

## TECHNIQUE

# All-Inside Arthroscopic Repair of Partial-Thickness Supraspinatus Tendon Tear

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## ■ ABSTRACT

To date, the reported arthroscopic suture anchor repair techniques for partial-thickness articular-sided rotator cuff tears use a transtendon placement of the anchor. We describe a new technique of an all-inside arthroscopic suture anchor repair.

**Keywords:** partial thickness, rotator cuff, arthroscopic repair

The improvement in diagnostic imaging capabilities and arthroscopic treatment techniques has increased the appreciation of partial-thickness rotator cuff tears. Whereas some partial-thickness tears respond well to arthroscopic debridement,<sup>1</sup> some authors have noted improved results with mini-open repairs.<sup>2</sup>

Recent studies have introduced the concept of arthroscopic repair of these tears.<sup>3-10</sup> Side-to-side suture repairs have been described<sup>3,8</sup> as well as suture anchor repairs.<sup>4-7,9,10</sup> However, all of the arthroscopic suture anchor repair techniques described have used a transtendon placement of the suture anchor. We describe an all-inside arthroscopic repair technique for partial-thickness articular-sided tears of the anterior portion of the supraspinatus tendon.

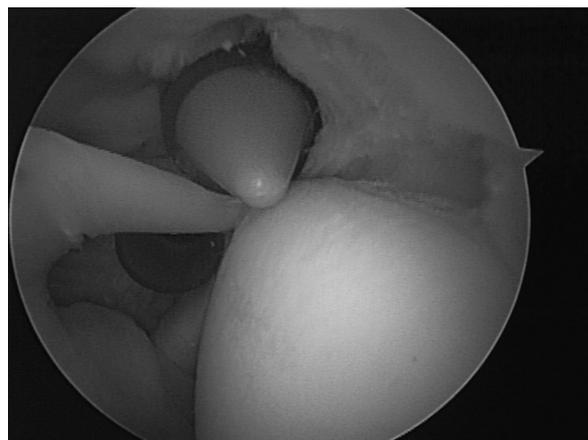
## ■ ILLUSTRATIVE CASE

D.C. is a 19-year-old man who sustained a posterior shoulder dislocation while wrestling. Examination showed a grade 3A posterior load-shift and weakness of the supraspinatus muscle. Magnetic resonance imaging revealed a

posterior labral tear and a partial-thickness articular-sided supraspinatus tear. This tear was confirmed at arthroscopy (Snyder type AIII)<sup>9</sup> and debrided with a mechanical shaver. An all-inside repair was performed in addition to a posterior labral repair.

## ■ TECHNIQUE

Shoulder arthroscopy was performed under interscalene block in the beach-chair position. The arm was prepared in a sterile fashion and secured into the Spider arm positioner (TENET Medical Engineering, Calgary, Alberta, Canada). The arthroscope was introduced through a standard posterior portal. Under arthroscopic visualization, an anterior portal was created just superior to the subscapularis tendon, a plastic cannula was placed, and a thorough diagnostic arthroscopy was performed. The partial-thickness articular-sided supraspinatus tendon tear is debrided with a mechanical shaver through the anterior portal. The repair site on the cuff tendon footprint was prepared. An accessory anterosuperior portal was created by entering the joint through the rotator interval superior to the biceps tendon (Fig. 1). With the arm



**FIGURE 1.** Placement of the anterosuperior portal through the rotator cuff interval.

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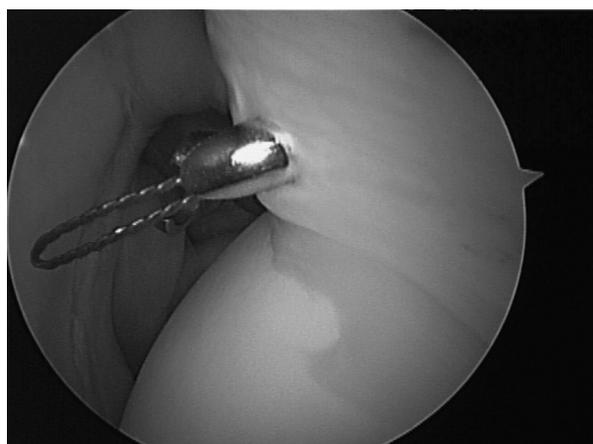
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**FIGURE 2.** Patient in the beach-chair position with the arm positioner holding the arm in abduction and internal rotation.

positioned in internal rotation at 90 degrees of abduction, the partial-thickness tear was accessible through the anterosuperior portal (Fig. 2). This position was easily maintained with the assistance of an arm positioner (Spider); however, an assistant can perform this task as well. A 90-degree Suture Lasso (Arthrex, Naples, Fla) was passed from the axilla of the tear (this is the most proximal portion of the tear and where the torn articular-sided fibers meet the intact remainder of the tendon) into the articular side of the supraspinatus tendon, and a suture shuttle was passed across the articular side of the tendon (Fig. 3). We used the PushLock knotless anchors (Arthrex, Naples, FL) for this repair because this obviated the need for an arthroscopic knot; however, a traditional anchor may also be used. The device was inserted through the anterosuperior portal (Fig. 4) and captured the tensioned sutures, which resulted in a



**FIGURE 3.** Passage of suture shuttle device through the articular side of the tendon.



**FIGURE 4.** Placement of knotless anchor through the anterosuperior portal.

secure repair (Fig. 5). If 2 anchors are required, care is taken to work from posterior to anterior with this repair, because the opposite order will limit visualization.

## ■ DISCUSSION

This technical note describes a new technique of partial-thickness articular-sided supraspinatus tendon repair using suture anchors. This technique provides reduction of the articular-sided tendon tear to its anatomical footprint location, adjacent to the articular cartilage. Violation of the intact bursal-sided tendon is avoided. The use of knotless anchors avoids subacromial knot irritation. We have performed this repair in 5 patients to date who are experiencing excellent results at short-term follow-up.

Recent advances in shoulder arthroscopy have generated an increased appreciation of partial-thickness rotator cuff tears. Before the advent of arthroscopic repair



**FIGURE 5.** Knotless repair of supraspinatus tendon to anatomical footprint.

techniques, the treatment options were debridement versus conversion to an open repair. Multiple arthroscopy techniques have been reported recently for the treatment of partial-thickness lesions.<sup>3–10</sup> Side-to-side suture repairs have been described<sup>3,8</sup> as well as suture anchor repairs.<sup>4–7,9,10</sup> However, all of the arthroscopic suture anchor repair techniques described have used a transtendon placement of the suture anchor.

Not all partial-thickness rotator cuff tears are amenable to repair using this described technique. Articular-sided tears along the “leading edge,” just posterior to the rotator interval can be addressed through an anchor placed from the anterosuperior portal. However, tears that extend along the entirety of the supraspinatus tendon insertion cannot be adequately repaired with anchors in this anterior position. A more posteriorly placed anchor must be added to the repair and can be placed in a transtendon fashion or via the posterior interval between the infraspinatus and supraspinatus. Although this new technique is not appropriate for all tears, it can be considered for partial-thickness, articular-sided, leading-edge tears of the supraspinatus.

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