

## Case Report

# Arthroscopic Treatment of Acute Traumatic Anterior Glenohumeral Dislocation and Greater Tuberosity Fracture

Gary M. Gartsman, M.D., Ettore Taverna, M.D., and Steven M. Hammerman, M.D.

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**Summary:** We present a case and a description of treatment of an anterior dislocation of the shoulder with a greater tuberosity fracture. Both the Bankart lesion and the tuberosity fracture were repaired using arthroscopic techniques.

**Key Words:** Greater tuberosity fracture—Anterior glenohumeral dislocation—Arthroscopy—Fracture fixation.

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Many differing arthroscopic treatments of acute and recurrent glenohumeral dislocation are described in the literature.<sup>1-3</sup> The association of a greater tuberosity fracture and an acute anterior inferior glenohumeral dislocation is well known.<sup>4</sup> Operative treatment for displaced greater tuberosity fractures with the use of an open surgical approach has been described.<sup>5</sup> Recent reports of successful arthroscopic repair of acute dislocation<sup>6,7</sup> and greater tuberosity nonunion<sup>8</sup> has led the authors to perform a combined arthroscopic Bankart repair and fixation of greater tuberosity fracture. To our knowledge, this is the first such case, and it forms the basis of this report.

### CASE REPORT

A 46-year-old right-hand dominant man was involved in a polo accident and sustained an anterior-inferior glenohumeral dislocation along with a greater tuberosity fracture (Fig 1). The dislocation was reduced in the emergency room but, because of the displacement of the greater tuberosity fracture, the

treating orthopaedist referred the patient to our office. His medical history included no prior significant shoulder problems. Physical examination was limited by pain from the shoulder injury but it revealed normal neurovascular status. Plain radiographs showed pre-reduction and postreduction views of the dislocation and displaced greater tuberosity fracture (Fig 2). The patient wished to pursue his avocation of competitive polo, so we advised operative treatment.

### SURGICAL TECHNIQUE

After the successful induction of general anesthesia with interscalene block supplementation, we placed the patient in the sitting position and prepared and draped the arm. An incision was made 1 cm inferior and 1 cm medial to the posterolateral corner of the acromion and the blunt trocar and cannula were inserted into the glenohumeral joint. A Bankart lesion was seen with detachment of the labrum-ligament complex from 1 to 4 o'clock. The anterior scapular neck and glenoid rim were abraded and two suture anchors inserted. The labrum-ligament complex was reattached anatomically. The arthroscope was removed and attention turned to the subacromial space. The trocar and cannula were inserted into the subacromial space and the lateral portal site was identified with a spinal needle. A large self-sealing cannula and trocar were inserted, followed by an arthroscopic probe. The

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*From Texas Orthopedic Hospital, Houston, Texas, U.S.A. (G.M.G., S.M.H.); and Ospedale SS. Benedetto e Gertrude, Cuggiono, Milan, Italy (E.T.).*

*Address correspondence and reprint requests to Gary M. Gartsman, M.D., Texas Orthopedic Hospital, 7401 S. Main St, Houston, TX 77030, U.S.A. Email: gary@fondren.com*

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FIGURE 1. Dislocation with greater tuberosity fracture.

fracture site was identified and the humeral fracture bed abraded with a power bur. An anterior cannula then was inserted. The greater tuberosity was reduced using a trocar (placed through the anterior portal) and a Kirschner wire placed percutaneously through the



FIGURE 2. Displaced greater tuberosity fracture.

tuberosity fragment into the humeral head under arthroscopic guidance. A 50-mm partially threaded cannulated 7-mm screw was inserted over the guide wire, which resulted in firm, compressive fixation of the tuberosity. The humeral articular surface was visualized during and after screw insertion and no cartilage penetration was noted. Reduction and screw placement were checked with an intraoperative radiograph, the instruments were removed, and a sterile bulky dressing applied. The patient was discharged home the next morning.

### FOLLOW-UP

The patient's arm was placed in a sling for 6 weeks. Passive range of motion in elevation and external rotation was begun on the first postoperative day. To minimize stress on the Bankart repair, external rotation was limited to 60°. At 6 weeks, full active motion was allowed and the patient used surgical tubing to strengthen all shoulder muscles except the supraspinatus. Three months after surgery, elevation was 140°, external rotation 75°, and internal rotation T12. Movements were fluid and the patient had good pain relief. Radiographs showed healing of the tuberosity fragment (Fig 3). The patient returned to playing polo. At 6 months, the patient showed an excellent range of motion of the right shoulder with 150° of elevation, 80° of external rotation, and T9 internal rotation. Two



FIGURE 3. Suture anchors and fixation screw.

years after surgery, the patient had no pain, normal range of motion, and normal strength of the right shoulder with clinical and radiographic evidence of union.

### DISCUSSION

An extensive search of the literature failed to find any documentation of arthroscopic-assisted fixation of a greater tuberosity fracture in association with a Bankart repair for an initial, traumatic, anterior glenohumeral dislocation. To our knowledge, this is the first report. We are aware that reduction and fixation of a greater tuberosity fracture cannot always be performed using arthroscopic techniques because of insufficient bone stock, significant displacement, or retraction. In this case, arthroscopic techniques were possible to repair both the greater tuberosity fracture and the Bankart lesion. Fluoroscopic imaging or intraoperative radiographs are suggested to ensure appropriate screw position.

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