

# Arthroscopic Management of a Chronic Primary Anterior Shoulder Dislocation

Gregory J. Galano, MD, Alexis A. Dieter, MD, Natan E. Moradi, and Christopher S. Ahmad, MD

## ABSTRACT

Chronic anterior dislocation of the glenohumeral joint often leads to functional impairment and pain. Duration of dislocation is correlated with complications, and this injury is traditionally treated with an open procedure.

A right-hand-dominant woman in her late 70s presented with traumatic chronic anterior dislocation of the glenohumeral joint. Her physical exam and imaging studies were consistent with anterior shoulder dislocation, a large Hill-Sachs deformity, and rotator cuff and anterior labral tears. A shoulder reduction under anesthesia was performed followed by an arthroscopic double-row rotator cuff repair. In addition, a labral repair was performed via percutaneously inserted suture anchors. Following this treatment, stability was restored to the glenohumeral joint. The patient progressed well with physical therapy and, at 1-year follow-up, the patient had returned to all routine activities pain-free.

Arthroscopic repair of chronic primary traumatic anterior shoulder dislocations requiring surgical treatment is a valuable alternative to open procedures and should be considered in higher-functioning elderly patients. Percutaneous suture anchor placement minimizes trauma to an already pathologic rotator cuff and joint capsule.

required arthroscopic stabilization to maintain the reduction. While this case was not a “locked” dislocation per se, extreme instability prompted operative treatment. The authors have obtained the patient’s written informed consent for print and electronic publication of the case report.

## CASE REPORT

A right-hand-dominant woman in her late 70s dislocated her right shoulder when she fell while unsteady. She delayed seeking medical treatment until 7 days after

**C**hronic dislocation of the glenohumeral joint can lead to significant functional impairment and pain. Commonly cited defini-

“...associated rotator cuff and labral injuries...required arthroscopic stabilization to maintain the reduction.”

tions of a chronic dislocation range from dislocation present for over 24 hours to one present for a minimum of 3 weeks.<sup>1-5</sup> Chronic dislocations are more frequently seen with anterior dislocations, and it is well recognized that the duration of dislocation is a significant risk factor for complication.<sup>2</sup>

A review of the literature identified 13 reported cases of irreducible (locked) anterior shoulder dislocations, 10 of which occurred in patients 45 years of age and older.<sup>6-8</sup> To our knowledge, there are no reported cases of arthroscopic treatment for a chronic shoulder dislocation in an elderly patient.

In this report, we describe an elderly patient with a chronic primary traumatic anterior shoulder dislocation and associated rotator cuff and labral injuries that

her fall and then presented to a physician who diagnosed her with a chronic anterior shoulder dislocation and sent the patient for magnetic resonance imaging (MRI) of the shoulder. Ten days after the injury, the patient presented to the senior author’s (CSA’s) office for a second opinion, complaining of significant pain and reporting vague numbness in the anterior aspect of her right arm.

Physical examination revealed diffuse swelling of the right shoulder and anterior prominence. There was significant reduction in passive and active range of motion in the right shoulder, with restriction to 30° of forward elevation and 10° of external rotation. Strength was intact in the elbow, wrist, and digits, and the patient was able to actively contract all 3 heads at the del-

Dr. Galano is Resident, Orthopaedic Surgery, Columbia University Medical Center, New York, New York.

Dr. Dieter is Resident, Obstetrics/Gynecology, New York University Medical Center, New York, New York.

Mr. Moradi is an undergraduate student, Center for Orthopaedic Research, and Dr. Ahmad is Associate Professor, Department of Orthopaedic Surgery, Columbia University Medical Center, New York, New York.

Address correspondence to: Gregory J. Galano, MD, Department of Orthopaedic Surgery, Columbia University Medical Center, 622 West 168<sup>th</sup> Street, PH 11<sup>th</sup> Floor, New York, NY 10032 (tel, 212-305-5974; fax, 212-305-6193; e-mail, galano7@gmail.com).

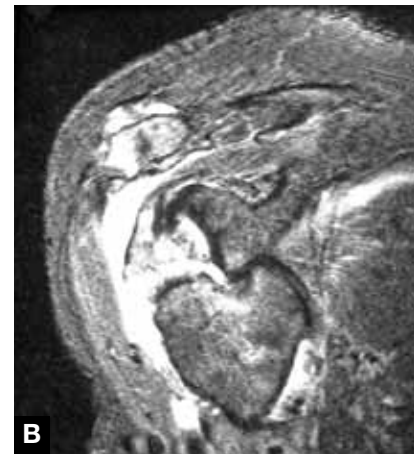
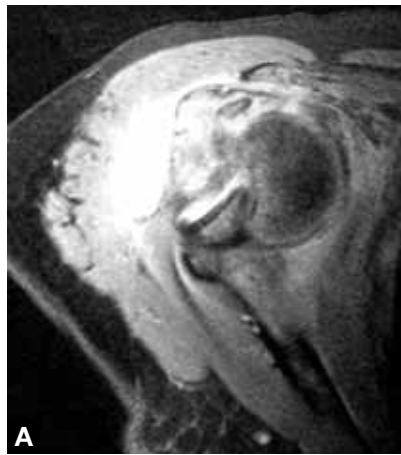
*Am J Orthop.* 2010;39(7):351-355. Copyright Quadrant HealthCom Inc. 2010. All rights reserved.



**Figure 1.** Radiograph shows anterior-inferior shoulder dislocation.

toid. Right shoulder radiographs revealed an anterior dislocation of the shoulder with a large Hill-Sachs deformity on the humeral head (Figure 1). MRI confirmed the dislocation and revealed a minimally retracted full-thickness rotator cuff tear involving the supraspinatus as well as a tear of the anterior labrum (Figure 2). No attempt at reduction was made in the office.

The patient was diagnosed with a chronic anterior glenohumeral dislocation. Treatment options were discussed with the patient, and a closed reduction under anesthesia, with possible diagnostic arthro-

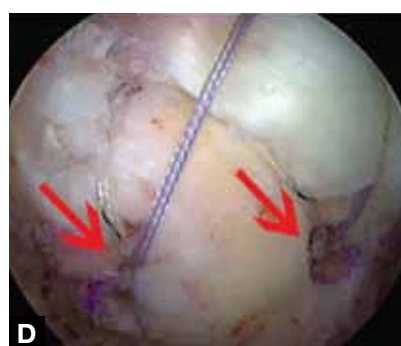


**Figure 2.** (A) Axial and (B) coronal magnetic resonance imaging demonstrates shoulder dislocation.

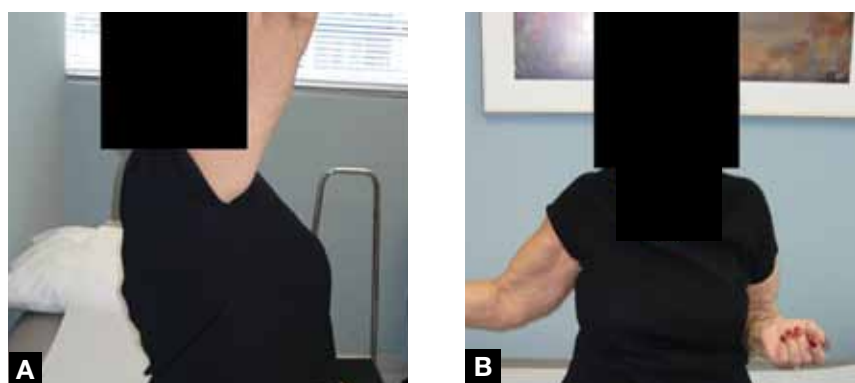
scopy and arthroscopic repair, was elected as the method of treatment. The patient was taken to the operating room where she was given regional anesthesia and placed in the supine position. Gentle traction with slow internal and external rotation of the humerus facilitated a closed reduction, which was confirmed with fluoroscopy. The patient was then placed in the beach chair position, and her shoulder was extremely unstable, dislocating with even slight external rotation, abduction, and elevation. At this point, the decision was made to perform diagnostic

arthroscopy. A posterior portal was established, and the arthroscope was introduced into the glenohumeral joint. Diagnostic shoulder arthroscopy demonstrated extensive intra-articular synovitis and scar tissue in the posterior aspect of the shoulder joint, both of which were débrided. Adequate visualization was then achieved; the arthroscope was advanced into the subacromial space, and anterior and lateral portals were established.

An extensive Hill-Sachs lesion (Figure 3A) was visualized, as well as a rotator cuff tear involving the supraspinatus tendon (Figure 3B)



**Figure 3.** (A) Arthroscopic view of the Hill-Sachs lesion from standard posterior portal. (B) Supraspinatus tear with greater tuberosity exposed. (C) Arthroscopic view of the anterior labral tear from standard posterior portal. (D) Arthroscopic view of the cruciate double-row rotator cuff repair. (E) Arthroscopic view of the anterior labral repair.



**Figure 4.** Postoperative exam demonstrating (A) active forward elevation and (B) external rotation range of motion.

and an anterior labral tear extending from approximately 3 o'clock to 6 o'clock (Figure 3C). There was diffuse arthritis, but there was no evidence of anterior glenoid deficiency.

The greater tuberosity was débrided and abraded using a motorized shaver. Two 5.5-mm Bio-FT suture anchors (Arthrex, Inc., Naples, Fla) were placed on the medial edge of the rotator cuff footprint, and the 2 sutures from each anchor were placed in horizontal fashion with standard suture-passing devices and were tied (Figure 3D). Suture bridge double-row repair was then performed by placing two 3.5-mm PushLock anchors (Arthrex, Inc.) lateral to the lateral edge of the greater tuberosity, one anterior and one posterior. Crossing of the sutures created a cruciate-type suture bridge repair, recreating the supraspinatus greater tuberosity footprint anatomy (Figure 3E).

However, the patient's shoulder could still be manually dislocated in abduction and external rotation. The anterior glenoid neck was abraded with a rasp and a shaver to stimulate healing. Two 3.0-mm SutureTak suture anchors (Arthrex, Inc.) were placed percutaneously and penetrating the subscapularis at the 5:30 and 4:30 positions. The sutures were passed through the labral capsular complex in a simple fashion using a suture lasso (Arthrex, Inc.) and were tied, giving excellent restora-

tion of glenohumeral stability. The capsule did not have significant stretch injury, so minimal capsular imbrication was performed as part of the capsular labral complex repair and to avoid potential postoperative stiffness.

The shoulder was no longer able to be dislocated at this point (ie, the Hill-Sachs lesion did not engage). The shoulder was suctioned dry, and the portals were closed in standard fashion.

The patient was discharged home the same day, and her shoulder was immobilized in a sling with a small abduction pillow for 6 weeks. The

months, she began more aggressive strengthening and stretching.

On her most recent visit at 1 year follow-up, the patient reported that she had returned to all her routine activities, and she denied any pain. Physical exam at this time revealed forward elevation to 175°, external rotation to 60°, and internal rotation to T6 (Figure 4). The patient demonstrated full strength in forward elevation and external rotation and was neurovascularly intact.

## DISCUSSION

Anterior dislocation of the shoulder is an easily recognized injury in younger patients but can be overlooked in the elderly population.<sup>9</sup> Failure to diagnose this injury is concerning, as anterior shoulder dislocations in elderly patients are not uncommon. In a review of 500 cases of anterior shoulder dislocations, Rowe and Sakellarides<sup>10</sup> found that the number of patients over 45 years old was equal to the number of patients younger than 45, suggesting that older patients may be just as likely to dislocate as younger patients. Additionally,

**"...in older patients, the dynamic rotator cuff fails by tendon avulsion from the greater tuberosity."<sup>11</sup>**

patient returned for follow-up at 2 weeks for suture removal, and radiographs revealed the glenohumeral joint to be reduced. At 6 weeks postoperatively, the patient began a physical therapy regimen in accordance with rotator cuff repair protocol with sessions 3 times weekly. Range of motion was limited to 140° forward elevation, 40° external rotation, and T12 internal rotation for the first 4 to 6 weeks of therapy. After 6 weeks, range of motion was advanced as symptoms allowed, and, 8 weeks into therapy, light strengthening exercises were added to the regimen. At 3

older patients are more likely to experience significant injuries as a result of shoulder dislocation.<sup>9</sup>

The pathology resulting from a traumatic shoulder dislocation is variable and in part depends on patient age. McLaughlin and McLellan<sup>11</sup> believe that, when dislocation occurs in younger patients, the static anterior stabilizing glenohumeral ligaments and labrum sustain damage. However, in older patients, the dynamic rotator cuff fails by tendon avulsion from the greater tuberosity.<sup>11</sup> Additional injuries associated with anterior dislocations in older as well as in younger

patients include Hill-Sachs lesions and osteochondral loose bodies.<sup>12</sup>

The reported incidence of rotator cuff tears found after traumatic shoulder dislocation ranges from 35% to 90%, and the increased frequency of rotator cuff tears occurring with shoulder dislocation in older patients is well documented.<sup>9,13-19</sup> Moreover, a direct correlation between patient age at time of dislocation and increasing incidence of rotator cuff tears has been shown. Simank and col-

leagues<sup>18</sup> found that, in 87 patients with primary shoulder dislocations, the incidence of rotator cuff tears increased from 41% in patients 40 to 55 years old to 100% in patients over the age of 70. Berbig and colleagues<sup>13</sup> reported similar findings in their study of 167 primary anterior shoulder dislocations, demonstrating again a direct correlation with incidence of tears and patient age.

and have concluded that surgery should be performed if significant symptoms and/or impairment of function persists after closed reduction or if closed reduction cannot be achieved.<sup>5,17,23,24</sup> Recent studies have reported significant disability from chronic dislocations and have advocated reduction (either closed or open) in patients of all ages.<sup>1</sup>

Yanmiş and colleagues<sup>5</sup> reported 2 cases where closed reduction was not possible in patients with

study of 16 patients who underwent combined rotator cuff and Bankart repairs arthroscopically. At a mean follow-up of 2.7 years, these patients demonstrated American Shoulder and Elbow Surgeons and L'Insalata scores of 95.8 and 95.0, respectively. These patients had significant improvements in range of motion, and none had recurrent dislocation. Thus, this study concluded that arthroscopic repair of rotator cuff tears and Bankart lesions pro-

**“In our patient, repair of the supraspinatus in isolation without addressing the labral tear demonstrated persistent instability while she was under anesthesia.”**

vides good clinical results and a high degree of patient satisfaction.

Our patient demonstrated many findings typical of an elderly patient with a chronic anterior shoulder dislocation, including a large Hill-Sachs lesion, a tear of the supraspinatus, and an anterior labral tear. In our patient, repair of the supraspinatus in isolation without addressing the labral tear demonstrated persistent instability while she was under anesthesia. Therefore, a labral repair was indicated in addition to the rotator cuff repair. Arthroscopic management of both rotator cuff and labral injuries combined with progressive rehabilitation resulted in excellent postoperative range of motion for our patient without stiffness or pain.

To our knowledge, our report is the first to describe arthroscopic repair of rotator cuff and labral tears in an elderly patient in the setting of a chronic anterior dislocation where there was inability to retain reduction following closed treatment alone.

Arthroscopic repair of injuries associated with primary traumatic shoulder dislocation is beneficial in many ways. This arthroscopic technique carries less morbidity than an open procedure. Additionally, the greater visualization of the glenohumeral joint cavity achieved

with arthroscopic surgery allows the surgeon to address any associated injuries or operative findings (ie, combined labral and rotator cuff injuries) more appropriately at the time of surgery.

Thus, we conclude that in elderly patients, arthroscopic repair can be successfully used for chronic anterior shoulder dislocations requiring surgical treatment, especially because of the minimally invasive nature of the procedure. Our patient's shoulder became stable only after combined rotator cuff and labral repairs. Arthroscopic management should therefore be considered in higher-functioning patients with a disabling chronic dislocation refractory to closed treatment.

### AUTHORS' DISCLOSURE STATEMENT

Dr. Ahmad wishes to note that he has received research grant support from Arthrex, Inc. (Naples, Fla). The other authors report no actual or potential conflict of interest in relation to this article.

### REFERENCES

- Goga IE. Chronic shoulder dislocations. *J Shoulder Elbow Surg.* 2003;12(5):446-450.
- Jerosch J, Riemer R, Schoppe R. Asymptomatic chronic anterior posttraumatic dislocation in a young male patient. *J Shoulder Elbow Surg.* 1999;8(5):492-494.
- Rowe CR, Zarins B. Chronic unreduced dislocations of the shoulder. *J Bone Joint Surg Am.* 1982;64(4):494-505.
- Schulz TJ, Jacobs B, Patterson RL Jr. Unrecognized dislocations of the shoulder. *J Trauma.* 1969;9(12):1009-1023.
- Yanmiş I, Kömürçü M, Oğuz E, Başbozkurt M, Gür E. The role of arthroscopy in chronic anterior shoulder dislocation: technique and early results. *Arthroscopy.* 2003;19(10):1129-1132.
- Davies MB, Rajasekhar C, Bhamra MS. Irreducible anterior shoulder dislocation: the greater tuberosity Hill-Sachs lesion. *Injury.* 2000;31(6):470-471.
- Guha AR, Jago ER. Irreducible acute anterior shoulder dislocation. *Int J Clin Pract.* 2004;58(12):1184-1186.
- Mihata T, Doi M, Abe M. Irreducible acute anterior dislocation of the shoulder caused by interposed fragment of the anterior glenoid rim. *J Orthop Sci.* 2000;5(4):404-406.
- Hawkins R, Bell R, Hawkins R, Koppert G. Anterior dislocation of the shoulder in the older patient. *Clin Orthop.* 1986;206:192-195.
- Rowe CR, Sakellarides HT. Factors related to recurrences of anterior dislocations of the shoulder. *Clin Orthop.* 1961;20:40-48.
- McLaughlin HL, McLellan DI. Recurrent anterior dislocation of the shoulder. II. A comparative study. *J Trauma.* 1967;7(2):191-201.
- Hart W, Kelly C. Arthroscopic observation of capsulolabral reduction after shoulder dislocation. *J Shoulder Elbow Surg.* 2005;14(2):134-137.
- Berbig R, Weishaupt D, Prim J, Shahin O. Primary anterior shoulder dislocation and rotator cuff tears. *J Shoulder Elbow Surg.* 1999;8(3):220-225.
- Neviaser RJ, Neviaser TJ, Neviaser JS. Concurrent rupture of the rotator cuff and anterior dislocation of the shoulder in the older patient. *J Bone Joint Surg Am.* 1988;70(9):1308-1311.
- Neviaser RJ, Neviaser TJ, Neviaser JS. Anterior dislocation of the shoulder and rotator cuff repair. *Clin Orthop.* 1993;(291):103-106.
- Pasila M, Jaroma H, Kiviluoto O, Sundholm A. Early complications of primary shoulder dislocations. *Acta Orthop Scand.* 1978;49(3):260-263.
- Pevny T, Hunter RE, Freeman JR. Primary traumatic anterior shoulder dislocation in patients 40 years of age and older. *Arthroscopy.* 1998;14(3):289-294.
- Simank HG, Dauer G, Schneider S, Loew M. Incidence of rotator cuff tears in shoulder dislocations and results of therapy in older patients. *Arch Orthop Trauma Surg.* 2006;126(4):235-240.
- Toolanen G, Hildingsson C, Hedlund T, Knibestol M, Oberg L. Early complications after anterior dislocation of the shoulder in patients over 40 years. An ultrasonographic and electromyographic study. *Acta Orthop Scand.* 1993;64(5):549-552.
- Handoll HH, Almayyah MA, Rangan A. Surgical versus non-surgical treatment for acute anterior shoulder dislocation. *Cochrane Database Syst Rev.* 2004;1(1):CD004325.
- Kuhn JE. Treating the initial anterior shoulder dislocation—an evidence-based medicine approach. *Sports Med Arthrosc.* 2006;14(4):192-198.
- Jakobsen BW, Johannsen HV, Suder P, Sojbjerg JO. Primary repair versus conservative treatment of first-time traumatic anterior dislocation of the shoulder: a randomized study with 10-year follow-up. *Arthroscopy.* 2007;23(2):118-123.
- Bassett RW, Cofield RH. Acute tears of the rotator cuff. The timing of surgical repair. *Clin Orthop.* 1983;(175):18-24.
- Sonnabend DH. Treatment of primary anterior shoulder dislocation in patients older than 40 years of age. Conservative versus operative. *Clin Orthop.* 1994;(304):74-77.
- Porcellini G, Paladini P, Campi F, Paganelli M. Shoulder instability and related rotator cuff tears: arthroscopic findings and treatment in patients aged 40 to 60 years. *Arthroscopy.* 2006;22(3):270-276.
- Voos JE, Pearle AD, Mattern CJ, Cordasco FA, Allen AA, Warren RF. Outcomes of combined arthroscopic rotator cuff and labral repair. *Am J Sports Med.* 2007;35(7):1174-1179.

---

This paper will be judged for the Resident Writer's Award

---