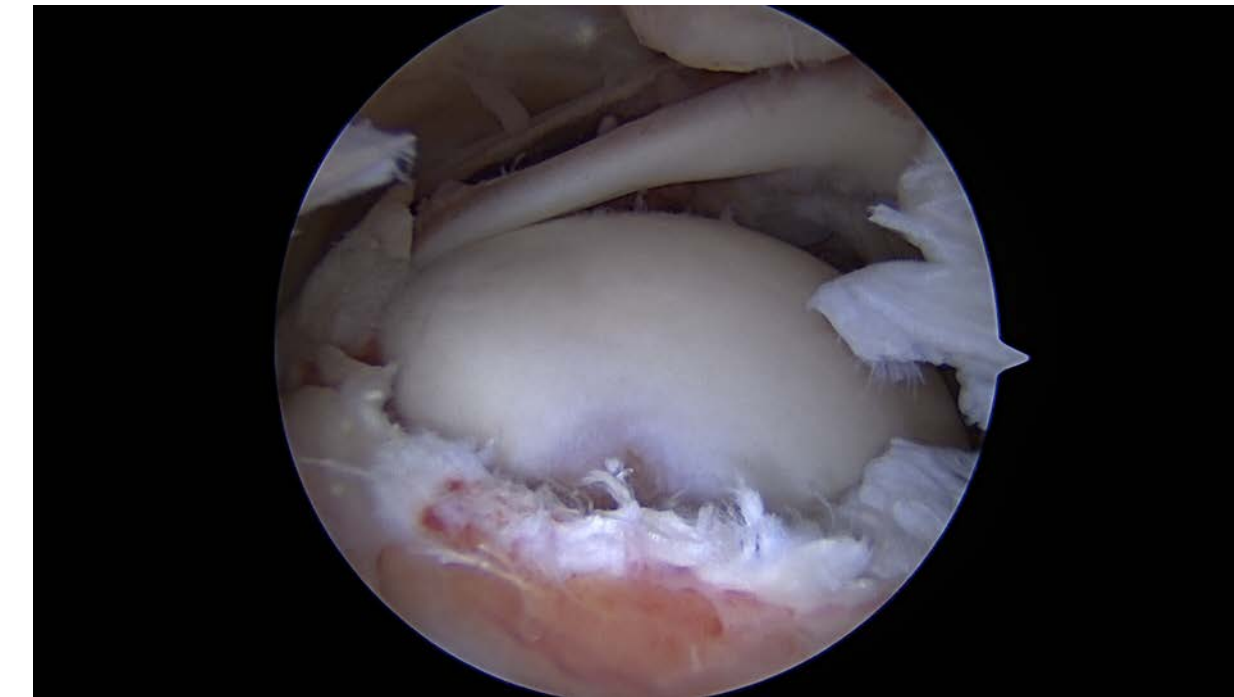


Figure 2A – Arthroscopic photo of rotator cuff tear from the subacromial space

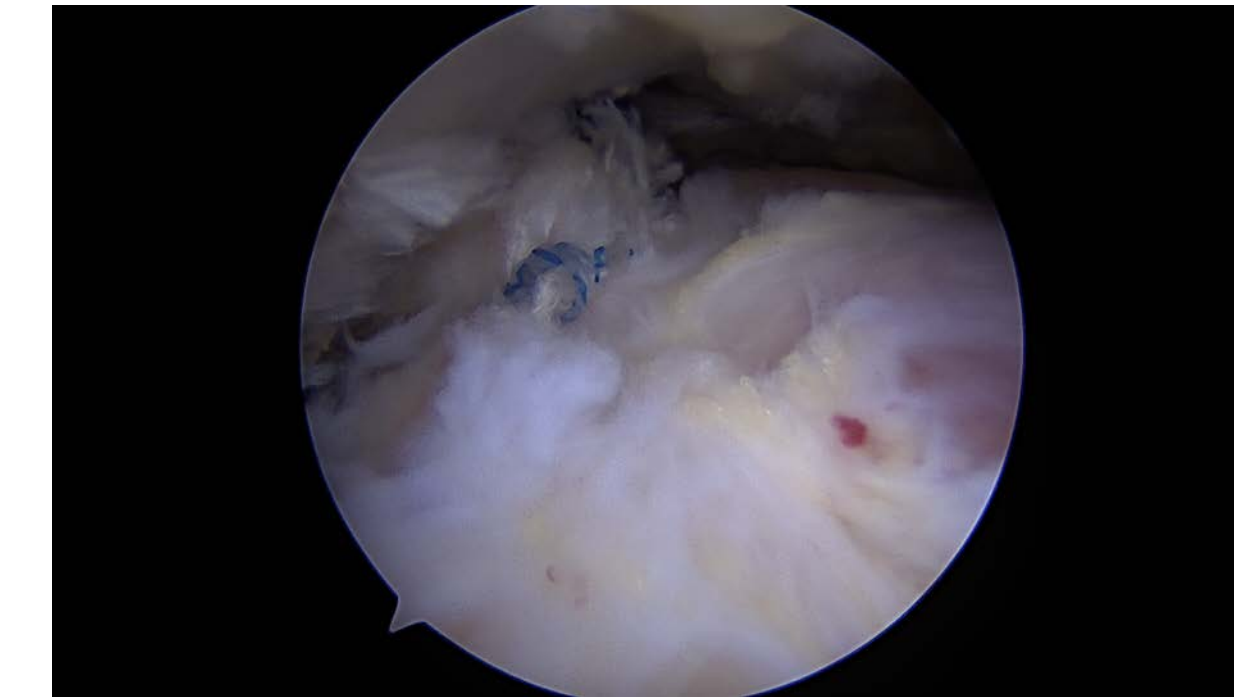


Figure 2B – Repaired rotator cuff tendon

Case #2

A 37 year-old male professional hockey player presented with intermittent shoulder pain throughout the season; however, there were no games lost due to shoulder pain. An MRI obtained during exit physicals demonstrated a small, full-thickness rotator cuff tear of the supraspinatus with mild extension into the upper border of the subscapularis. Exam demonstrated full, symmetric AROM and 5/5 rotator cuff strength. After considering all options, player opted for conservative management. He also underwent treatment with intermittent NSAIDs and 1 steroid injection in the offseason.

Player was a full participant in training camp and preseason games. However, during the first regular season game, the player re-injured his shoulder when he checked a player into the boards. Repeat MRI demonstrated significant supraspinatus rotator cuff tear progression with moderate to severe retraction, full thickness tearing of the upper border of the subscapularis tendon and medial subluxation of the biceps tendon. He then underwent arthroscopic rotator cuff repair, open subscapularis tendon repair, and biceps tenodesis and was placed on IR for the remainder of the season.

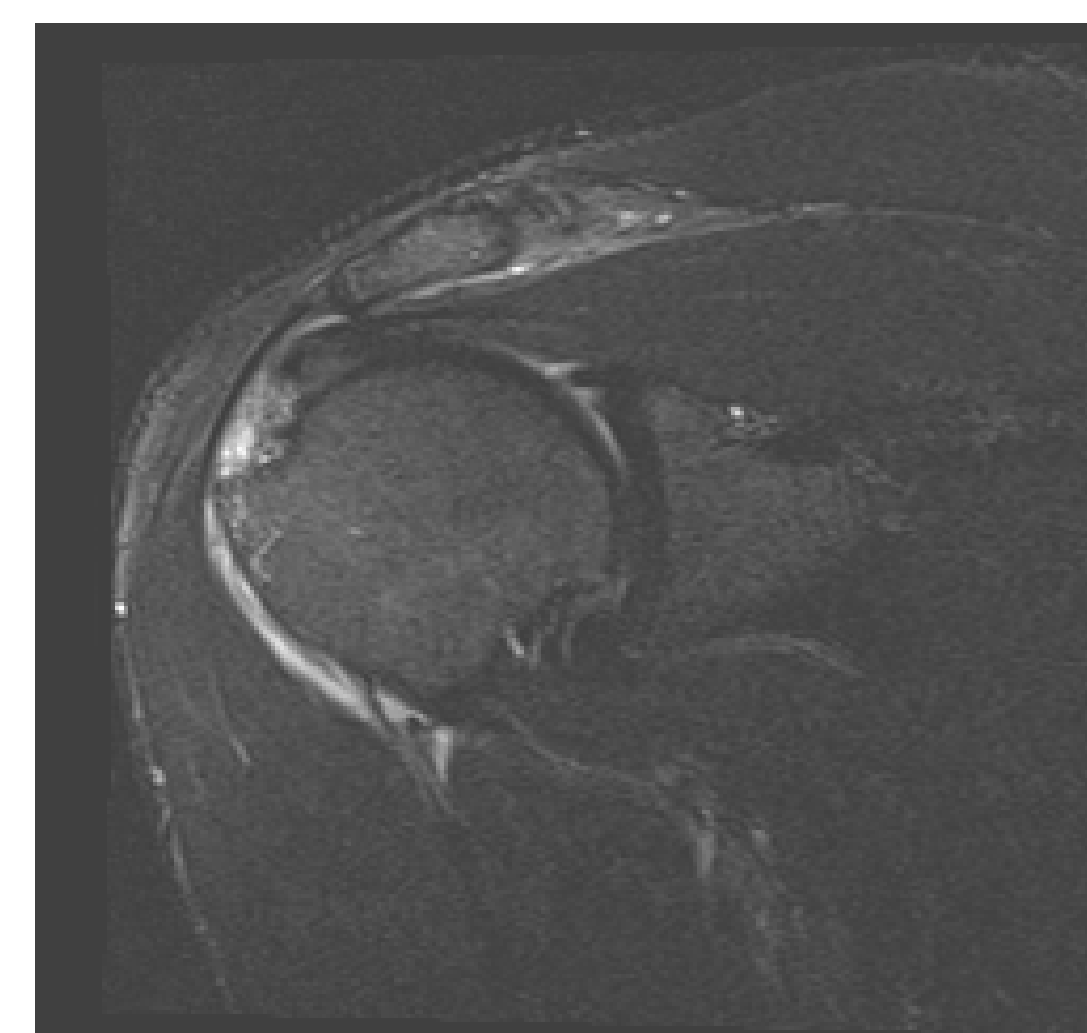


Figure 3A – Initial MRI
Small full thickness rotator cuff tear off of footprint

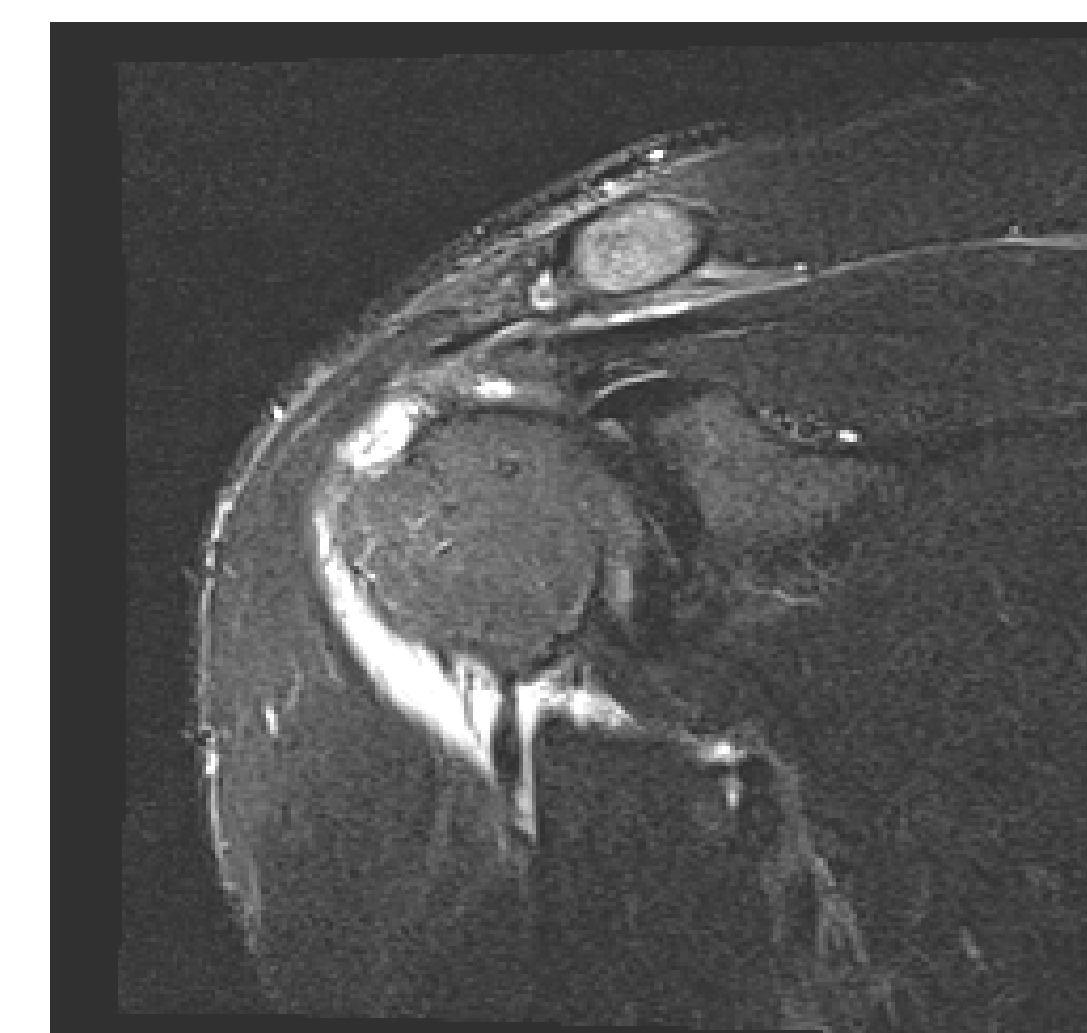


Figure 3B – Repeat MRI
Progression of full thickness rotator cuff tear

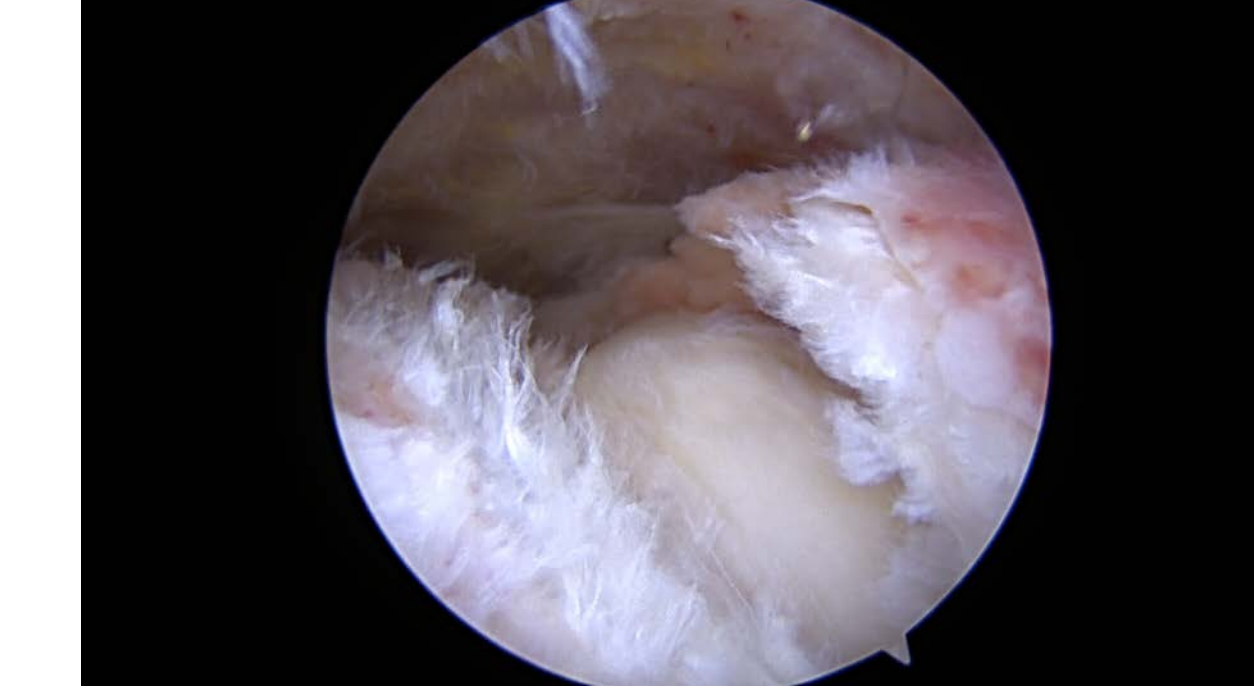


Figure 4A – Arthroscopic photo of rotator cuff tear from the subacromial space

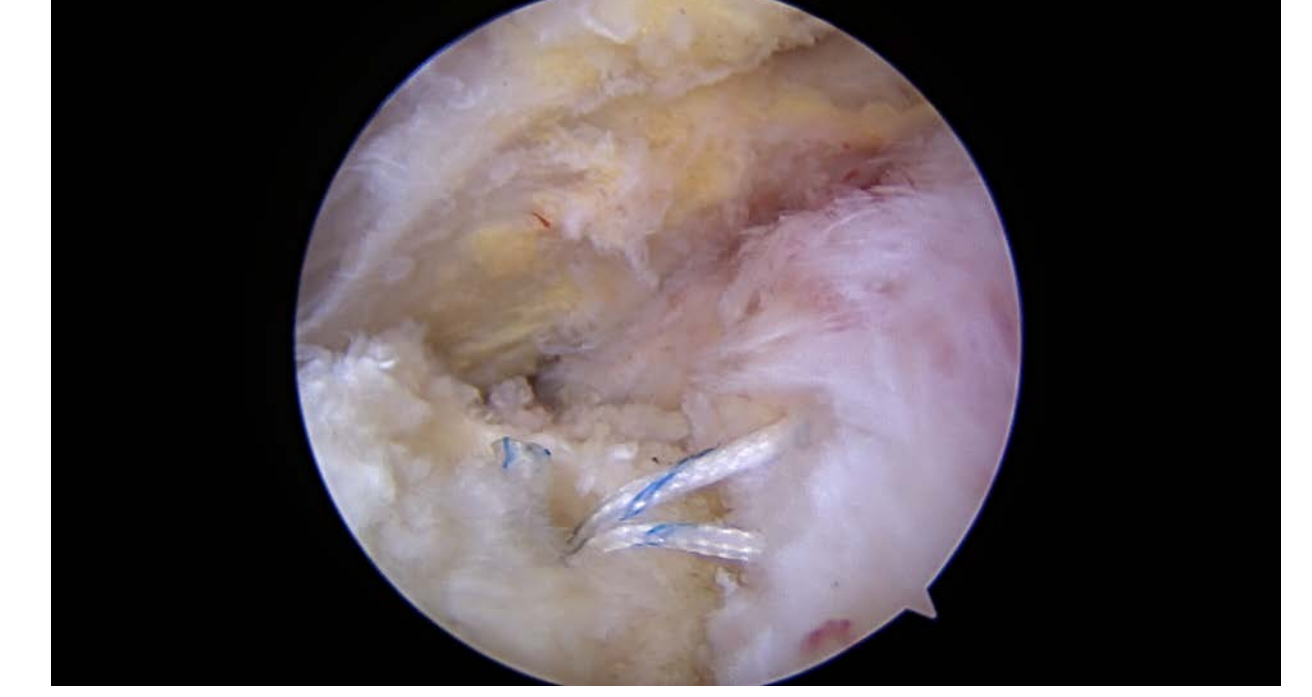


Figure 4B – Repaired rotator cuff tendon

Discussion

- Natural history studies in the general population suggest that 50-80% of full thickness rotator cuff tears will progress over time.^{3,4} However, rotator cuff tear progression has not been studied in contact athletes.
- Based on these cases and the current literature, we feel that minimally symptomatic full-thickness cuff tears will likely progress rapidly when contact athletes return to regular season play.
- A significant increase in tear size may lower chances for a successful repair and require a conservative post-op protocol, further delaying eventual return to play.
- Players should be counseled about the high risk of cuff tear progression, and early surgical repair should be encouraged.
- Players who elect for non-surgical treatment should be followed closely with serial exams and imaging to monitor for cuff tear progression.

Conclusion

Based on the available evidence, we believe minimally symptomatic full-thickness cuff tears will likely progress rapidly when contact athletes return to regular season play. Players should be counseled about the high risk of cuff tear progression, and early surgical repair should be encouraged.

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