

# Tackling An Uncommon Shoulder Injury in Adolescent Football: A Case Report



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## History

A 17-year-old high school senior QB presents with acute right shoulder instability after being tackled in the first football game of the year.

- ❑ Player suffered injury while running the ball
- ❑ Position of the arm was internally rotated and flexed to 90 degrees at the elbow
- ❑ The shoulder was manually reduced on sidelines by athletic training staff
- ❑ Only one prior shoulder instability episode after a motor vehicle episode the year prior

## Physical Exam

- ❑ Visual inspection revealed no gross deformity, bony step off, or obvious asymmetry.
- ❑ Tenderness to palpation of anterior and lateral shoulder.
- ❑ Strength 4 out of 5 supraspinatus and infraspinatus likely secondary to recent injury.
- ❑ Neurovascularly intact with full sensation C5-T1 nerve roots.
- ❑ Provocative testing of the right shoulder is deferred secondary to recent dislocation injury.

## Differential Diagnosis

- ❑ Shoulder instability
- ❑ Labral tear
- ❑ Rotator cuff tear
- ❑ Nerve injury
- ❑ Glenohumeral joint capsule injury
- ❑ Acromioclavicular joint injury

## Test & Results

- ❑ Shoulder X-rays (Fig 1): Hill-Sachs injury with noted bony fragments superior the the humeral head
- ❑ MRI shoulder without contrast: (Fig 2) full thickness tear of the supraspinatus with avulsion fracture fragment. (Fig 3) Anterior inferior labral tear with (Fig 4) Hill-Sachs injury indicative of shoulder dislocation episode.

## Images



Figure 1. bony fragmentation superior to humeral head in rotator cuff distribution



Figure 2. Full thickness supraspinatus tear

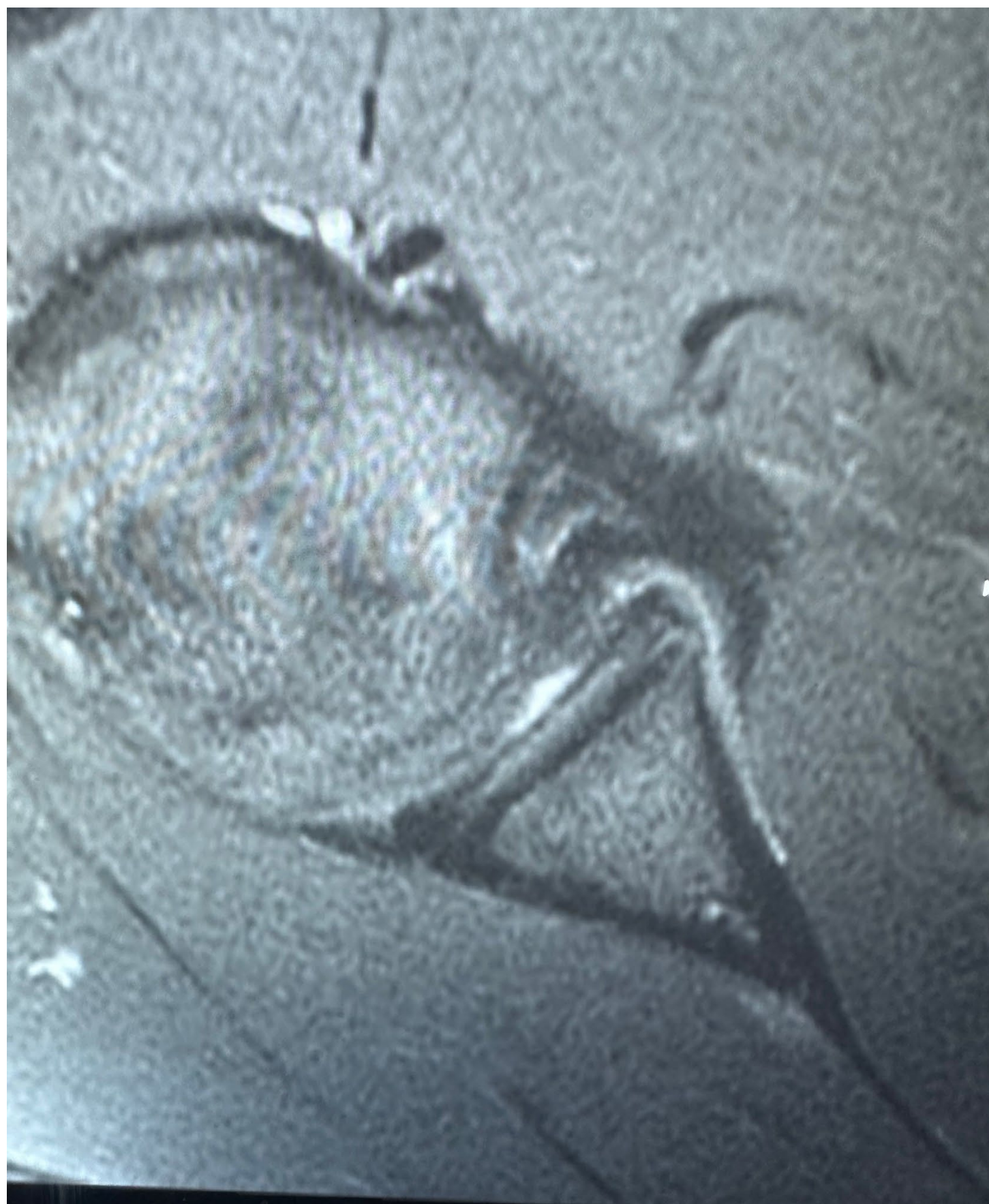


Figure 3. Antero-inferior labral tear

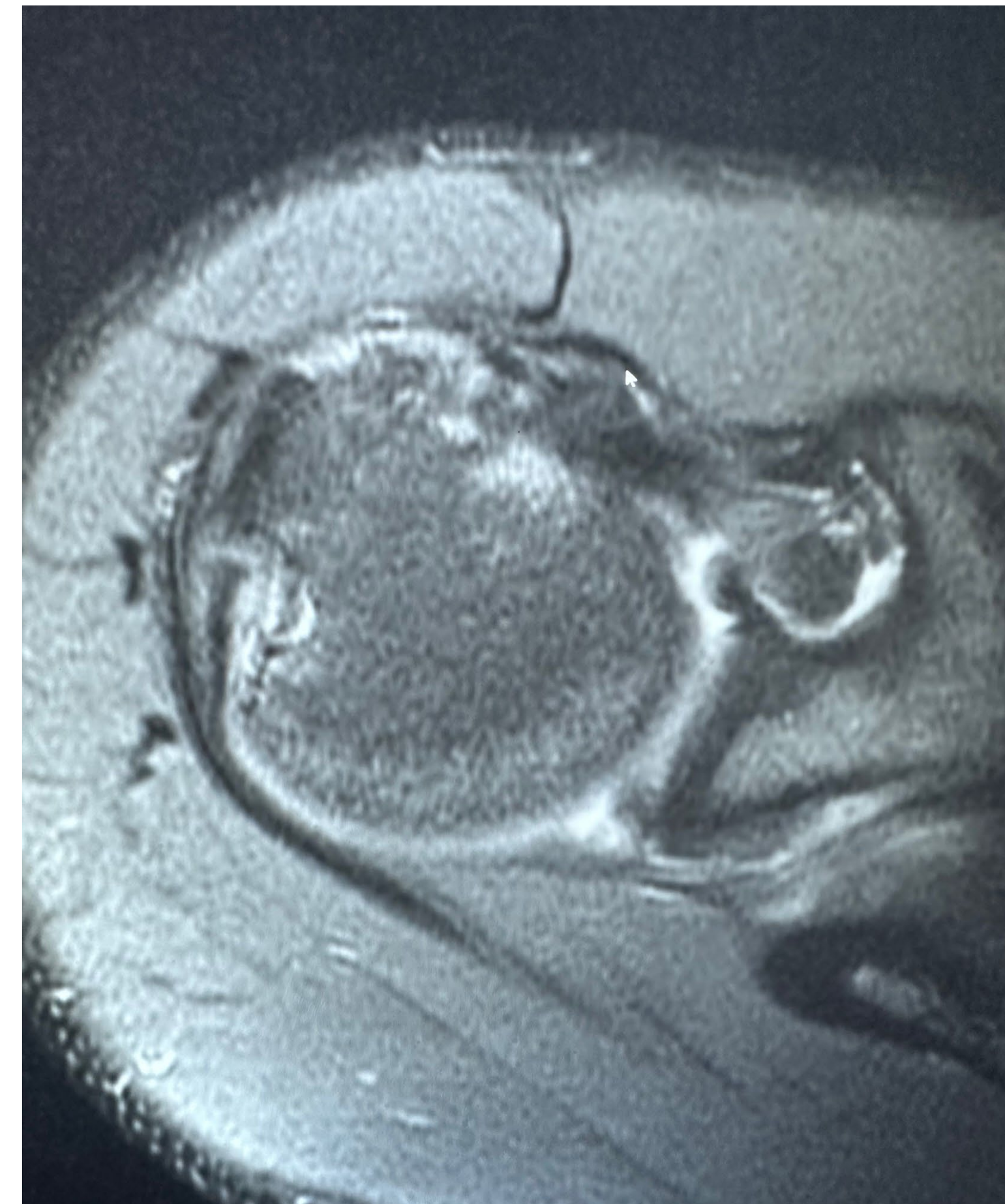


Figure 4. Hill-Sachs injury

## Working Diagnosis

- ❑ Right shoulder 2nd dislocation episode with supraspinatus avulsion injury involving the full thickness of the rotator cuff, anterior inferior labral tear with a Hill-Sachs lesion

## Discussion

- ❑ After review of MRI and discussion regarding options for treatment with the athlete and his family, the athlete elected for surgical repair.
- ❑ He successfully underwent right shoulder arthroscopy with repair of the right labral tear and repair of the full thickness supraspinatus tear.
- ❑ This case proved to be a unique presentation as rotator cuff tears in adolescent athletes are very rare [1].
- ❑ Full thickness tears are even less common, accounting for <1% of all rotator cuff tears, with limited data on the incidence of rotator cuff tears in pediatric population [2].
- ❑ Most of the rotator cuff tears that do occur are traumatic in nature [3,4].
- ❑ Per a 2021 retrospective study of 20 athletes, age 30 and under (there is a lack of literature on adolescent populations only), who underwent arthroscopic rotator cuff repair, the more advanced the athletes (i.e professional vs recreational or competitive) the less likely return to equivalent level of play [5].

## Return to Activity and Follow-Up

- ❑ The athlete was unable to participate in remainder of football season.
- ❑ Athlete is now 4 months post op and doing well. He is currently in PT, working with school AT, and is participating in spring sports (track and field).
- ❑ He has no current plans to pursue collegiate athletics.

## References

1. Zbojnicz AM, Maeder ME, Emery KH, Salisbury SR. Rotator cuff tears in children and adolescents: experience at a large pediatric hospital. *Pediatr Radiol*. 2014 Jun;44(6):729-37. doi: 10.1007/s00247-014-2875-6. Epub 2014 Jan 29. PMID: 24473866.
2. Azzam MG, Dugas JR, Andrews JR, Goldstein SR, Emblom BA, Cain EL Jr. Rotator Cuff Repair in Adolescent Athletes. *Am J Sports Med*. 2018 Apr;46(5):1084-1090. doi: 10.1177/0363546517752919. Epub 2018 Feb 13. PMID: 29438628.
3. Ivan S, Tarkin,† MD, Christina M. Morganti,‡ MD, Debra A. Zillmer,§ MD, Edward G. McFarland,|| MD, and Charles E. Giangarra,† MD From the † University of Nebraska Medical Center/Creighton University Medical Center, Department of Orthopedic Surgery, Omaha, Nebraska, the ‡ Orthopaedic and Sports Medicine Center, Annapolis, Maryland, § M & M Orthopedics, Downer's Grove, Illinois, and ||Division of Sports Medicine and Shoulder Surgery, Department of Orthopaedic Surgery, Johns Hopkins University, Baltimore, Maryland.
4. Condon NB, Kaiser JT, Damodar D, Wagner KR, Evarherhe A Jr, Farley T, Cole BJ. Rotator Cuff Repair in the Pediatric Population Displays Favorable Outcomes: A Systematic Review. *Arthrosc Sports Med Rehabil*. 2022 Jan 6;4(2):e775-e788. doi: 10.1016/j.asmr.2021.11.010. PMID: 35494282; PMCID: PMC9042767.
5. Davey MS, Hurley ET, Scanlon JP, Gaafar M, Pauzenberger L, Mullett H. Excellent Clinical Outcomes and Rates of Return to Play After Arthroscopic Rotator Cuff Repair for Traumatic Tears in Athletes Aged 30 Years or Less. *Arthrosc Sports Med Rehabil*. 2021 Mar 22;3(3):e667-e672. doi: 10.1016/j.asmr.2021.01.003. PMID: 34195630; PMCID: PMC8220565.

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