


# Arthroscopic Repair of a Type VIII Superior Labrum Anterior Posterior Tear

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*Investigation Performed at University of Pittsburgh Medical Center Health System, Pittsburgh, Pennsylvania, USA*

**Background:** Type VIII superior labrum anterior posterior (SLAP) tears are described as SLAP type II tears with posterior extension to the posterior inferior glenohumeral ligament. These tears are a common source of pain, instability, and decreased function in active individuals, particularly overhead or throwing athletes.

**Indications:** Type VIII SLAP tears can cause pain and loss of sports performance, especially in a throwing athlete. This patient is a quarterback and pitcher who had magnetic resonance imaging and arthroscopic evidence of a type VIII SLAP tear with pain and inability to throw at his preinjury level.

**Technique Description:** In the lateral decubitus position, a standard posterior portal is established along with anterior and accessory lateral portals. A type VIII SLAP tear is identified and the arm is taken out of balanced suspension traction and placed in abduction and external rotation which shows displacement of the posterior labrum and peelback of the superior labrum indicating pathologic labral instability. The labrum is then elevated and glenoid prepared to achieve healthy bleeding bone. Tape sutures are then passed around the labrum and placed into a glenoid anchor starting superiorly and continuing the repair posteroinferiorly. Three anchors were placed in the superior labrum using a percutaneous technique, with 2 more placed from the posterior portal to complete the 5-anchor repair. The posterior portal is then closed with a single monofilament suture to prevent a potential stress riser in the capsule.

**Results:** The literature suggests that athletes with type VIII SLAP tears can expect improved functional outcomes and high return to play rates (>90%); however, only 50% to 70% of throwing athletes return to the same level of play.

**Discussion/Conclusion:** Type VIII SLAP tears are an important cause of shoulder pain and dysfunction, particularly in overhead athletes. Arthroscopic repair of type VIII SLAP tears can improve functional outcomes and ability to return to sport; however, throwing athletes experience lower rates of return to previous level.

**Patient Consent Disclosure Statement:** The author(s) attests that consent has been obtained from any patient(s) appearing in this publication. If the individual may be identifiable, the author(s) has included a statement of release or other written form of approval from the patient(s) with this submission for publication.

**Keywords:** SLAP tear; labrum; shoulder instability; sports medicine; arthroscopy

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## VIDEO TRANSCRIPT

Arthroscopic repair of a type VIII slap tear is presented by Dr James Bradley, clinical professor of Orthopedic Surgery, University of Pittsburgh Medical Center, and head team physician for the Pittsburgh Steelers, along with Michael Nammour, Orthopedic Sports Medicine Fellow.

These are our disclosures.

Slap tears were initially classified by Snyder.<sup>1</sup> Subsequently, several authors have described additional variations resulting in 10 subtypes of slap tears based on their location and morphology.<sup>1,2,8</sup>

This video will focus on the type VIII slap tear, which is characterized by posterior extension of a type II tear to include the posterior labrum and the insertion of the posterior inferior glenohumeral ligament.<sup>1,2,7,8</sup> These more extensive tears typically extend from the 7-o' clock position to the 1-o' clock position and are associated with biceps and



posterior glenohumeral instability.<sup>3,8</sup> Type VIII tears are found commonly in throwing athletes and are thought to arise as a posterior extension of a type II tear as a result of repetitive microtrauma.<sup>3-5,6,8</sup>

This patient is a 16-year-old boy who presents with right shoulder pain. He is right-hand dominant and plays both quarterback and pitcher. He has had persistent pain in his shoulder, limiting his ability to throw. On examination, his motion and rotator cuff strength are symmetric and intact. His labral examination reveals findings associated with superior and posterior labral pathology, including positive O'Brien test, dynamic posterior instability test (DPIT), modified DPIT, Whipple, modified Whipple, and scapular retraction testing.

At our institution, we use the DPIT as well as the modified DPIT as part of our clinical examination. Pain with resisted throwing motion would signify a positive DPIT test. If the pain is at least partially relieved when the humeral head is stabilized posteriorly, then this would be a positive modified DPIT.

A magnetic resonance imaging scan was obtained which revealed the posterior superior labral tear extending from the 1-o'clock position to the 7-o'clock position with evidence of posterior superior labral peelback on abduction and external rotation (ABER) images.

In this throwing athlete, we elected to perform a right shoulder arthroscopy with repair of this posterior superior type VIII slap tear. The patient is positioned in a lateral decubitus position and the arm is placed in 10 pounds of traction. After insufflating the joint with 30 mL of normal saline, a standard posterior portal is established for initial viewing and evaluation. An anterior portal is created in an inside-out fashion inferior to biceps at the level of the superior glenohumeral ligament.

An anterior cannula is placed over the switching stick and the initial evaluation is continued.

The arm is removed from the suspension apparatus and a dynamic evaluation is performed which shows posterior superior labral peelback with biceps invagination in ABER. The tear is further evaluated statically with a 70° arthroscope from the posterior-viewing portal. The 70° arthroscope is then used for the duration of the labral repair. We begin with the preparation for labral repair.

First, an arthroscopic elevator is used to mobilize the disrupted labrum from the glenoid rim. This allows for the assessment of the tear extent in preparation for anchor placement and repair. After mobilizing the superior portion of the labrum, an arthroscopic shaver is used to remove soft tissue from the glenoid rim. This is followed by the use of a meniscal rasp to create a bleeding bed of glenoid bone to enhance the biologic healing response of the repair.

After preparing the posterior superior glenoid, a posterior lateral accessory portal is percutaneously localized and a low-profile, clear 5-mm arthroscopic cannula is placed. This portal is slightly posterior to midline just lateral to the acromion and the trajectory is more flat in relation to the acromion. It is important to make sure this portal does not fall out during the case. Using a suture-passing device, suture tapes are sequentially passed

through the labrum and docked in the anterior cannula. Care is taken to avoid including capsular tissue so as to not overtighten this throwing athlete.<sup>2-4,6,8</sup>

In this case, 3 suture tapes are placed for the posterior superior aspect of this repair. It should be noted that we use a left-curved suture passer through the anterior portal for a right shoulder posterior labral repair (as in this patient) and a right-curved suture passer for a left shoulder posterior labral repair.

After passing the third suture tape, it is loaded into a 2.9-mm BioComposite PushLock Anchor (Arthrex; Naples, FL) through the posterior lateral portal. A drill guide is used to localize the position for anchor placement. A drill hole is then created and the anchor is placed appropriately on the glenoid rim. The suture tape is then cut flush with the anchor to avoid any suture irritation. This process is repeated for the 2 subsequent posterior superior anchors.

After securing the posterior superior labrum, the arm is again removed from the suspension apparatus and the dynamic reevaluation is performed. This shows resolution of the labral peelback and biceps invagination, after securing the posterior superior labrum. The 70° arthroscope is then replaced with an arthroscopic cannula posteriorly and the camera is repositioned anteriorly. Viewing now from the anterior portal, the posterior inferior extent of the labral tear is visualized, including the attachment of the posterior inferior glenohumeral ligament, the defining feature of a type VIII slap tear. The posterior inferior labrum is prepared in a similar way for repair, first with the use of an arthroscopic elevator, followed by a meniscal rasp, and arthroscopic shaver.

The posterior inferior labral repair is then performed in an inferior to superior manner. Again, a suture-passing device is used to shuttle a suture tape around the labrum, avoiding any capsular plication. During this portion of procedure, a 2.9-mm BioComposite PushLock Anchor is loaded after each stitch, the guide is then placed, a drill hole is established, and the anchor is placed, securing the labrum anatomically to the glenoid rim. The sutures are again cut flush with a closed arthroscopic cutting device. For the final anchor, a crescent-shaped suture-passing device is used to shuttle the labral tape and the labrum is again secured to the glenoid rim with the same procedure. This case required a total of 5 anchors to achieve an excellent repair. These repairs typically require between 4 and 6 anchors for a satisfactory result.<sup>2-4,6,8</sup>

The repair is then visualized with a 70° arthroscope through the anterior portal, followed by the posterior portal, revealing a complete repair of the posterior superior and posterior inferior components of this type VIII slap tear with anatomic reduction of the labrum to the glenoid rim without capsular plication in this throwing athlete. The 70° arthroscope is then replaced with a 30° arthroscope for closure of the posterior portal. The arthroscopic cannula is backed out through the capsule and the suture-passing device is used to place a simple monofilament suture to approximate and secure the posterior portal and mitigate the potential stress riser.

The portals are closed and the patient is placed in a sling in 30° of abduction. The sling remains in place full time for


3 weeks. The rehabilitation program begins with pendulum exercises at 2 weeks, followed by passive range of motion, capsular stretching, and a scapulothoracic program at 4 weeks. Resistant exercises begin at 10 weeks. In the case of throwers like this patient, an interval throwing program is initiated at 16 weeks with progression to full throwing at 28 weeks postoperatively.

In terms of outcomes, this study from the *Journal of Arthroscopy* examined 46 patients (27 throwers and 19 nonthrowers) with an average of 6.6 years of follow-up. Both groups had significant improvement in stability, pain, range of motion, KJOC (Kerlan-Jobe Orthopaedic Clinic), and ASES (American Shoulder and Elbow Surgeons) scores. There was no difference in stability, surgical satisfaction, or overall return to play. Throwers had more pain, decreased range of motion, and lower KJOC and ASES scores, and were less likely to return to play at previous level when compared with nonthrowers. The conclusion was that type VIII SLAP repair significantly improves outcomes in all athletes; however, throwers require specific counseling and expectation management regarding their ability to return to play at previous level.

These are our references.

Thank you for your attention.

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