



Arthroscopic repair of an isolated teres minor tear with associated posterior glenohumeral ligament avulsion

Aaron Schwartz, MD ^{*}, Spero Karas, MD

Sports Medicine, Emory University, Atlanta, GA, USA



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Isolated teres minor tears are very rare, and only a few case reports have been published in the literature.^{6,7,11,12} The teres minor functions as an external rotator of the glenohumeral joint and a secondary depressor of the humeral head. Most teres minor tears are associated with larger rotator cuff tears; however, there is minimal literature on how to manage isolated injuries. Posterior humeral avulsion of the glenohumeral ligaments (HAGL) is rare as well and is usually associated with labral tears.^{1,3,4,10} Only 1 case report has been published in the literature describing a teres minor avulsion and concomitant bony posterior HAGL injury, although it was also associated with a posterior Bankart lesion.¹² In this case report we describe a new arthroscopic technique for the repair of a teres minor tear with an associated soft tissue posterior HAGL lesion, without other concomitant injuries.

Case report

A 15-year-old right-hand-dominant boy presented with left shoulder pain 10 days after he sustained a traumatic injury while wrestling. He felt his shoulder “shift” with associated pain. He had been using a sling since the injury occurred. On examination, he had full range of motion but had discomfort with active flexion and abduction. He displayed weakness in external rotation but had good strength in the rest of his rotator cuff musculature. He had no specific point tenderness and had no shoulder instability. A magnetic resonance image (MRI) from another facility showed an avulsion of the teres minor from its insertion on the humeral head and a posterior HAGL lesion (Figs. 1 and 2). The patient was sent to physical therapy while a surgical date was set 3 weeks later.

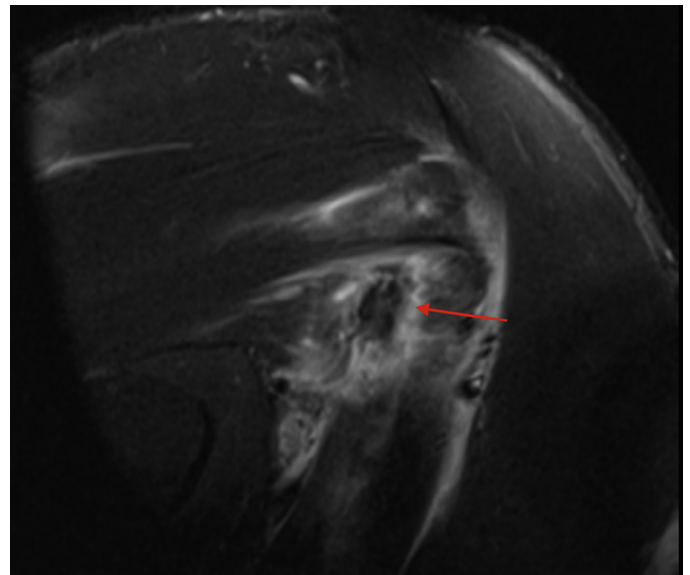


Figure 1 Coronal magnetic resonance imaging study with the arrow pointing to an isolated teres minor tear.

Surgical technique

Arthroscopy was performed with the patient in lateral decubitus. A standard posterior viewing portal was established, followed by an anterior portal in the rotator interval. All intra-articular structures were visualized and inspected with a 30° arthroscope. The biceps, labrum, chondral surfaces, supraspinatus, and infraspinatus were free of injury. The posterior glenohumeral ligament injury was visualized after the arthroscope was put in the anterior portal

The patient and his father provided written permission for this case report.

^{*} Corresponding author: Aaron Schwartz, MD, Emory University, 675 Ponce De Leon Ave NE, Apt W731, Atlanta, GA 30308, USA.

E-mail address: schwaaaron@gmail.com (A. Schwartz).

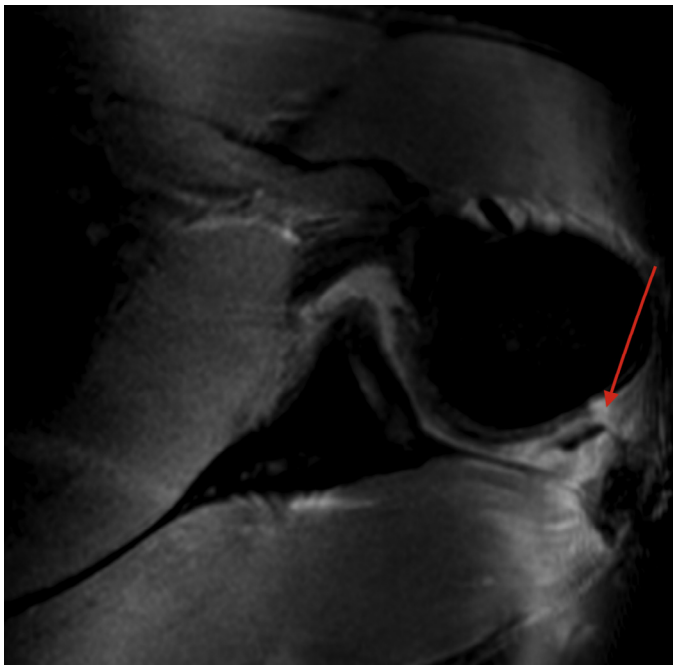


Figure 2 Axial magnetic resonance imaging study with the arrow pointing to the posterior humeral avulsion of the glenohumeral ligaments avulsion.

(Fig. 3). The arthroscope was then placed into the subacromial space and an accessory anterolateral, accessory posterolateral portal and the port of Wilmington were established (Fig. 4).

A clear 8.25-mm cannula (Arthrex, Naples, FL, USA) was placed in the superior posterolateral portal to allow passage of sutures without creating a tissue bridge. The avulsion of the teres minor had filled in with scar tissue and hematoma. That area was débrided with a shaver (Arthrex) and coblation wand (Smith and Nephew, London, UK), and the anatomic plane was visualized (Fig. 5).

The area beneath the avulsed tendon was prepared using a 5.5-mm burr to create a bony bed for healing. Two FiberTape sutures (Arthrex) were passed in a mattress fashion from distal to proximal along the tear using an ExpressSew (DePuy Synthes, Raynham, MA, USA). This effectively captured the posterior glenohumeral ligament along with the teres minor tendon with the suture. Two 4.75-mm SwiveLock anchors (Arthrex) were placed to reinsert the tendon

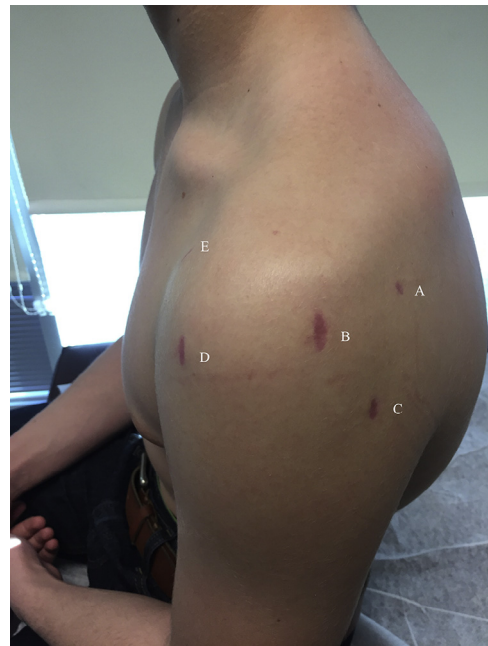


Figure 4 Arthroscopic portals: A, standard posterior portal; B, port of Wilmington; C, accessory posterolateral portal; D, accessory anterolateral portal, and E, standard anterior portal.

and the posterior HAGL lesion onto the humeral head with knotless fixation (Fig. 6). A small dog-ear was tied down with a No. 2 FiberWire to reinforce the repair. The arthroscope was then inserted back into the anterior interval portal to view the repair of the HAGL lesion (Fig. 7).

Postoperative outcome

The patient was placed in a sling for 6 weeks and started pendulum range of motion exercises 2 days postoperatively. At 3 weeks, the patient began gentle passive forward elevation with an internal rotation limit to the beltline. Active motion was started at 6 weeks, and strengthening was started after 3 months.

The patient was seen 6 months postoperatively. He was having no pain with activities, had nearly complete range of motion in all planes, and had full external rotation strength. He was told to pro-

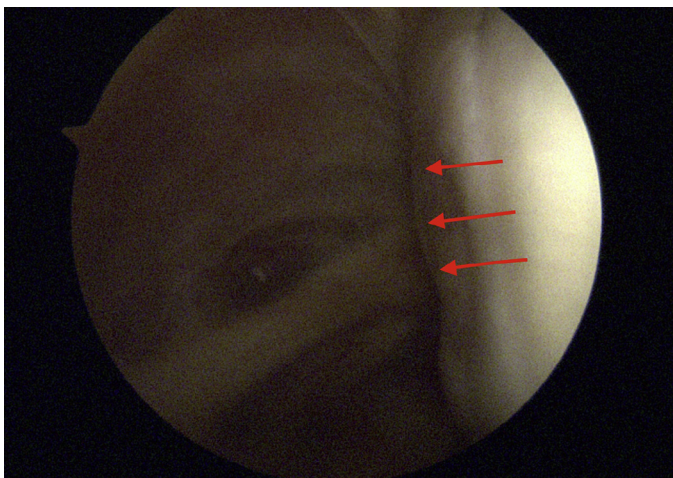


Figure 3 Arthroscopic intra-articular view from the anterior portal shows the posterior humeral avulsion of the glenohumeral ligaments injury.



Figure 5 Arthroscopic bursal-sided view from the accessory posterolateral portal shows the teres minor injury.

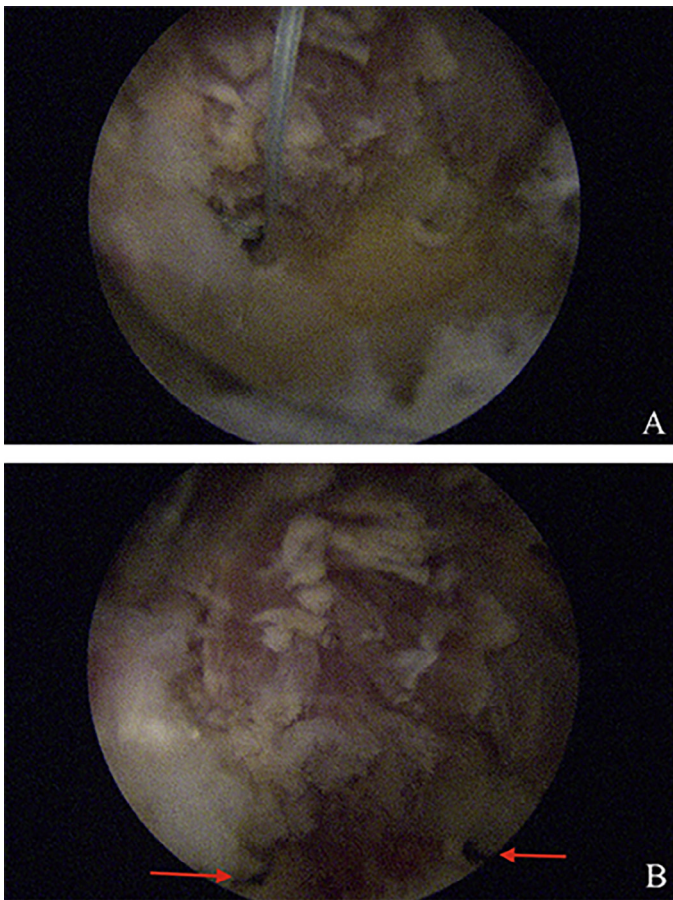


Figure 6 Arthroscopic bursal-sided view from the accessory posterolateral portal. (A) Suture anchors within the footprint. (B) After the repair was completed. The arrows indicate the 2 anchors.

gress with sport-specific drills, with anticipation of returning to live wrestling after the 8-month mark.

Discussion

Few articles in the literature have described isolated teres minor tears and posterior HAGL lesions. HAGL lesions have been de-

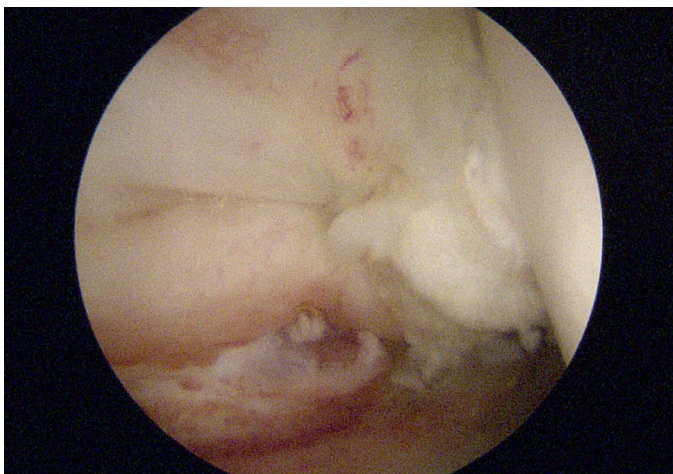


Figure 7 Arthroscopic intra-articular view from the anterior portal after the completed repair.

scribed as a sequela for shoulder instability and pain.^{3,4,10} Although most of these lesions are associated with anterior instability, a small percentage of patients present with a posterior injury. George et al⁵ described only 7% of all HAGL lesions were the posterior variant. Bui-Mansfield et al² found in their literature review that there were 3% posterior HAGL lesions and 4% posterior-inferior lesions where the labrum was also involved. A case series by Castagna et al³ found that only 3 of 9 patients had an isolated posterior HAGL lesion without concomitant intra-articular pathology. They recommended that these lesions be evaluated with an MRI and that the surgeon must place the arthroscope in an anterior portal to properly observe the injury.³

There has been some thought that teres minor injuries are due to posterior shoulder instability. Ovesen and Sjöbjerg⁹ found that when they simulated a posterior shoulder dislocation in 10 cadavers, all specimens had posterior capsule ruptures and teres minor tears. Hottya et al⁶ described 4 patients with posterior shoulder dislocation that were associated with posterior capsular rupture and teres minor injury based on MRI review, and 2 of those 4 patients had partial or complete rupture of the tendon. Teres minor tears are also rare, even in combination with other rotator cuff tendon tears. Melis et al⁸ showed that in the 1572 rotator cuff tears they reviewed, the teres minor was normal in 90.8% of shoulders, hypertrophic in 5.8%, atrophic in 3.2%, and absent in 0.2%.

In this case report, we describe an isolated soft tissue posterior HAGL lesions with a teres minor tear. To our knowledge, this is the first description of this injury in the literature. The only other similar report describes a young patient with a shoulder instability event.¹¹ Also, few case reports have described posterior HAGL lesions in young patients with shoulder instability events,^{1,4,10} and although older, Lee et al⁷ described an isolated teres minor tear in a 52-year-old patient who sustained a posterior dislocation. Although no frank dislocation occurred in our patient, he described a “shift” in his shoulder during the injury mechanism. This continuum of posterior shoulder instability can produce a wide variety of injuries; thus, the clinician must properly evaluate with a thorough history, physical examination, and imaging modalities.

Conclusion

There should be a high degree of suspicion in an athlete who has a questionable subluxation event and presents with nonspecific shoulder pain or external rotation weakness, or both. Although exceedingly rare, one must evaluate teres minor pathology if a patient presents with these findings. There is a spectrum of injuries that can occur with posterior shoulder instability, and care must be taken to rule out concomitant injuries such as a posterior labral tear and a posterior HAGL lesion. An MRI is crucial for the diagnosis and decision making. We recommend that an acute injury in a young, active patient warrants operative repair. The arthroscopic technique presented is a safe, reproducible procedure that can yield excellent results.

Disclaimer

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