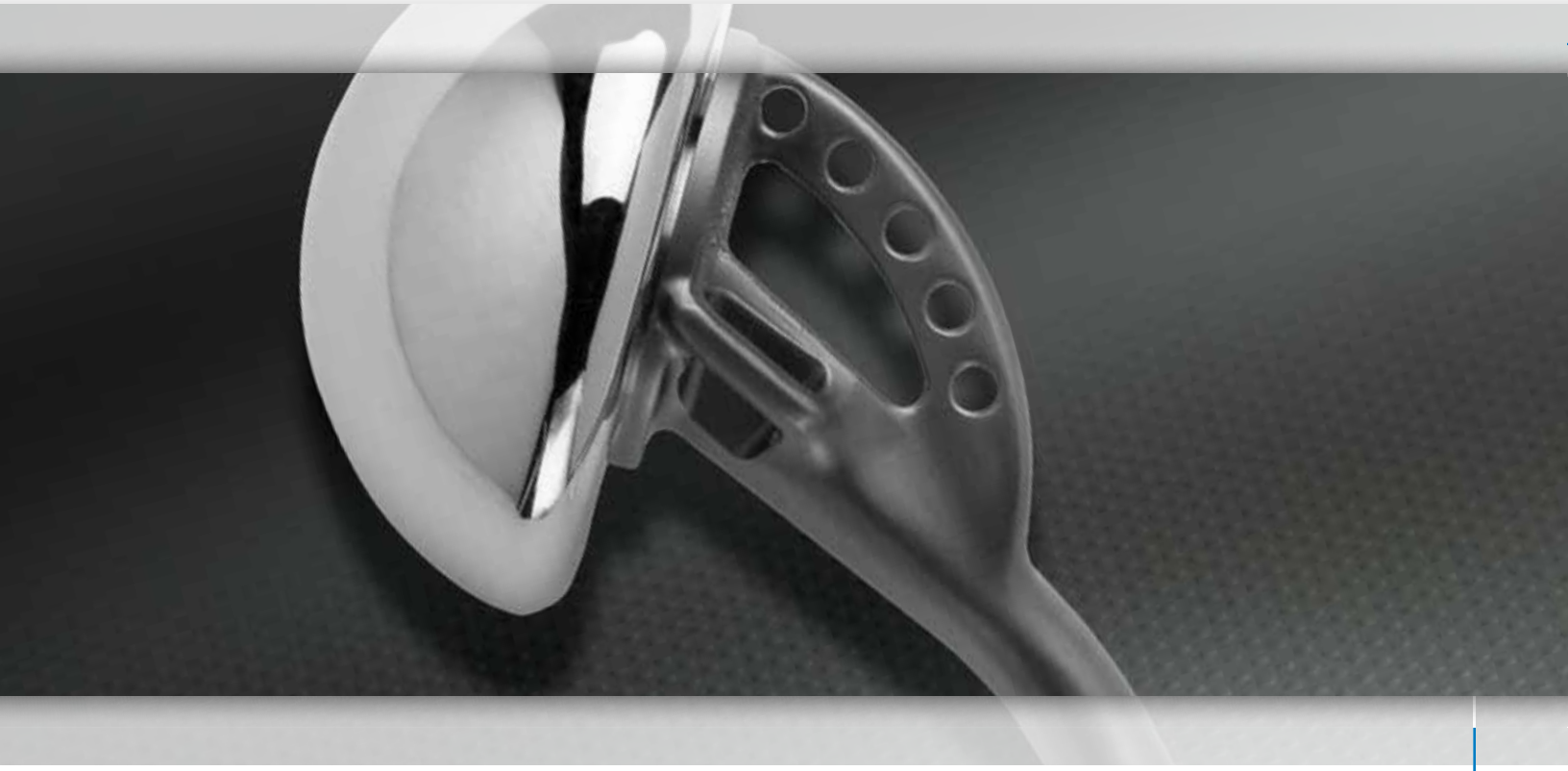
EXACTECH | **SHOULDER**

Operative Technique



equinoxe®

SHOULDER SYSTEM

Fracture Arthroplasty

Exactech®

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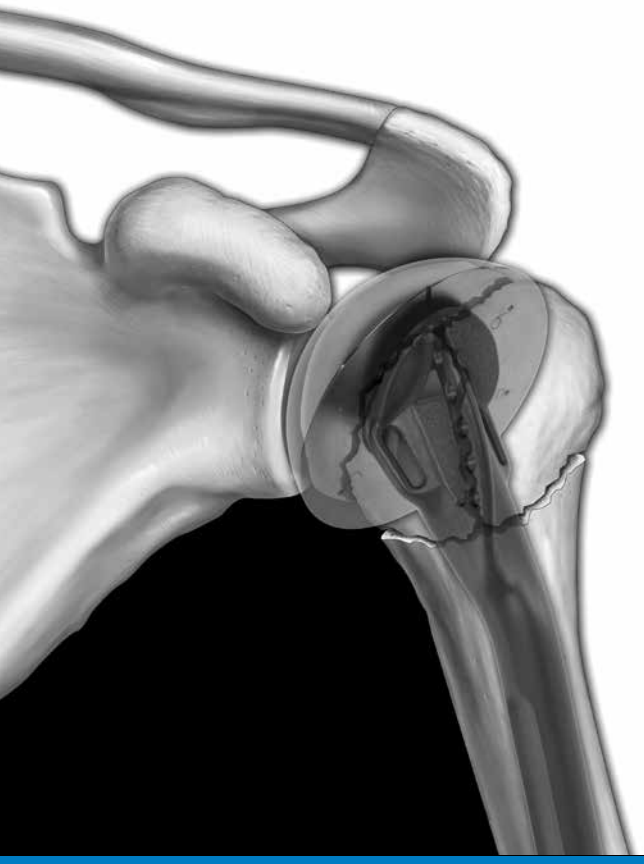

EQUINOXE® SHOULDER SYSTEM DESIGN TEAM

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The Equinoxe® Shoulder System redefines "anatomical." The primary stem allows independent adjustability of all four anatomic parameters *in situ*. The reverse shoulder is an optimized design that minimizes both scapular notching and torque on the glenoid while seamlessly integrating with the primary stem. The fracture stem's offset anterior-lateral fin and asymmetric tuberosity beds define the next generation in complex fracture reconstruction.

INTRODUCTION

Throughout the development process, our team has collaborated on every facet of the Equinoxe Shoulder System including this operative technique. We have taken a comprehensive approach to the technique, discussing the surgery from pre-operative planning to post-operative rehabilitation, since many shoulder replacements are performed by surgeons who may only do two to three per year. Obviously, there are myriad approaches to each step of shoulder arthroplasty and the surgeon should feel free to employ those with which he is most comfortable. The Equinoxe-specific techniques, though, should be respected to help ensure a safe and successful surgery.

We began the product development process by identifying concerns our team had with shoulder replacements for complex fractures of the proximal humerus. Our goal was to develop solutions to those concerns and we believe the Equinoxe System significantly improves the surgeon's ability to secure the tuberosities. The asymmetric beds act as a scaffold for the stable reconstruction of the fractured fragments. The offset anterior-lateral fin, when placed in the distal bicipital groove, assists the surgeon in correctly establishing retroversion.

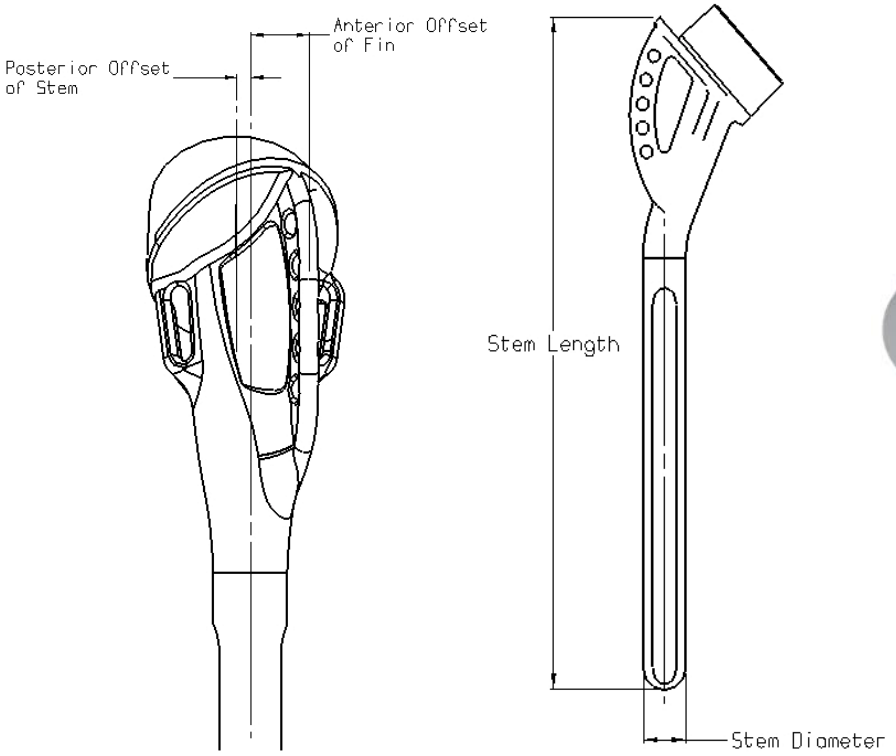
We offer this operative technique in two different formats. The first is a high-level overview intended as a refresher before surgery or as a guide for the surgeon's support staff. The detailed narrative version is intended for an in-depth understanding of the step-by-step approach that our team has endorsed and should be read at least once before using the Equinoxe Shoulder System.

We hope that our work, both the technique and the Equinoxe Shoulder System, will facilitate *"A Great Day in the OR"* for the surgeon and the staff.

Respectfully,

Pierre-Henri Flurin, MD
Thomas W. Wright, MD
Joseph D. Zuckerman, MD

SYSTEM SPECIFICATIONS



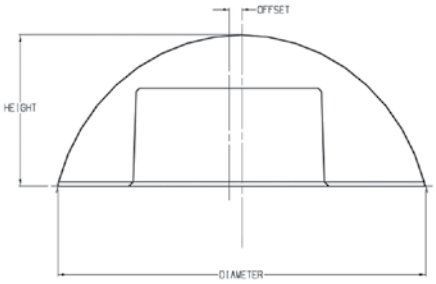
Left Right

FRACTURE STEM

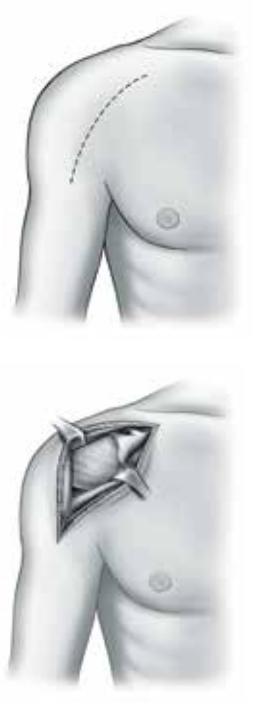
				Surface Finish				
Distal Diameter (mm)	**Length (mm)**	**Sides**	**Material**	**Tuberosity Beds**	**Remainder of Stem**	**Suture Holes**	**Inherent Posterior Offset (mm)**	**Anterior Offset of Fin (mm)**
7.0	140 & 200	Rights & Lefts	Ti-6Al-4V	16 grade grit blast	Satin finish grit blast	Rounded to avoid breakage	1.8	6.0
9.5	140						1.8	7.5
12.0							1.8	7.5

HUMERAL HEADS

	Height (mm)				
Diameter (mm)	**Short**	**Tall**	**Expanded**	**Offset (mm)**	**Material**
38	16	19		0	Co-Cr
41	16	20		0	
44	17	21		1.5	
47	18	22	26	1.5	
50	19	23	27	1.5	
53	20	24	28	1.5	



OVERVIEW TECHNIQUE OVERVIEW FOR RIGHT SHOULDER



1

Incision and exposure

2

Reaming the humeral shaft

3

Inserting the Fracture Stem Trial

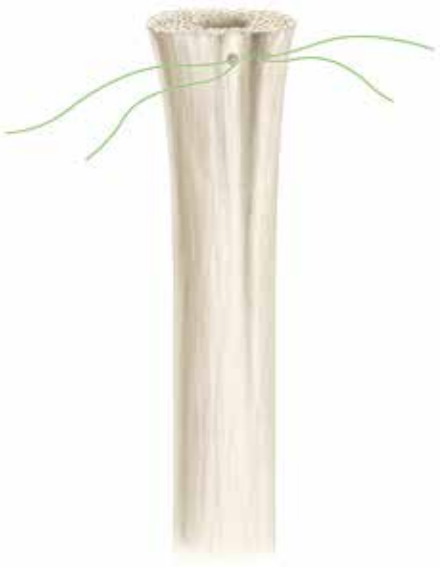
- Contralateral X-ray with template overlays to approximate height (use fin holes as reference)
- Pull down test — With Head Trial in place, pull arm distally and the top of the head should be at the top of the glenoid
- Finger test — One finger should fit between the greater tuberosity and the acromion
- Piece back the tuberosities to snugly fit under the humeral head
- If medial bone is intact, use as a reference to determine height
- Once height is established, maintain with Fracture Stem Positioning Device.

4

Establishing/maintaining the height

5

Trial reduction

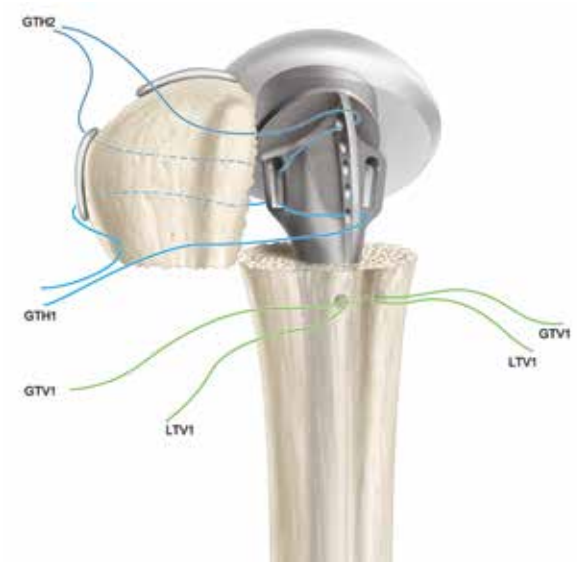


6

Preparing shaft for cement

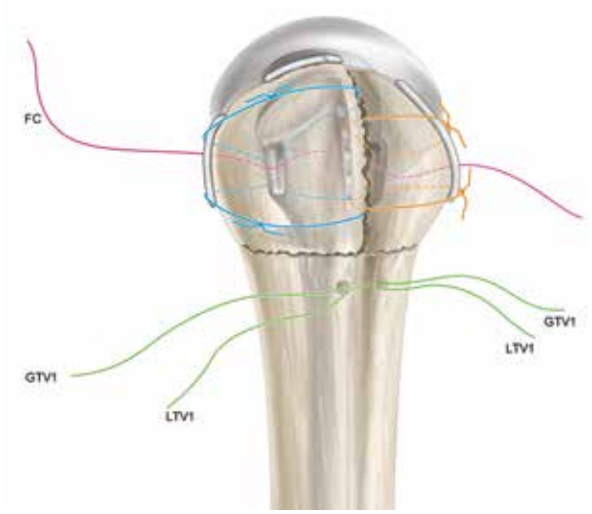
7

Cementing final stem



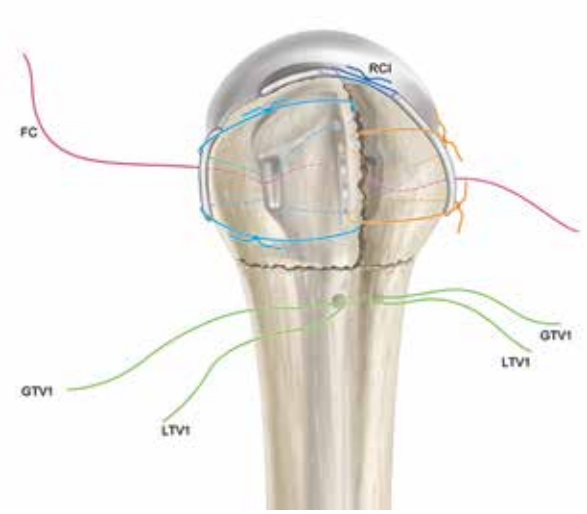
8

Place GT horizontal sutures (GTH)



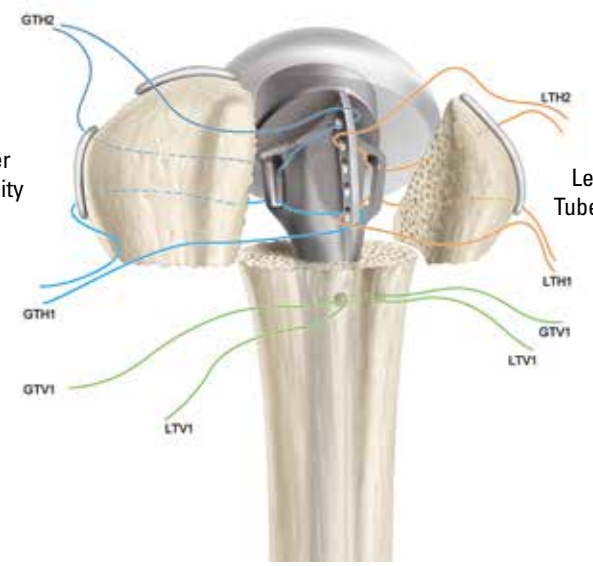
11

Tie horizontal sutures



12

Place and tie cuff interval suture (RCI)

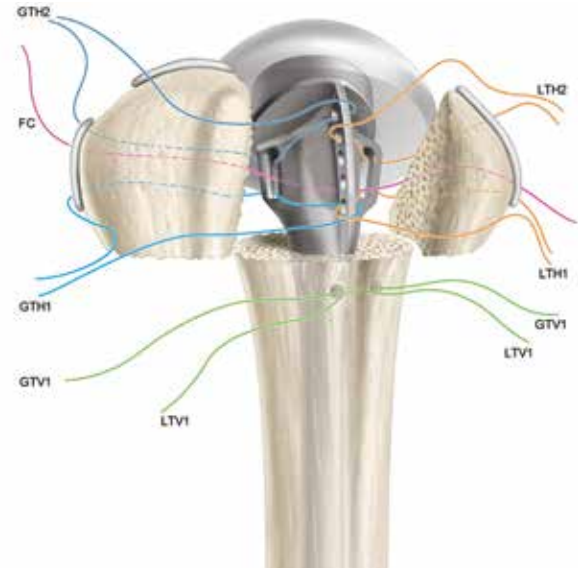


Greater Tuberosity

Lesser Tuberosity

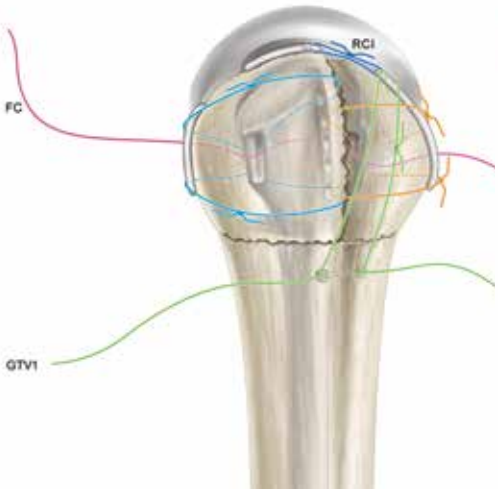
9

Place LT horizontal sutures (LTH)



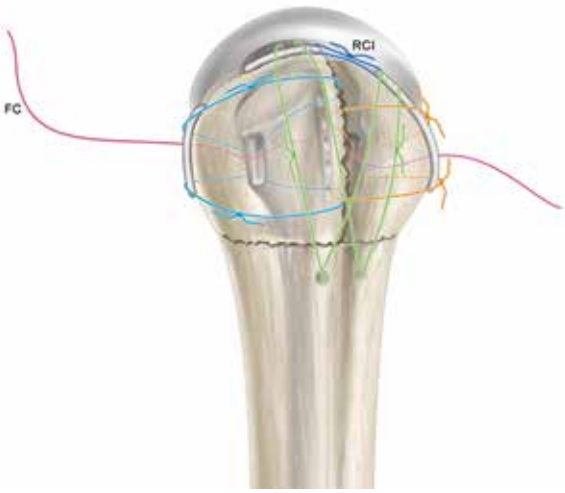
10

Place final cerclage (FC)



13

Tie LT vertical suture



14

Tie GT vertical suture

15

Tie final cerclage

DETAILED OPERATIVE TECHNIQUE

The Equinoxe Fracture Shoulder System is indicated to relieve pain and restore function in skeletally mature individuals with three- and four-part fractures of the proximal humerus and humeral head fracture with displacement of the tuberosities. For a more detailed description of the indications and the listing of contraindications, please refer to the package insert.

SPECIAL CONSIDERATIONS

The decision to proceed with proximal humeral replacement should reflect a careful consideration of both injury and patient factors. An important injury factor is the degree of tuberosity displacement; it indicates the degree of soft-tissue injury and is associated with an increased risk of osteonecrosis. The degree of comminution and bone quality also are important factors that may prevent optimal fixation.

Important patient factors include the age and functional needs of the patient. Additionally, the presence of pre-existing functional deficits in the involved extremity must be considered in the decision to proceed with a reconstructive procedure. Patients must be able to participate in a structured post-operative rehabilitative program, which is essential for a successful outcome.

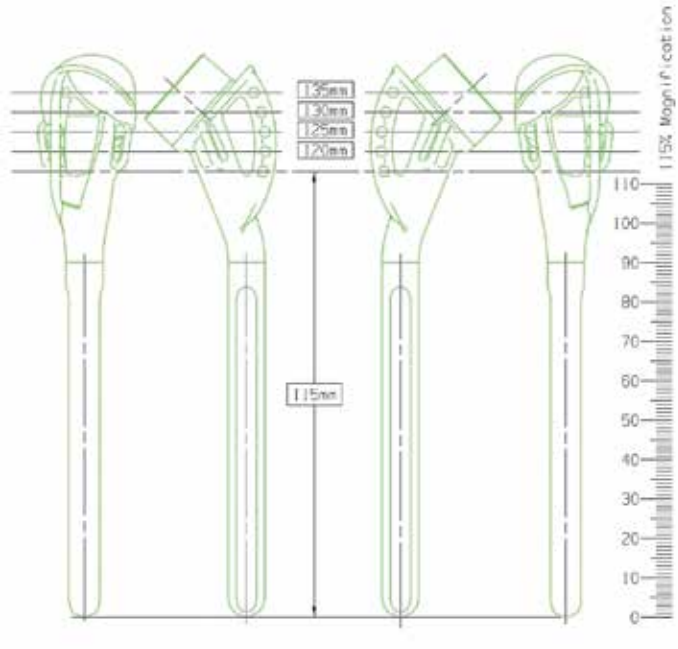
PRE-OPERATIVE PLANNING

Establishing the appropriate humeral head height and humeral length is a challenge in reconstructing four-part proximal fractures. The most common pre-operative method to evaluate humeral head height in the fractured shoulder is by comparison to the contralateral humerus in an A/P radiograph.

Once the appropriate head height is established, mark the A/P radiograph with the anticipated location of the humeral head using the Equinoxe surgical templates *(Figure 1)*. Define the height level of the humeral stem relative to the fracture line. The graduated markings on the template should be used to match those on the stem trial to establish the final height. Additionally, assess the appropriate stem diameter relative to the canal diameter; each stem has a 1mm circumferential cement mantle.

PATIENT POSITIONING

The patient should be placed on an operating table in a supine position. The head of the operating table should be elevated approximately 30 degrees in a modified beach chair position. A small bolster is placed behind the involved scapula. The patient should be moved to the side of the table so that



Left Right

Figure 1
Determining height pre-operatively using Equinoxe Surgical Templates

the upper extremity can be placed into maximum extension without obstruction by the operating table. Alternatively, a Captain's chair or similar positioning device can be used for proper patient positioning. The patient should be secured to the operating table to minimize any changes in position intra-operatively. The entire upper extremity should be prepped and draped to allow full mobility during the procedure.

SURGICAL APPROACH

A straight deltopectoral incision is made beginning just lateral to the tip of the coracoid process and extending distally and laterally to the insertion of the deltoid. The subcutaneous tissues are divided and medial and lateral flaps are elevated to expose the deeper muscular layers.

The deltopectoral interval is identified by localization of the cephalic vein. The cephalic vein is usually retracted laterally with the deltoid muscle. In some instances the cephalic vein is more easily retracted medially with the pectoralis major. In either case, care should be taken to preserve the cephalic vein throughout the procedure.

The subdeltoid space is mobilized, as is the pectoralis major. The conjoined tendon muscles are identified and the clavipectoral fascia is divided at the medial edge of the conjoined tendon muscles. The fracture hematoma is usually evident after dividing the clavipectoral fascia. The conjoined tendon muscles and the pectoralis major are retracted medially and the deltoid is retracted laterally. This can be most easily accomplished with the use of a self-retaining type of retractor. After the fracture hematoma has been evacuated, the deeper structures can be visualized. The biceps tendon should be identified and tagged with a suture. The biceps tendon provides an orientation to the greater and lesser tuberosities.

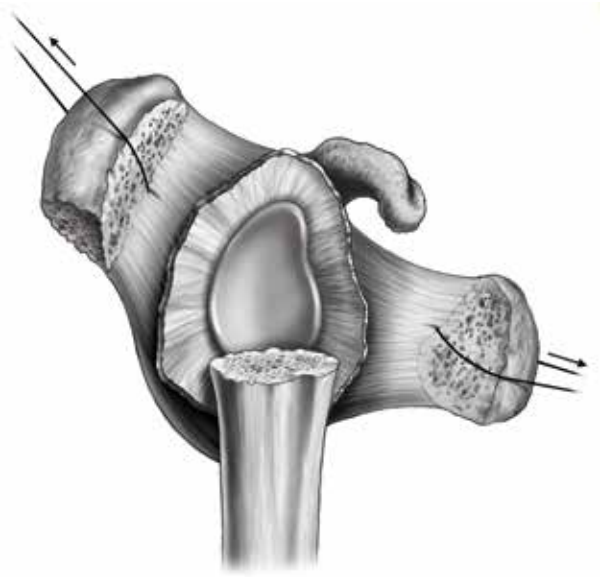


Figure 2
Tuberosity Identification and Mobilization

The lesser tuberosity is located medial to the biceps tendon and the greater tuberosity is located superiorly and laterally. Each tuberosity should be tagged with a #2 suture for easier mobilization. These sutures should be placed at the tendon insertion site because this is generally the most secure area; placement of the sutures through the tuberosity itself can result in fragmentation. The lesser tuberosity is mobilized and retracted medially while the greater tuberosity is retracted laterally and superiorly to allow visualization of the articular segment *(Figure 2)*.

In four-part fractures, the articular segment is generally devoid of soft-tissue attachments and is easily removed. The coracoacromial ligament should be identified at its coracoid attachment and followed to its acromial attachment. When possible, preserve the ligament because of its potential contribution to anterior-superior stability.

With the articular segment removed and the tuberosities retracted, the glenoid articular surface should be inspected. In most situations, the

articular surface of the glenoid is intact. It should be visualized to confirm the absence of pre-existing degenerative changes or acute injury. The axillary nerve can usually be palpated at the anterior-inferior aspect of the glenoid. Continuity of the axillary nerve can be confirmed by the "tug test", which consists of palpation of the nerve as it comes around the humeral neck on the underside of the deltoid and as it passes inferior to the glenoid. A gentle back and forth "tugging" motion confirms its continuity. At this point, the humerus should be placed in extension to expose the proximal portion of the humeral shaft.

HUMERAL PREPARATION

Sequentially ream the intramedullary canal beginning with the 8mm **Fracture Straight Reamer,** until endosteal cortical contact is achieved *(Figure 3)*. To avoid over reaming, keep in mind the anticipated stem diameter based on pre-operative templating. The canal should be reamed to the depth specified by the laser etching, which corresponds to the height established during the templating.

The use of a cement restrictor is based on personal preference; however, an appropriately sized cement restrictor will improve distribution. If a cement restrictor will be used, it is advantageous to place the cement restrictor in the humeral canal after reaming and before the **Fracture Stem Positioning Device** is attached to the humerus to avoid interference with the K-wires.

Note: *Reaming to the 115mm laser mark will ensure adequate depth if desired height was difficult to determine pre-operatively.*

Fracture Stem Trialing

Select the **Fracture Stem Trial** based on the last Reamer used. Ensure that the appropriate stem side is chosen (e.g. "Right" or "Left").

Retroversion - Distal Portion of Bicipital Groove Visible

Retroversion is established by aligning the anterior-lateral fin of the Fracture Stem Trial with the posterior aspect of the distal bicipital groove *(Figure 4)*. Computational analysis of data from our anatomic study of cadaveric humeri demonstrated that placing the fin in the posterior aspect of the distal bicipital groove established retroversion as accurately as the traditional technique of using a pre-selected fixed angle relative to the epicondylar axis.[1]

Figure 3
Straight Reamer Scale

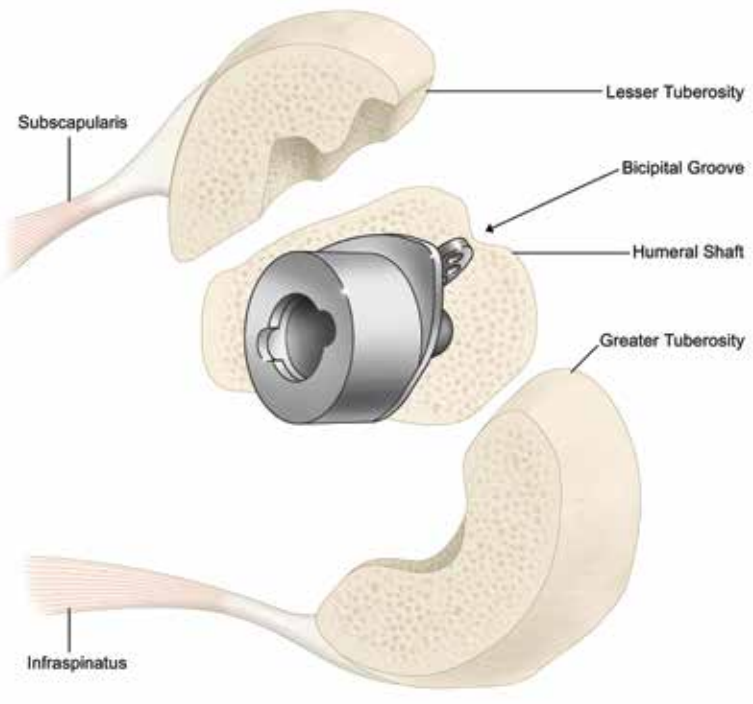


Figure 4
Establish version by aligning the anterior-lateral fin with the distal bicipital groove

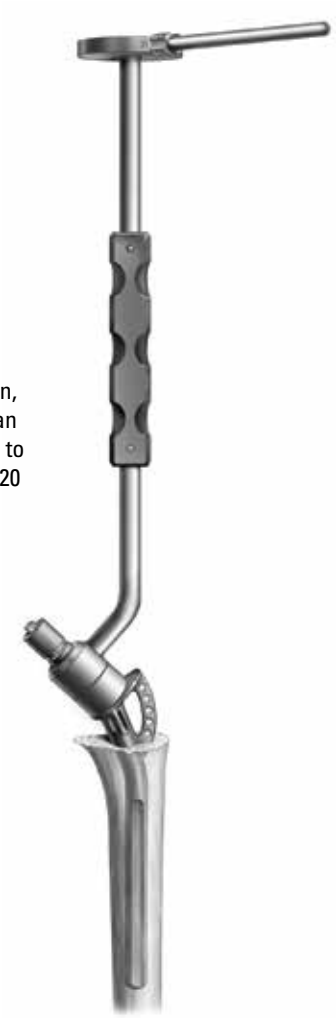


Figure 5
As a visual check of version, the Retroversion Handle can be aligned with the forearm to place the Humeral Stem in 20 degrees of retroversion

Figure 6
The Fracture Stem Positioning Device maintains the surgeon's desired stem height during trial reduction

Retroversion - Distal Portion of Bicipital Groove Not Visible

Typically, the distal portion of the bicipital groove is visible but in cases when it is not, the standard technique of retroverting the implant at 20 degrees relative to the forearm should be used. In this case, the surgeon must attach the **Fracture Stem Inserter** to the Fracture Stem Trial and screw in the **Retroversion Handle** as shown in Figure 4. By aligning the **Retroversion Handle** with the forearm, the **Fracture Stem Trial** will be placed in 20 degrees of retroversion *(Figure 5)*. A mark should be placed on the humeral cortex that corresponds to the anterior-lateral fin of the implant to maintain 20 degrees of retroversion during implantation.

Humeral Stem Height

Place the Fracture Stem Trial into the intramedullary canal at the desired height as determined pre-operatively (e.g. templating contralateral shoulder) or based on the surgeon's intra-operative judgment (see "Tips for Establishing Height Intra-Operatively"). Select the Fracture Stem Positioning Device that corresponds to the size of the Fracture Stem Trial and slide the two pins through the top and bottom suture holes in the anterior-lateral fin of the Fracture Stem Trial. Then place two K-wires (0.062mm) into the humeral shaft to stabilize the Fracture Stem Positioning Device to the bone. The goal is to secure the K-wires in the cortical bone so choose the widest holes that still align with the humerus. Selecting a middle row allows the surgeon to make +/- 4mm height adjustments during the trial reduction by sliding the Fracture Stem Positioning Device off the K-wires and repositioning it *(Figure 6)*.

Tips for Establishing Height Intra-Operatively

- PULL-DOWN TEST — With **Humeral Head Trial** in place, pull arm distally and the top of the head should be at the top of the glenoid
- FINGER TEST — One finger should fit between the greater tuberosity and the acromion
- Piece back the tuberosities to snugly fit under the Humeral Head
- If there is no medial bone comminution and no metaphyseal bone on the head fragment, then the calcar of the Humeral Stem can be placed directly on this medial bone, which will then determine head height.

Humeral Head Trial

As a starting point, choose a Humeral Head Trial based on the size of the patient's anatomic Humeral Head. The eccentric position of the Humeral Head should be chosen based on the anatomy and/or soft tissue tension as assessed during trial reduction of the tuberosities.

Trial Reduction

Trial reduction is a critical part of the procedure because it defines the parameters needed to obtain a stable construct. After the Humeral Head is reduced onto the glenoid, the greater and lesser tuberosities are pulled into position. The biceps tendon is allowed to fall between the tuberosities. Traction on the tuberosity sutures not only maintains the tuberosities in position, but also provides a more accurate assessment of stability. Self-retaining retractors should be relaxed when assessing soft-tissue tension.

Assessment of posterior, inferior and anterior stability should be performed by translating the Humeral Head in each direction. Up to 50 percent of posterior and inferior translation of the Humeral Head on the glenoid is acceptable; however, anterior translation should not exceed 25 percent. If translation is greater, the position of the Humeral Stem should be re-evaluated to confirm that it has not subsided or rotated within the canal.

Varying the thickness of the Humeral Head provides the ability to optimize stability and range of motion *(Figure 7)*. If soft-tissue laxity is excessive, a taller Humeral Head may be needed. Conversely, if soft-tissue tension is excessive, a shorter Humeral Head is chosen. In either situation, repeat assessment of stability is required to confirm that the proper components and position have been chosen. When the proper position and component size are confirmed, the trial prosthesis should be removed.

Cementing the Fracture Stem

To remove the Fracture Stem Trial, leave the Fracture Stem Positioning Device attached to the humerus and slide the holding pins out of the suture holes in the anterior-lateral fin.

Two drill holes are placed through the humeral cortex into the intramedullary canal. These holes should be placed approximately 1.5 to 2cm distal to the level of the surgical neck, and adjacent to the bicipital groove. Two #5 non-absorbable sutures are passed through one drill hole into the intramedullary canal and then out through the second drill hole *(Figure 8 and page 12)*. These vertical sutures are used for tuberosity fixation. The canal is then irrigated copiously and any loose cancellous bone removed.

Formal cement pressurization is avoided to decrease the possibility of humeral-shaft fracture. The intramedullary canal should be packed with a sponge to obtain adequate drying before cementing. Cement is mixed and injected into the canal with a cement gun.

Humeral Head Thickness (mm)	Humeral Head Diameter (mm)					
	38	41	44	47	50	53
Short	16	16	17	18	19	20
Tall	19	20	21	22	23	24
Expanded				26	27	28

Figure 7
Humeral Head Scope

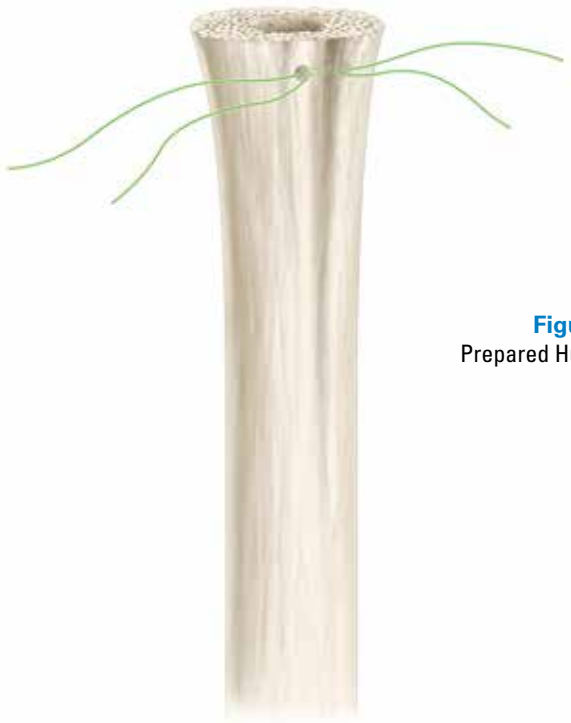


Figure 8
Prepared Humerus Shaft

Figure 9
The Fracture Stem Positioning Device enables the final prosthesis to be positioned at the same height determined during trialing and maintains the desired height during cement polymerization

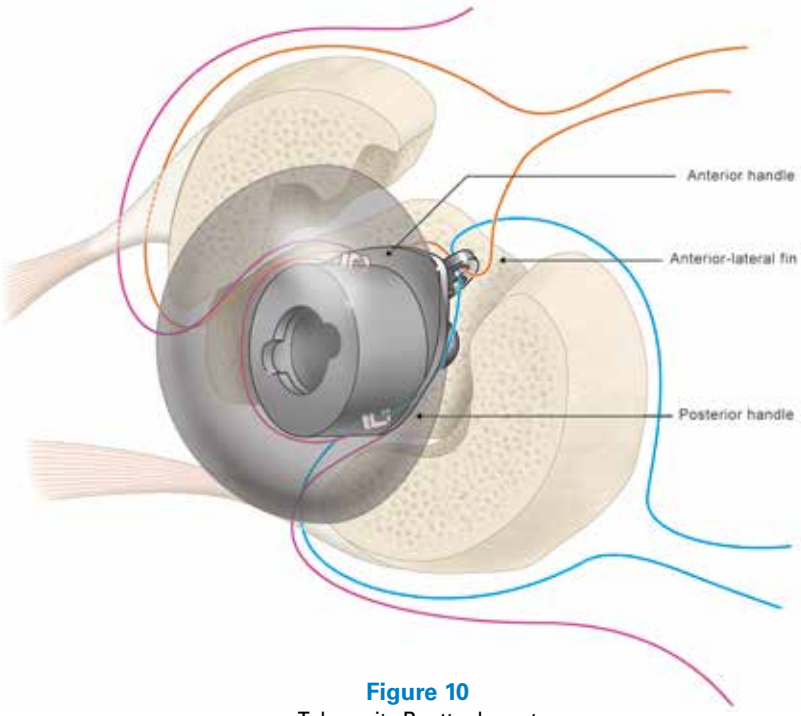


Figure 10
Tuberosity Reattachment

Insert the final prosthesis into the canal and insert the Fracture Stem Positioning Device's two holding pins through the top and bottom holes of the stem's anterior-lateral fin *(Figure 9)*. Ensure the two sutures in the humeral shaft remain mobile and that no cement hardens in the posterior suture handle. This will ensure that the prosthesis is inserted at the same height and version as the Fracture Stem Trial.

When the cement is hardened, make certain the taper is dry and free of any debris. The final Humeral Head component is placed on the Humeral Stem in the same orientation established in the trialing phase. Impact the Humeral Head using the **Impactor** directly in line with the taper to ensure proper engagement of the Morse taper.

Alternatively, the surgeon may want to pass the sutures through the greater tuberosity, then the posterior handle and lateral fin prior to placing the Humeral Head as this gives easier access.

Tuberosity Fixation

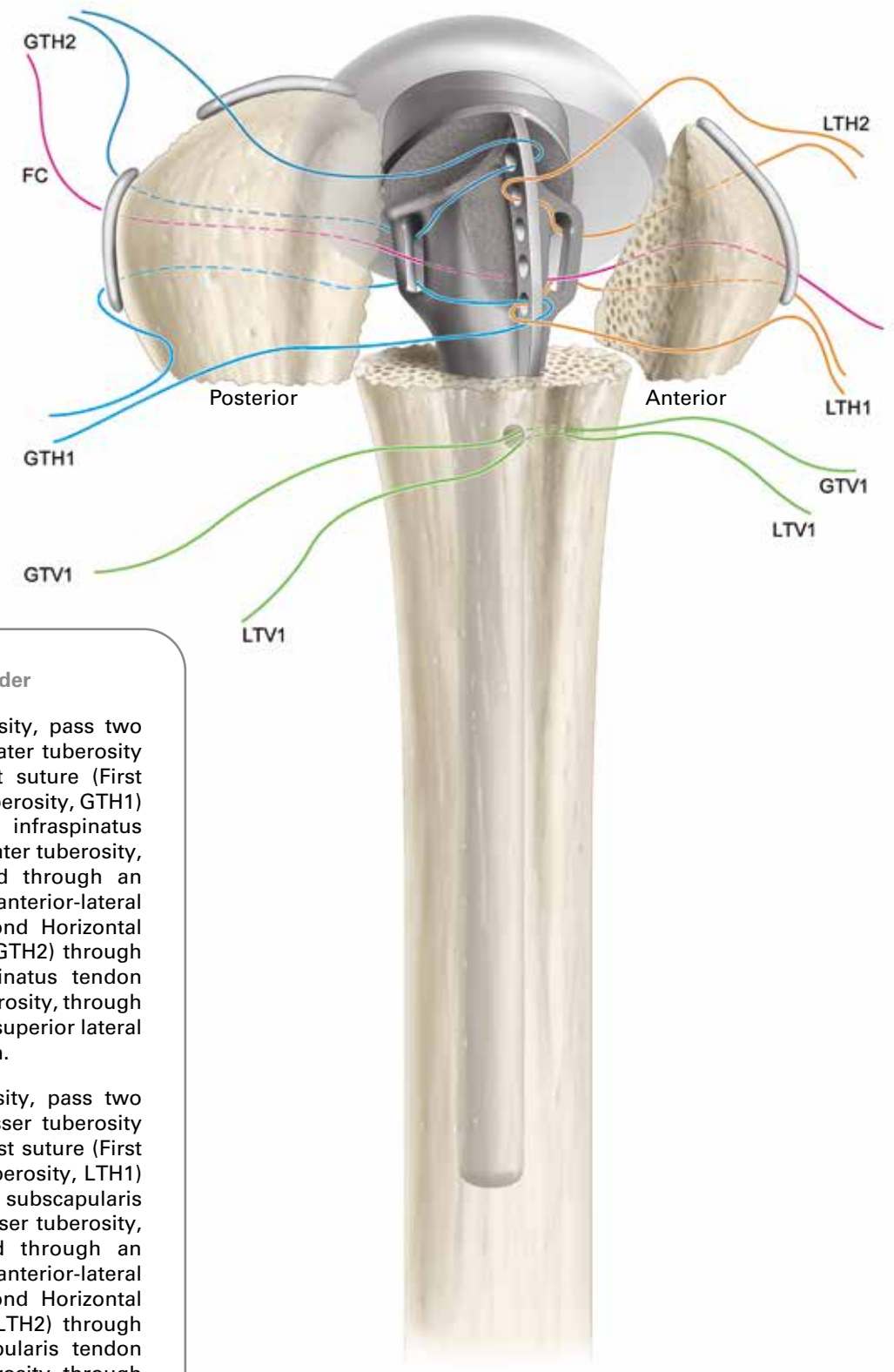
Fixation of the tuberosities to the prosthesis and the shaft is critical to the success of the procedure. Proper tuberosity reattachment and secure fixation will enhance the probability of a successful outcome in terms of pain relief, range of motion and overall function.

A grafting window is provided in the anterior-lateral fin to allow tuberosity apposition. Apply cancellous bone from the Humeral Head between the shaft and the tuberosities, and between the tuberosities to facilitate healing and a more anatomic reconstruction.

Tuberosity Reattachment

The principles of tuberosity fixation include: (1) two horizontal sutures around each tuberosity to pull the tuberosities to the Humeral Stem *(Figure 10); 2)* placement of one longitudinal suture from the shaft to each tuberosity to bring the tuberosities into a position below the prosthetic articular surface and into contact with the humeral shaft; and 3) one final cerclage suture, which cinches the tuberosities together, and to the Humeral Stem, for added stability.

To secure the tuberosities to the Humeral Stem, we recommend heavy (#5) non-absorbable sutures. Tuberosity reattachment should be performed with the arm in approximately 20 degrees of abduction and neutral flexion.

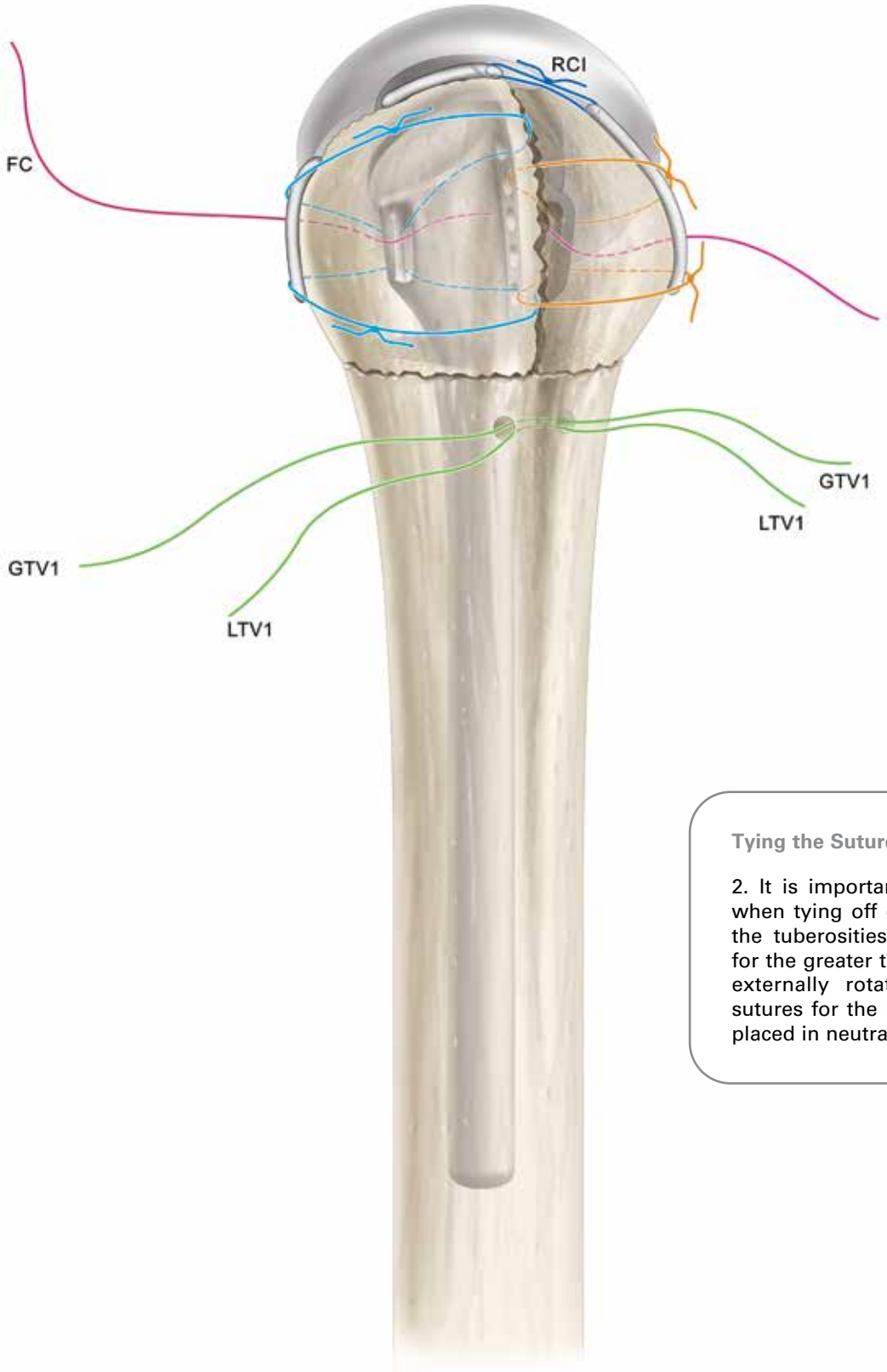


Suturing Technique for Right Shoulder

1a: To reattach the greater tuberosity, pass two horizontal sutures between the greater tuberosity and Humeral Stem. Pass the first suture (First Horizontal suture for the Greater Tuberosity, GTH1) through the lower portion of the infraspinatus tendon where it inserts into the greater tuberosity, through the posterior handle and through an inferior lateral suture hole of the anterior-lateral fin. Pass the second suture (Second Horizontal suture for the Greater Tuberosity, GTH2) through the upper portion of the infraspinatus tendon where it inserts into the greater tuberosity, through the posterior handle and through a superior lateral suture hole of the anterior-lateral fin.

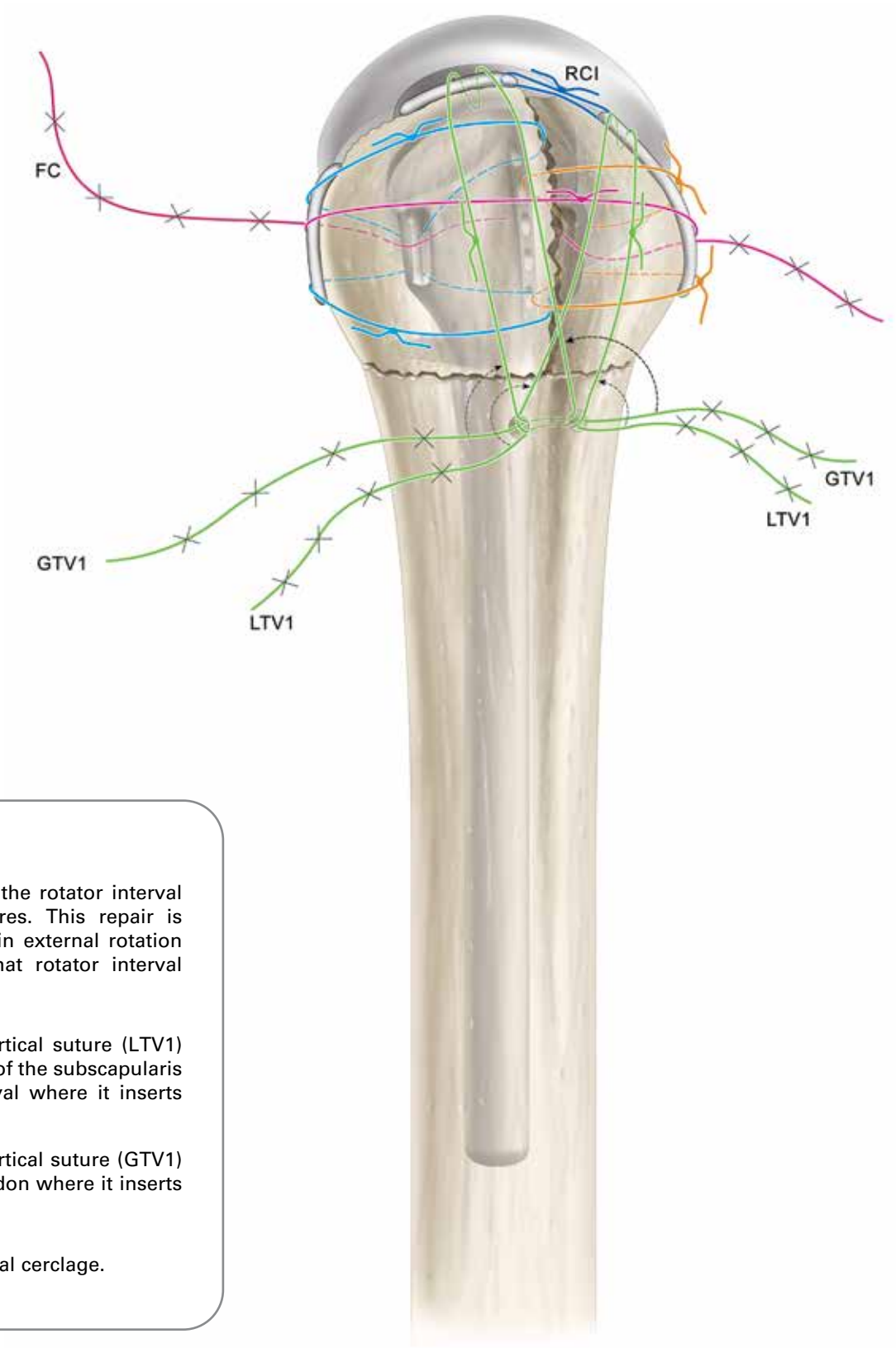
1b: To reattach the lesser tuberosity, pass two horizontal sutures between the lesser tuberosity and the Humeral Stem. Pass the first suture (First Horizontal suture for the Lesser Tuberosity, LTH1) through the lower portion of the subscapularis tendon where it inserts into the lesser tuberosity, through the anterior handle and through an inferior lateral suture hole of the anterior-lateral fin. Pass the second suture (Second Horizontal suture for the Lesser Tuberosity, LTH2) through the upper portion of the subscapularis tendon where it inserts into the lesser tuberosity, through the anterior handle and through a superior suture hole of the anterior-lateral fin.

1c: Next, pass the final cerclage (FC) through the middle of the infraspinatus tendon, through the posterior handle and around the medial portion of the Humeral Stem. Next, pass the final cerclage (FC) through the anterior handle and through the middle of the subscapularis tendon.



Tying the Sutures

2. It is important to balance the applied-tension when tying off each suture so as not to displace the tuberosities. First, tie the horizontal sutures for the greater tuberosity when the arm is slightly externally rotated. Second, tie the horizontal sutures for the lesser tuberosity when the arm is placed in neutral rotation.



Tying the Sutures (continued)

2a: Closure includes repair of the rotator interval with #2 non-absorbable sutures. This repair is performed with the humerus in external rotation to decrease the possibility that rotator interval closure will restrict rotation.

2b: Next, pass and tie the vertical suture (LTV1) through the top upper portion of the subscapularis tendon near the rotator interval where it inserts into the lesser tuberosity.

2c: Finally, pass and tie the vertical suture (GTV1) through the supraspinatus tendon where it inserts into the greater tuberosity.

2d: Once completed, tie the final cerclage.

Final Stable Reconstruction

When the tuberosity fixation is completed, the stability of the fixation should be carefully assessed. Range of motion in forward elevation, external rotation, internal rotation and abduction should be performed to determine the specific limits of motion that will be allowed in the post-operative rehabilitation program.

Depending on surgeon preference, a drain may be placed deep into the deltopectoral interval and brought out through the skin distally and laterally. The deltopectoral interval is repaired with an absorbable suture, as is the subcutaneous tissue. Skin closure can be performed with either sutures or staples. A sterile dressing is applied and the upper extremity is placed in a sling.

Radiographs in the operating room are strongly recommended. These should include an A/P view of the shoulder with the humerus in internal rotation (on the chest) and maximum external rotation as defined by the intra-operative assessment. An axillary view is also obtained. These radiographs provide excellent visualization of the position of the prosthesis as well as the position of the tuberosities

POST-OPERATIVE REHABILITATION

It is recommended to initiate the rehabilitation program on the same day as surgery or on post-operative day one. All patients begin active range of motion of the elbow, wrists and hand, and passive range of motion of the shoulder. External rotation should be limited based upon the intra-operative evaluation; internal rotation is allowed to the chest. This is important to avoid any excess stress on the tuberosity repair that could compromise healing.

Exercises are continued for six to eight weeks. Radiographs are obtained approximately two weeks following surgery to confirm the position of the tuberosities. Additional radiographs are obtained at six to eight weeks following surgery to assess the degree of tuberosity healing. If tuberosity healing is sufficient, the sling is discontinued and an active range-of-motion program is begun. The patient is encouraged to use the upper extremity for activities of daily living. Passive range-of-motion is continued with gentle stretching to increase overall range. At eight weeks following surgery, isometric deltoid and internal and external rotator strengthening exercises are begun. Vigorous strengthening exercises are not allowed until active forward elevation of at least 90 degrees is obtained. Most patients can expect continued improvement during the first year following surgery, although most recovery will occur during the first six months.

IMPLANT SCOPE

Catalog Number	Part Description
Fracture Stems	
304-01-07	Equinoxe, Humeral Stem, Fracture, Left, 7mm
304-01-10	Equinoxe, Humeral Stem, Fracture, Left, 9.5mm
304-01-12	Equinoxe, Humeral Stem, Fracture, Left, 12mm
304-02-07	Equinoxe, Humeral Stem, Fracture, Right, 7mm
304-02-10	Equinoxe, Humeral Stem, Fracture, Right, 9.5mm
304-02-12	Equinoxe, Humeral Stem, Fracture, Right, 12mm
304-03-07	Equinoxe, Humeral Long Stem, Fracture, Left, 7x200mm
304-04-07	Equinoxe, Humeral Long Stem, Fracture, Right, 7x200mm

Humeral Heads	
310-01-38	Equinoxe, Humeral Head, Short, 38mm
310-01-41	Equinoxe, Humeral Head, Short, 41mm
310-01-44	Equinoxe, Humeral Head, Short, 44mm
310-01-47	Equinoxe, Humeral Head, Short, 47mm
310-01-50	Equinoxe, Humeral Head, Short, 50mm
310-01-53	Equinoxe, Humeral Head, Short, 53mm
310-02-38	Equinoxe, Humeral Head, Tall, 38mm
310-02-41	Equinoxe, Humeral Head, Tall, 41mm
310-02-44	Equinoxe, Humeral Head, Tall, 44mm
310-02-47	Equinoxe, Humeral Head, Tall, 47mm
310-02-50	Equinoxe, Humeral Head, Tall, 50mm
310-02-53	Equinoxe, Humeral Head, Tall, 53mm
310-03-47	Equinoxe, Humeral Head, Expanded, 47mm
310-03-50	Equinoxe, Humeral Head, Expanded, 50mm
310-03-53	Equinoxe, Humeral Head, Expanded, 53mm

INSTRUMENT LISTING

Catalog Number	Part Description
301-03-10	Retroversion Handle
301-07-01	Mallet
305-01-07	Equinoxe, Humeral Stem Trial, Fracture, Left, 7mm
305-01-10	Equinoxe, Humeral Stem Trial, Fracture, Left, 9.5mm
305-01-12	Equinoxe, Humeral Stem Trial, Fracture, Left, 12mm
305-02-07	Equinoxe, Humeral Stem Trial, Fracture, Right, 7mm
305-02-10	Equinoxe, Humeral Stem Trial, Fracture, Right, 9.5mm
305-02-12	Equinoxe, Humeral Stem Trial, Fracture, Right, 12mm

INSTRUMENT LISTING

Catalog Number	Part Description
305-05-08	Fracture Straight Reamer, 8mm
305-05-11	Fracture Straight Reamer, 10.5mm
305-05-13	Fracture Straight Reamer, 13mm

305-07-10	Fracture Stem Inserter/Extractor

305-99-07	Fracture Stem Positioning Device, 7mm
305-99-10	Fracture Stem Positioning Device, 9.5mm
305-99-12	Fracture Stem Positioning Device, 12mm

311-01-38	Humeral Head Trial, Short, 38mm
311-01-41	Humeral Head Trial, Short, 41mm
311-01-44	Humeral Head Trial, Short, 44mm
311-01-47	Humeral Head Trial, Short, 47mm
311-01-50	Humeral Head Trial, Short, 50mm
311-01-53	Humeral Head Trial, Short, 53mm
311-02-38	Humeral Head Trial, Tall, 38mm
311-02-41	Humeral Head Trial, Tall, 41mm
311-02-44	Humeral Head Trial, Tall, 44mm
311-02-47	Humeral Head Trial, Tall, 47mm
311-02-50	Humeral Head Trial, Tall, 50mm
311-02-53	Humeral Head Trial, Tall, 53mm
311-03-47	Humeral Head Trial, Expanded, 47mm
311-03-50	Humeral Head Trial, Expanded, 50mm
311-03-53	Humeral Head Trial, Expanded, 53mm

311-05-01	Head Removal Tool

311-07-05	Impactor

311-07-07	Humeral Head Impactor Tip

REFERENCES

1. Angibaud L, Zuckerman JD, Flurin PH, Roche C, Wright T. Reconstructing proximal humeral fractures using the bicipital groove as a landmark. *Clin Orthop Relat Res.* 2007 May;458:168-74.

CE 2797 CE Mark is not valid unless there is a CE Mark on the product label.

For additional device information, refer to the Exactech Equinoxe Shoulder System – Instructions for Use.

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