

Bankart Repair using the Smith & Nephew BIORAPTOR[◇] 2.9 Suture Anchor

Gary M. Gartsman, M.D.



Introduction

Arthroscopic studies of anterior-inferior glenohumeral instability have focused on the repair of Bankart lesions. However, current investigation supports the concept that anterior-inferior instability is associated with multiple lesions and that the success rate can be increased with the treatment of all lesions at the time of the surgery. We believe that our technique of arthroscopic treatment of anterior-inferior glenohumeral instability is better than previous arthroscopic techniques and is equivalent to open repairs. An improved rate of success is the result of the repair not only of the anterior-inferior lesion but also (where necessary) of inferior and superior labral tears. In addition, soft tissue tension within the capsule and ligaments is corrected with various suture techniques.

The proposed advantages of arthroscopic stabilization include smaller skin incisions, more complete inspection of the glenohumeral joint, the ability to treat intra-articular lesions, access to all areas of the glenohumeral joint for repair, less soft-tissue dissection, and maximum preservation of external rotation.

The arthroscopic technique involves identifying and repairing all pathology that contribute to glenohumeral instability, i.e., debridement, repair of ligament and labral tears, capsular tensioning, and if needed, repair of the rotator interval.

Gary M. Gartsman, M.D., an active member at Texas Orthopedic Hospital, is noted for shoulder surgery and arthroscopy, as well as teaching, research, and publishing in the shoulder and arthroscopy subspecialty of orthopedic medicine.

Dr. Gartsman serves on the faculty of the University of Texas Health Science Center as Clinical Professor, Department of Orthopaedic Surgery.

Dr. Gartsman has over 300 academic productions to his credit including professional papers, book chapters on orthopedics, meeting and symposium presentations, and audiovisual productions addressing physician and patient education. He is the author of a textbook entitled *Shoulder Arthroscopy*.

Patient Setup, Initial Examination

Place the patient in the sitting or lateral decubitus position. Begin by examining the patient's range of motion under anesthesia. Examine both shoulders and record the direction and degree of translation.

Portal Placement

Enter the glenohumeral joint with a Smith & Nephew CLEAR-TRAC[®] COMPLETE Cannula and a blunt trocar through a posterior skin incision placed 1.5 cm inferior and 1.5 cm medial to the posterolateral border of the acromion. The arthroscope is placed posteriorly.

The anterior-inferior portal is defined with an arthroscopic needle so that the cannula enters the shoulder immediately superior to the subscapularis tendon and 1 cm lateral to the glenoid (Figure 1).

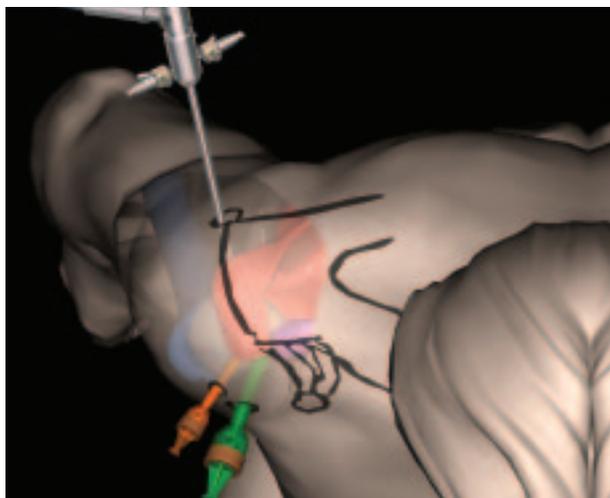


Figure 1

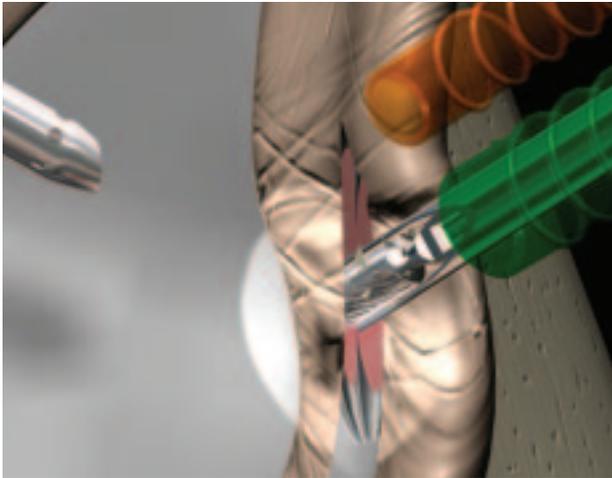


Figure 2

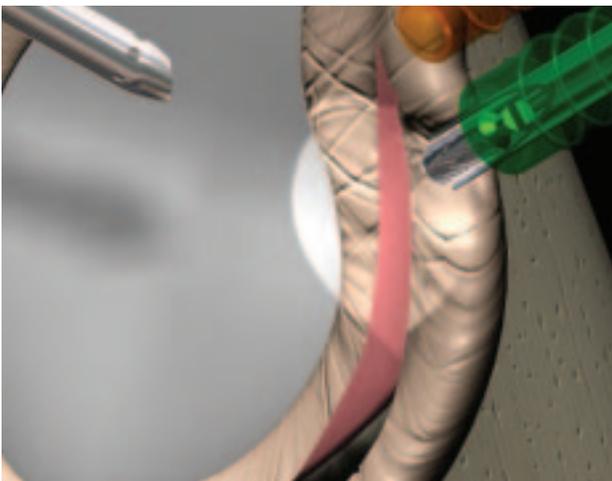


Figure 3

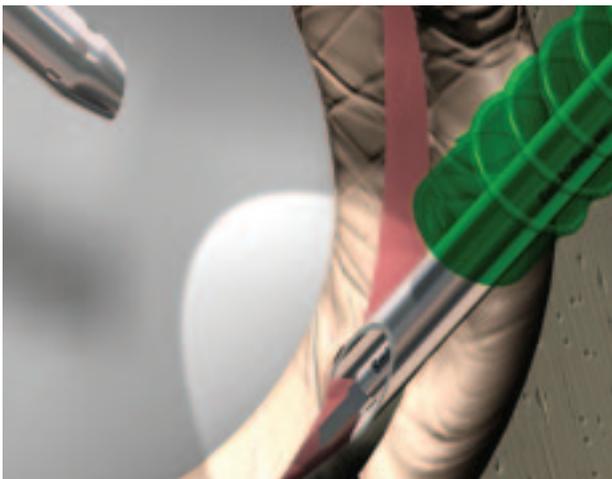


Figure 4

Joint Inspection

1. Inspect the glenohumeral joint. Re-examine the shoulder for translation while viewing the shoulder through the arthroscope. An attempt should be made to reproduce the symptomatic position to observe whether significant translation occurs.
2. Use an arthroscopic probe to assess labral attachment and ligament tension accurately.
3. Once the diagnosis of the glenohumeral instability is confirmed, an anterior-superior portal is created and a CLEAR-TRAC[®] COMPLETE Cannula is placed through the rotator cuff interval 1 cm lateral to the glenoid.

Soft Tissue Repair

1. Repair all traumatic tears of the superior, anterior, and inferior aspects of the labrum.
2. Remove only minor labral flap tears, and repair those involving at least 50 percent of the labral thickness with absorbable monofilament sutures. Remove any loose bodies with arthroscopic surgical forceps.
3. Remove any fibrous tissue from the anterior glenoid rim to help create a cancellous bone surface for permanent ligament healing. Normally, the anterior-inferior glenohumeral ligament is detached from the anterior-inferior rim.
4. Remove the soft tissue covering the anterior scapular neck with a tissue resector.
5. If the ligament is only minimally displaced, use a small rasp or curette to free the ligament. Ligament dissection should continue until the ligament moves freely.
6. An arthroscopic probe or Smith & Nephew ELITE[®] Tissue/Suture Grasper can be used to grasp the ligament and draw it superiorly, thereby reducing the tear.
7. Once the ligament is freely moveable, the bone should be prepared. Use a Smith & Nephew 4 mm Abrader Burr (Figure 2).
8. The entire debrided area should undergo decortication, removing approximately 1 mm of bone (Figure 3).

9. With the scope held posteriorly, the most anterior-inferior portions of the debridement can be difficult to visualize. In this case, the arthroscope should be moved to the anterior-superior portal. The other instruments remain in the anterior-inferior portal.

Anchor Placement

1. Use a Smith & Nephew BIORAPTOR® 2.9 Suture Anchor to reattach the labrum to the glenoid.
2. Drill a hole at the prepared area in the anterior-inferior rim using the Smith & Nephew 2.7 mm drill and 4 mm drill guide (Figure 4 and Figure 5). Hole depth is determined by aligning the laser marks on the drill and drill guide.
3. Insert the BIORAPTOR 2.9 suture anchor through the drill guide and into the drill hole. While viewing the anchor through the drill guide window, tap the back of the insertion device until the laser mark on the insertion device aligns with the laser mark on the drill guide (Figure 6).
4. Carefully remove the insertion tool from the operative site. Note: If the anchor inserter is difficult to remove, use a small mallet to tap outward on the front of the inserter handle to remove the inserter.

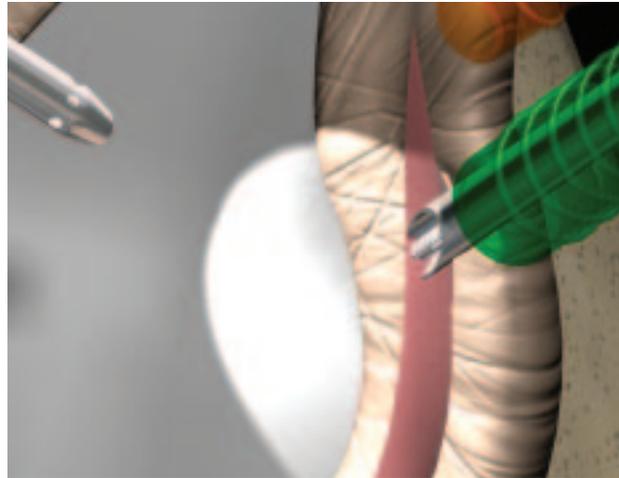


Figure 5

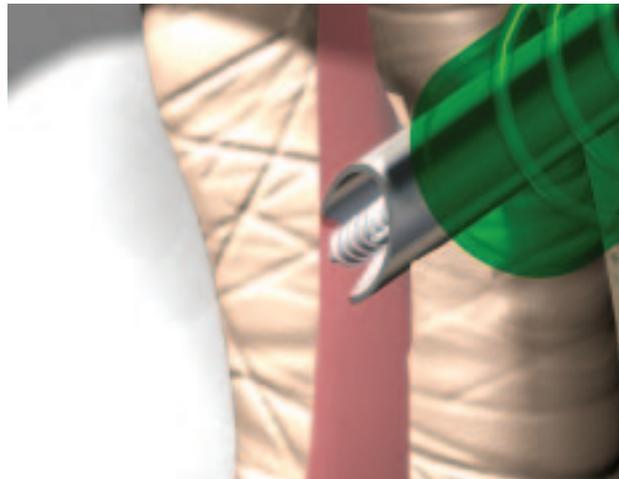


Figure 6

Labrum Repair

1. Introduce a Smith & Nephew ARTHRO-PIERCE® 35° Up Grasper into the operative site and pass it through the labral tissue towards the center of the glenoid and equal in height to the anchor.
2. Identify one suture and isolate it with the tip of the grasper. Open the door of the grasper and capture the isolated suture (Figure 7).
3. Retrieve the suture through the tissue and out the cannula. While retrieving the suture, observe the suture/anchor interface. The suture should not be moving through the eyelet. If the suture is moving through the eyelet, (1) stop pulling on the ARTHRO-PIERCE Grasper, (2) place a clamp or hemostat on the suture limb that is moving into the joint, and (3) release tension on the grasper handle. Continue to retrieve the suture out the cannula while observing the anchor/suture interface for movement.
4. Repeat the process for additional sutures.

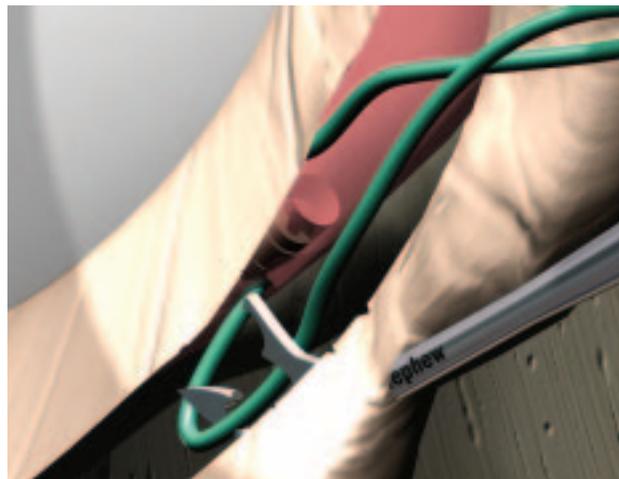


Figure 7

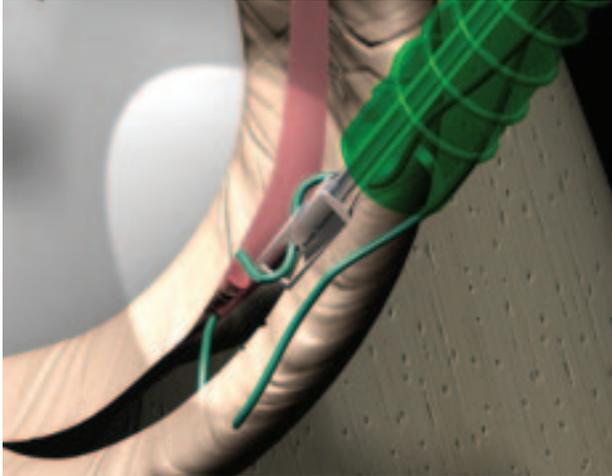


Figure 8

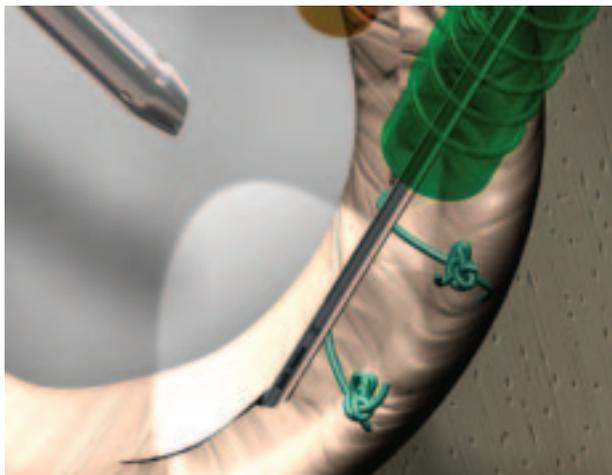


Figure 9

Knot Tying

1. Using the Smith & Nephew ELITE[®] Suture Manipulating Grasper, isolate the suture that has not been passed through the tissue (Figure 8). While holding the suture in the eyelet of the suture manipulating grasper, remove the instrument. This will ensure that any tangles in the suture are removed, and will identify the post leg of the suture.
2. Place the full loop ELITE[®] KNOT MANIPULATOR[®] on the post leg of the suture and apply a clamp to the end of the suture. This will provide tension to the post leg and prevent the KNOT MANIPULATOR from slipping off the suture while tying knots.
3. Form a knot outside the cannula and use the KNOT MANIPULATOR to slide the knot to the tissue surface.
4. After the knot is secured, the Smith & Nephew ELITE Sliding Suture Cutter is used to trim the sutures.
5. Repeat the knot tying sequence with the remaining suture if needed.
6. If additional anchors are needed to repair the tissue, repeat the anchor placement, suture passing, and knot tying steps above.
7. Use an arthroscopic probe to inspect the repair (Figure 9).

Postoperative Care

The patient is placed in a sling for 4-6 weeks for normal daily activity. The sling is only to be removed for rehabilitation activities and for activities when the sling will become wet. Gentle active range of motion movement begins at the end of the 3-4 week healing period. As the patient progresses and as the patient's pain allows, a strengthening program is implemented. Certain strengthening such as the grip, triceps, and biceps can be started quickly. Rehabilitated enhancement of the deltoid, rotator cuff, and scapular muscle are continued until normal strength and range of motion return. Passive stretching of the glenohumeral joint is not recommended.

The patient can return to full activity at 6-12 months.

Additional Instruction

Prior to performing this technique, consult the Instructions for Use documentation provided with individual components — including indications, contraindications, warnings, cautions, and instructions.

Courtesy of Smith & Nephew, Inc., Endoscopy Division

Caution: U.S. Federal law restricts this device to sale by or on the order of a physician.