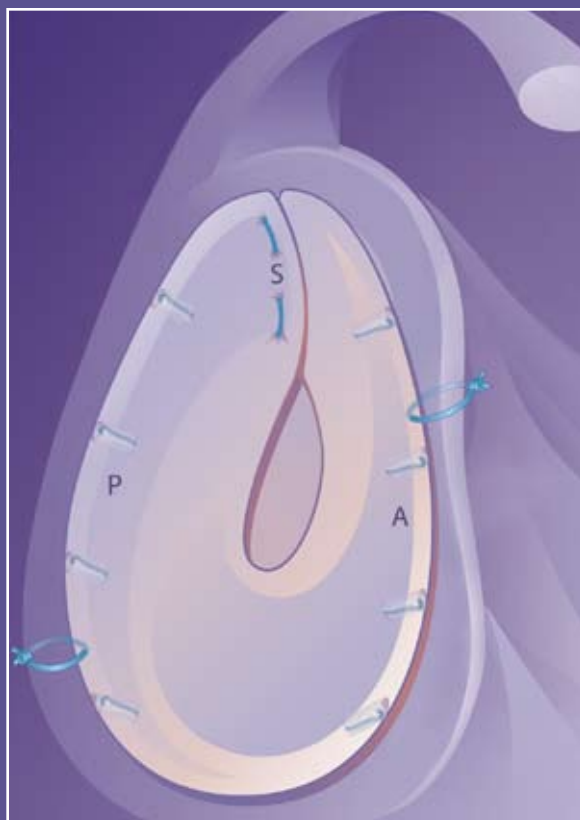




Arthroscopic Glenoid Resurfacing
with a Meniscal Allograft

Surgical Technique



Arthroscopic Glenoid Resurfacing

Introduction

The following technique describes an arthroscopic method of glenoid resurfacing with a meniscal allograft to aid in the restoration of function to patients debilitated by arthritic conditions of the glenohumeral joint. Prior to surgical intervention appropriate radiological studies should be obtained to determine if the humeral head and/or glenoid have advanced patterns of wear that may preclude this procedure from being successful.

William Pennington, M.D., Milwaukee, Wisconsin

Indications:

- The chronically painful arthritic glenohumeral joint recalcitrant to non-surgical treatment modalities

Contraindications:

- Excessive glenoid wear posteriorly
- Severe humeral head deformity with advanced osteophytic formation

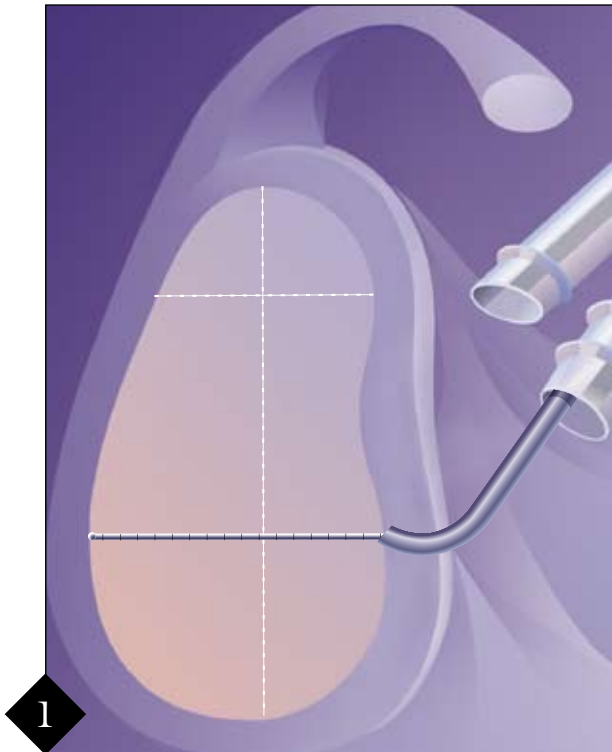
Surgical Technique

This procedure may be performed in the lateral decubitus or beach chair position. Portal placement is essential to facilitate the ease of this procedure. The portals established are similar to those performed in anterior and posterior stabilization procedures.

Insert the arthroscope initially into the glenohumeral joint through a posterior portal. It is recommended that this portal be placed 3 cm distal to the posterior corner of the acromion in a position lateral and inferior to the standard posterior portal of the shoulder. The lateral placement facilitates proper anchor placement into the glenoid rim. The inferior placement allows access to the inferior capsule and labrum as well as the posterior/inferior glenoid rim. Create an anterior/inferior portal with an outside/in technique just superior to the articular fibers of the subscapularis tendon and lateral enough to provide the proper angle for anchor placement into the glenoid rim. Place an 8.25 mm Twist-In Cannula into this portal. Create an anterior/superior portal 1 cm off of the anterior lateral corner of the acromion. Place a 7 mm Partially Threaded Cannula into this portal.

Examine the glenohumeral joint arthroscopically and debride of any loose bodies, fibrillate tissue and osteophytes that are commonly found in these patients. Examine the labrum and determine its viability. Examine both the humeral and glenoid surfaces and record the severity of cartilaginous loss.

Surgical Technique



Prepare the glenoid surface by removing any remaining articular cartilage using a combination of a rasp, curette and mechanical burr. Gently debride the bony surface around the edge of the glenoid adjacent to the labrum to reveal a bleeding bed. Care is taken to preserve any labral tissue that remains as it will be utilized to assist in fixation of the allograft in the procedure.

After complete visualization of the glenoid is established, measure the glenoid dimensions using the black handled 70° Measurement Probe. Three measurements are necessary, including total glenoid height, superior 1/3 width and the widest point. After the measurements are obtained, record the results so they can be used to properly size and prepare the meniscal allograft. Place the arthroscope through the anterior/superior portal and establish an 8.25 mm Twist-In Cannula in the posterior portal.



Clearly define the anterior and posterior rim of the glenoid and place drill holes in the proper positions to ease the eventual anchor placement. These holes are made using the long V-Tak® drill and purple handled FASTak II Spear drill guide. Drill four to five anterior and posterior holes equally spaced at clock point positions immediately adjacent to the glenoid face. Care is taken to ensure that an adequate bone bridge remains between all drilled holes to avoid compromising eventual anchor fixation strength. An accessory portal with a stab incision may be performed in the posterior/superior position, immediately adjacent to the posterior corner of the acromion, to allow placement of the drill holes and anchors in the 10 and 11 o'clock positions.

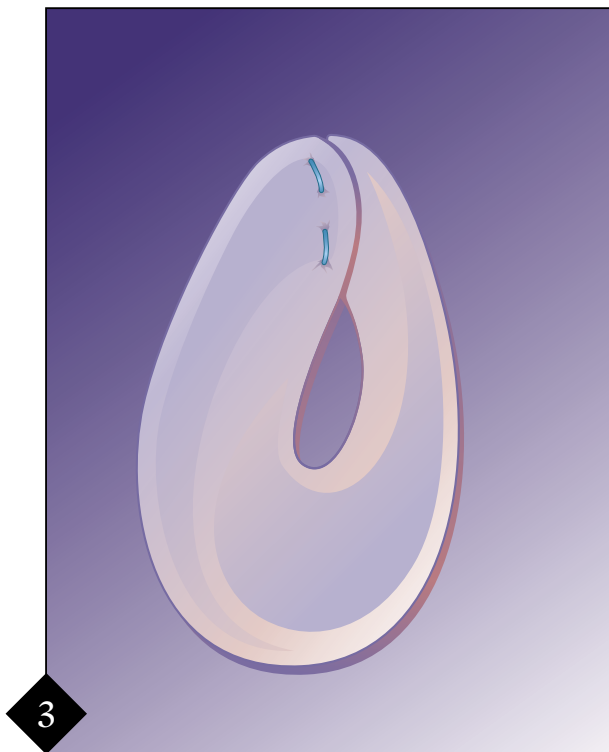
Alternate drilling method:

An alternate to predrilling the anchor holes is to pass the graft into the joint and drill the holes corresponding to the suture loops with the graft in place. Introduce the FASTak™ II Spear drill guide through the appropriate portal and drill the holes in the glenoid rim close to each loop. A grasper may be used to temporarily move the graft edge away from the glenoid rim to facilitate visualization of the rim.

Optional capsular release:

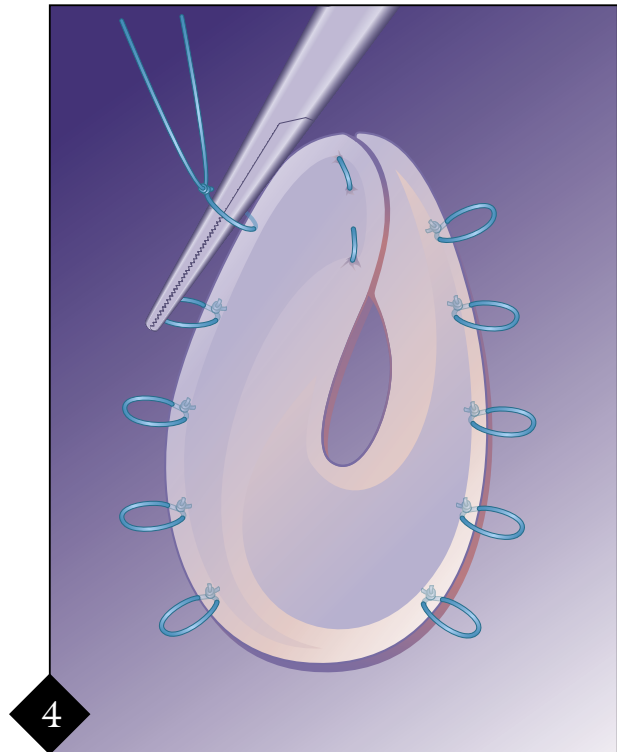
Prior to meniscal graft introduction, capsular release should be performed if the preoperative examination supports its necessity. This should be done circumferentially to help increase motion that is usually compromised in the arthritic shoulder and to increase the field of view to all parts of the glenoid rim and graft.

Allograft Preparation



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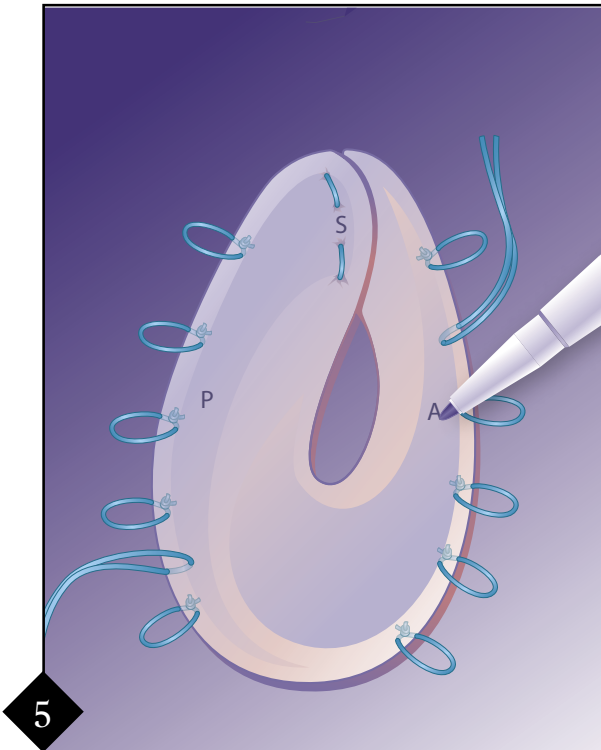
Preparation of the meniscal allograft is ideally performed by an assistant in conjunction with the arthroscopic preparation of the glenoid. A lateral meniscal allograft is the preferred soft tissue for transposition as it provides appropriate anatomic surface covering while being small enough to facilitate arthroscopic insertion. Remove the meniscus from its bone block and any fibrillated tissue around the horns. Bring the two horns together in an overlapping fashion to form a ring and adjust until the dimensions of the graft closely match the dimension previously taken of the glenoid. Attach the horns to each other using a series of 0 FiberWire® horizontal mattress sutures placed so that the complete edge of each horn is securely attached to the other horn and the knots are on the undersurface of the graft.



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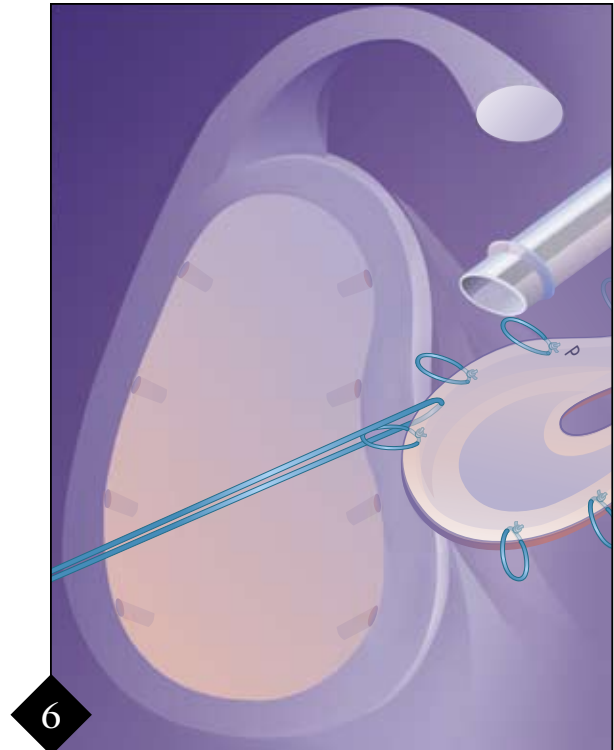
After formation of the initial graft ring shape, install a series of 0 FiberWire loops along the edge of the graft corresponding to the drill holes on the glenoid surface. These loops will be captured by individual forked V-Tak anchors allowing attachment of the entire perimeter of the graft to the glenoid. Install a total of eight to ten loops in a similar pattern to the drill holes around the glenoid so loops match hole placement for anchoring convenience. Uniformity of each of the individual loops can be achieved by using a 5.5" Kelly forcep as a spacer. Each loop should have a diameter of approximately 10-12 mm and the knot should be four throw-reverse half-hitches for stability. After each loop is tied, the knot should be directed to the back surface of the graft by tugging on the loop gently with a smooth grasper or forcep.

Introduction of the Graft into the Glenohumeral Joint



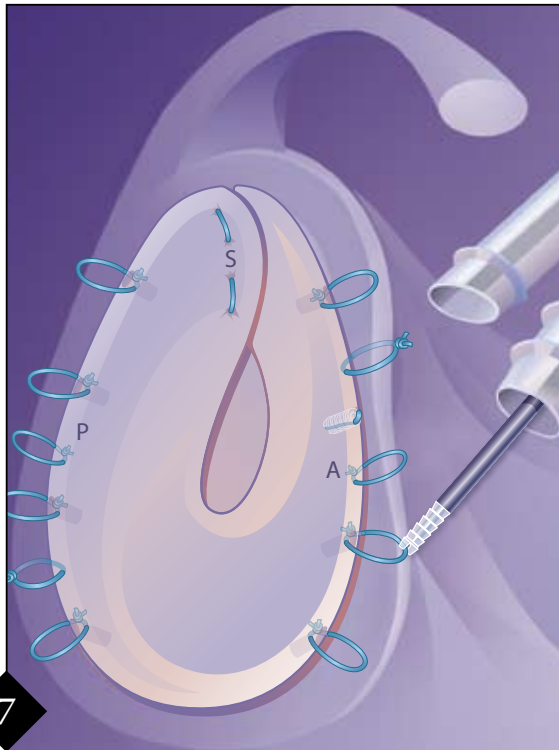
Use a #2 FiberWire suture for traction sutures on the anterior and posterior side of the graft to aid in the introduction of this graft into the glenohumeral joint. Depending on the side being operated upon (RT vs. LT), place each stitch either above or below the midline of the graft face. Generally, for a right shoulder, the anterior traction stitch is placed at the 2 o'clock area and the posterior stitch is placed at the 8 o'clock area.

Lastly, to aid in positioning of the graft in relation to the glenoid, the superior, anterior and posterior surfaces of the graft, as they relate to the humeral head, are marked with an "s", "a" and "p" with a sterile marking pen.

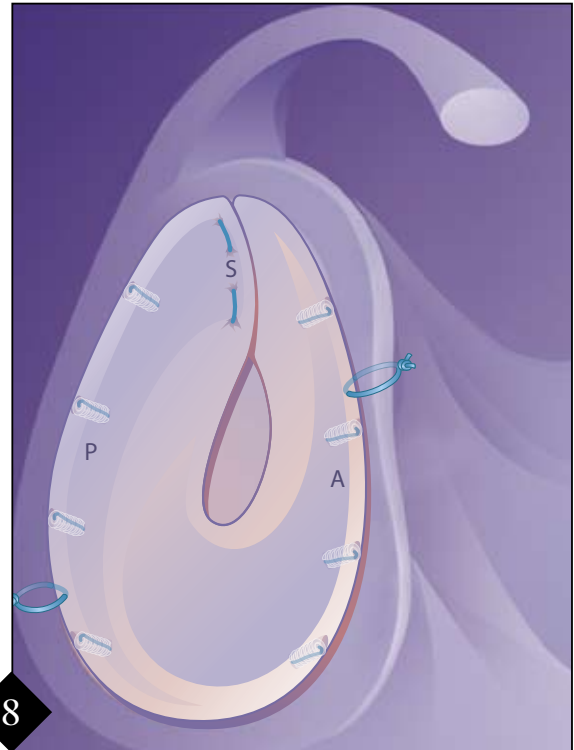


Remove the anterior/inferior cannula in order to pass the graft into the joint. Slightly extend the anterior/inferior portal with a scalpel then bluntly dilate with a hemostat to widen it enough for easy passage of the graft. With the arthroscope in the posterior viewing portal, introduce a 90° SutureLasso™ into the joint through the posterior portal and advance the wire loop into the joint. Using a grasper through the anterior inferior portal, retrieve the wire loop out of the joint. Place the posterior #2 FiberWire traction sutures into the wire loop and pull the loop back through the joint from anterior to posterior to lead the graft into the glenohumeral space. If the graft gets interfered upon by soft tissue during introduction use a blunt grasper or hemostat to facilitate graft placement into the joint from the anterior portal. Simultaneous tension on the anterior and posterior graft passing sutures narrows and elongates the graft to facilitate insertion through the anterior/inferior portal.

Anchoring the Graft



After successful placement of the soft tissue graft onto the glenoid, maneuver the suture loops to positions in close proximity to the predrilled holes using a grasper. Replace the threaded cannula into the anterior/inferior portal for anchor placement. Depending on the area of the glenoid that is being accessed, introduce a 2.2 mm x 7 mm V-Tak anchor on its long driver into the glenohumeral space through the most convenient portal/cannula and advance the anchor down over a suture loop, locking the suture loop into the forked tip of the V-Tak.



Lead the V-Tak/suture loop combination over to the nearest corresponding drill hole and advance into the hole using a mallet until the anchor is countersunk just under the cortex and the soft tissue graft has been properly tensioned to the glenoid without over tensioning it. Repeat this process until all available and accessible suture loops have been interfaced with a V-Tak and inserted into their drill holes to complete the peripheral attachment of the soft tissue graft to the glenoid.

Note: If further reinforcement is required by the surgeon, additional sutures can be placed around the labrum and through the upper edge of the soft tissue graft using a small diameter cannulated suture passing device, like the SutureLasso SD or the Micro SutureLasso. #2 FiberWire should be used for these additional stability sutures.

Postoperative Management

On postoperative day one the patient is maintained in a sling for comfort and started on a continuous “passive motion” (CPM) machine. The patient is initially given motion restrictions of 90° of abduction and 30° of external rotation for four to six weeks allowing adequate time for soft tissue healing. Physiotherapy is commenced on week three focusing on gentle, early strengthening and motion.

Implants and Disposables:

V-Tak, 2.2 mm x 7 mm	AR-8735B
#2 FiberWire, 38 inches w/Tapered Needle, 26.5 mm 1/2 circle	AR-7200
0 FiberWire, 38 inches w/Tapered Needle, 22.2 mm 1/2 circle	AR-7250
Measurement Probe, 70°	AR-4070-70S
Partially Threaded Cannula w/no squirt cap, 7 mm x 7 cm w/obturator	AR-6567
Twist-In Cannula, w/no squirt cap, 8.25 mm I.D. x 7 cm, <i>SU</i>	AR-6530
SutureLasso, 90° w/wire loop, sterile, <i>SU</i>	AR-4065-90W
SutureLasso SD, 90° straight, sterile, <i>SU</i>	AR-4068-90W

Instrumentation:

Long Step Drill for V-Tak, 2 mm (reusable)	AR-1917D
V-Tak Inserter, long (reusable)	AR-1917DB
Bio-SutureTak® Instrumentation Set, 3 mm (AR-1934S) includes:	
FASTak II Spear	AR-1949
Blunt Tip Obturator	AR-1949-02
3 mm SutureTak Punch	AR-1934P
Bio-SutureTak Instrumentation Case	AR-1934C
Punch, Capsular, Inverted Scoop Tip, 3.4 mm	AR-17120

SU = Single Use

Allografts:

Allograft Ordering: Meniscal allografts are ordered by your Arthrex representative through ATSI. These allografts are provided frozen from tissue banks that have been accredited by the American Association of Tissue Banks.

Lateral Meniscus, left	237101
Lateral Meniscus, right	237111

ATSI Allograft Tissue Systems Inc.

27299 Riverview Center Blvd.
Suite 201
Bonita Springs, Florida 34134
Tel: (877) 454-4338

Supporting Scientific Article:

Pennington W T, Bartz B A. Arthroscopic Glenoid Resurfacing With Meniscal Allograft: A Minimally Invasive Alternative for Treating Glenohumeral Arthritis. *Arthroscopy: The Journal of Arthroscopic and Related Surgery* 2005; 21: 1517-1520



Arthrex, Inc.
1370 Creekside Boulevard, Naples, Florida 34108-1945 • USA
Tel: 239-643-5553 • Fax: 239-598-5534 • Website: www.arthrex.com

Arthrex GmbH
Liebigstrasse 13, D-85757 Karlsfeld/München • Germany
Tel: +49-8131-59570 • Fax: +49-8131-5957-565

Arthrex Latin América
3750 NW 87th Avenue, Suite 620, Miami, Florida 33178 • USA
Tel: 954-447-6815 • Fax: 954-447-6814

Arthrex S.A.S.
5 Avenue Pierre et Marie Curie, 59260 Lezennes • France
Tel: +33-3-20-05-72-72 • Fax: +33-3-20-05-72-70

Arthrex Canada
Lasswell Medical Co., Ltd., 405 Industrial Drive, Unit 21, Milton, Ontario • Canada L9T 5B1
Tel: 905-876-4604 • Fax: 905-876-1004 • Toll-Free: 1-800-224-0302

Arthrex GesmbH
Triesterstrasse 10/1 • 2351 Wiener Neudorf • Austria
Tel: +43-2236-89-33-50-0 • Fax: +43-2236-89-33-50-10

Arthrex BvbA
Technologiepark Satenrozen, Satenrozen 1a, 2550 Kontich • Belgium
Tel: +32-3-2169199 • Fax: +32-3-2162059

Arthrex Ltd.
Unit 16, President Buildings, Savile Street East, Sheffield S4 7UQ • England
Tel: +44-114-2767788 • Fax: +44-114-2767744

Arthrex Hellas - Medical Instruments SA
43, Argous Str. - N. Kifissia, 145 64 Athens • Greece
Tel: +30-210-8079980 • Fax: +30-210-8000379

Arthrex Sverige AB
Turbinvägen 9, 131 60 Nacka • Sweden
Tel: +46-8-556 744 40 • Fax: +46-8-556 744 41

Arthrex Korea
Rosedale Building #1904, 724 Sooseo-dong, Gangnam-gu, Seoul 135-744 • Korea
Tel: +82-2-3413-3033 • Fax: +82-2-3413-3035

Arthrex Mexico, S.A. de C.V.
Insurgentes Sur 600 Mezanine, Col. Del Valle Mexico D.F. • Mexico
Tel: +52-55-91722820 • Fax: +52-55-56-87-64-72

This description of technique is provided as an educational tool and clinical aid to assist properly licensed medical professionals in the usage of specific Arthrex products. As part of this professional usage, the medical professional must use their professional judgment in making any final determinations in product usage and technique. In doing so, the medical professional should rely on their own training and experience and should conduct a thorough review of pertinent medical literature and the product's Directions For Use.

U.S. PATENT NO. 6,716,234 and PATENT PENDING

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