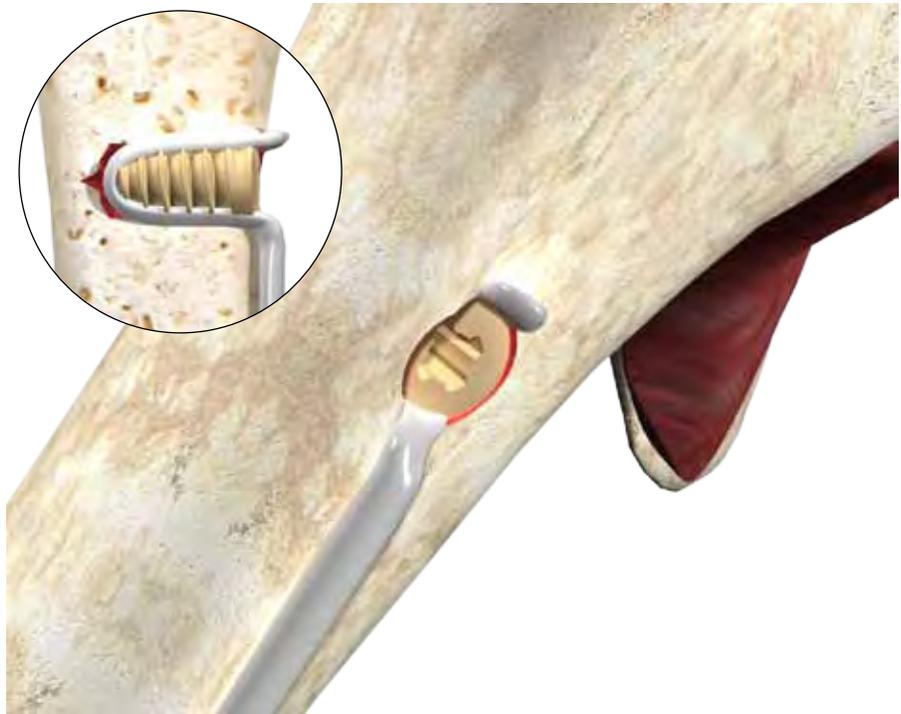


BICEPTOR[®] Tenodesis System

Sub-Pectoral Biceps Tenodesis

A Shoulder Series Technique Guide

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Sub-Pectoral Biceps Tenodesis

Introduction

The Smith & Nephew BICEPTOR® Tenodesis System was created to simplify the biceps tenodesis procedure. The BICEPTOR system does not require whipstitching the tendon, reducing the steps for either an all-arthroscopic repair or mini-open repair, both using a BIOSURE® PK Interference Screw for fixation.

Arthroscopic Technique

Perform an initial arthroscopic examination of the shoulder and visualize the long head biceps tendon. Once the biceps pathology is identified and a decision is made to proceed with biceps tenodesis, place an initial tagging suture in the tendon. Use a needle to place the tagging suture percutaneously through the rotator interval, into the glenohumeral joint, and then through biceps tendon.

Next, pass a monofilament suture through the needle and retrieve it from the anterior portal (Figure 1). Retrieve the opposite end of the suture through the same portal, and use a hemostat to secure the sutures for later use.

Use a basket punch or arthroscopic scissors to transect the tendon near its insertion on the superior labrum and supraglenoid tubercle (Figure 2). With the tendon released, use an oscillating shaver to debride any remaining prominent stump of tendon tissue. Complete the remainder of the arthroscopic shoulder procedure.

Open Technique

Patient Preparation

For the open portion of the procedure, place the patient in a modified beach chair position with the head of the bed elevated approximately 30°. Take care to appropriately position the neck and avoid extremes of flexion and extension. Prep the arm and shoulder to allow changes in arm position during the procedure. Alternatively, if the initial arthroscopy is performed in a lateral position, the patient can be turned slightly supine to the operative side to allow access to the operative site.

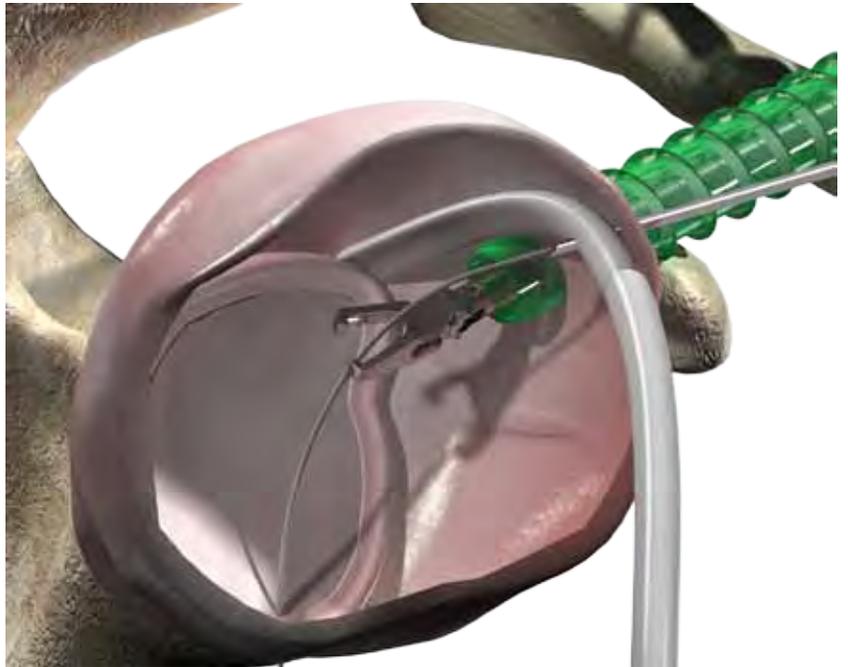


Figure 1

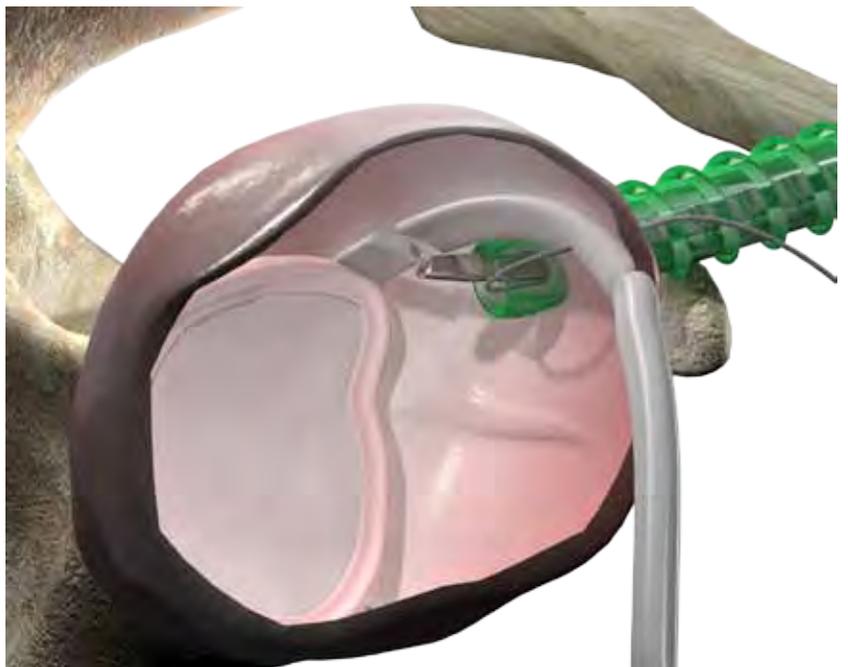


Figure 2



Figure 3

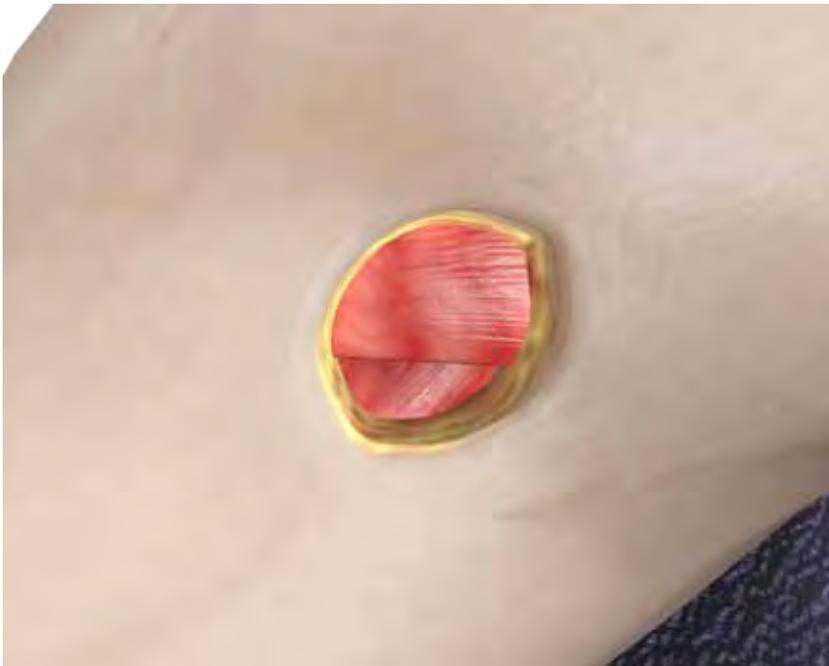


Figure 4

Incision

Make a 4 cm incision beginning at the superior aspect of the axillary fold and running laterally along the medial edge of the biceps muscle (Figure 3). The incision should be centered on the inferior border of the pectoralis major muscle. Carry the incision through the subcutaneous tissue and expose the inferior muscular border of the pectoralis major muscle. Just deep and inferior to the pectoralis, identify the short head biceps muscle belly (Figure 4).

Develop the plane between the pectoralis and short head biceps muscle. Use blunt finger dissection to develop this plane laterally, allowing elevation of the pectoralis muscle. The humeral shaft and bicipital groove can now be palpated.

Place a pointed Homan retractor under the pectoralis muscle and over the lateral border of the humerus, providing superior and lateral retraction of the pectoralis muscle. Facilitate this by placing the arm in slight flexion and internal rotation.

Place a small Homan retractor along the medial aspect of the humerus to define the medial edge of the bone and to protect the medial structures. Take care to avoid excessive medial retraction which may place the musculocutaneous nerve at risk. At this point, the long head biceps tendon can be palpated just medial to the pectoralis tendon insertion on the humeral shaft (Figure 5). Use a curved hemostat to open the tendon sheath.

Remove the tendon from the sheath and groove to allow access to the underlying humeral bone, ensuring that the tagging sutures remain intact through the anterior arthroscopic portal. These sutures, placed through the tendon during the arthroscopic portion of the technique, will provide the means of tensioning the repaired tendon.

Identify the superior border of the pectoralis major insertion, which marks the level for the tenodesis. It is located 1–2 cm distal to the base of the bicipital groove. Use an electrocautery to remove the soft tissue overlying the humerus in this area.

Introduce and place a guide wire through the anterior cortex and into, but not through, the posterior cortex of the humerus (Figure 6). Ensure that the guide wire is placed in a centered position on the humeral shaft. An asymmetric placement of the guide wire may lead to inadvertent reaming of the medial or lateral cortex of the humerus, increasing the risk of fracture. The Smith & Nephew Tendon Fork can be used as a drill guide for the inserting the 2.4 mm guide wire.

Estimate the tendon width and select a 7 mm, 8 mm, or 9 mm reamer and the corresponding 7 mm, 8 mm, 9 mm tendon fork. Experience has shown that for most patients, an 8 mm device is appropriate. In smaller patients, where concern over the width of the humerus versus the size of the drill hole exists, a 7 mm fork can be selected. Alternatively, if the tendon appears large, and does not fit comfortably within the 8 mm tendon fork, a 9 mm fork can be selected.

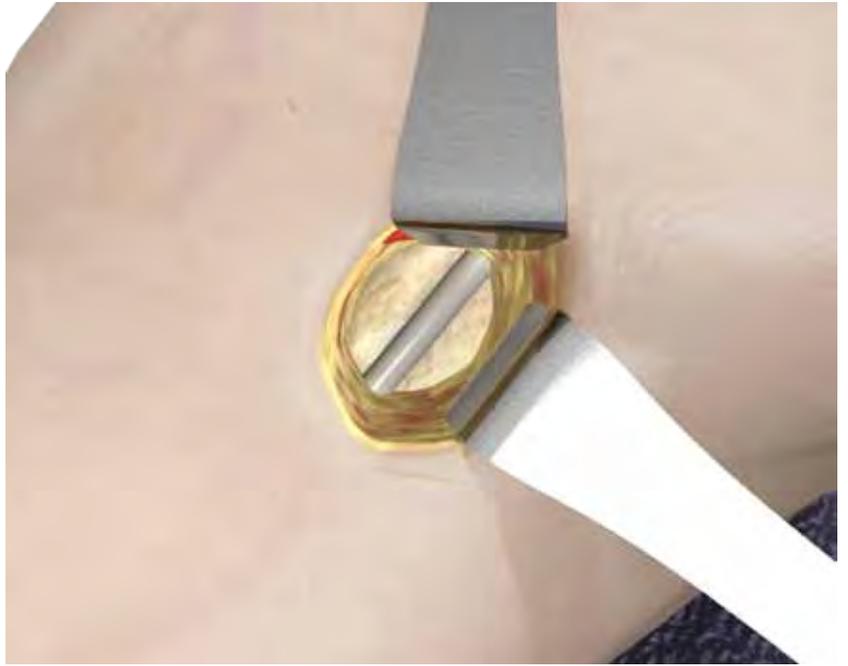


Figure 5



Figure 6



Figure 7

Place the corresponding reamer over the guide wire and drill an unicortical hole through the anterior cortex of the humerus to a depth of 20 mm (Figure 7). Avoid penetration of the posterior cortex of the humerus. Remove the reamer and guide wire. Use an electrocautery device and/or a periosteal elevator to remove any soft tissue from the surrounding edge of the drill hole. **Optional:** Use a corresponding tap to prepare the drill hole for screw insertion.

Use the tagging suture via the anterior arthroscopic portal to tension the biceps tendon. Applying tension should have the effect of centering the tendon over the drill hole. This generally corresponds to a position 1–2 cm proximal to the musculotendinous junction. Maintain appropriate tension to reproduce normal tendon tension and biceps contour.

Use the tendon fork to capture the tendon over the prepared drill hole and drive it into the base of the hole (Figure 8). As the tendon enters the hole, release some of the tension on the proximal sutures to allow the tendon to seat within the base of the hole.

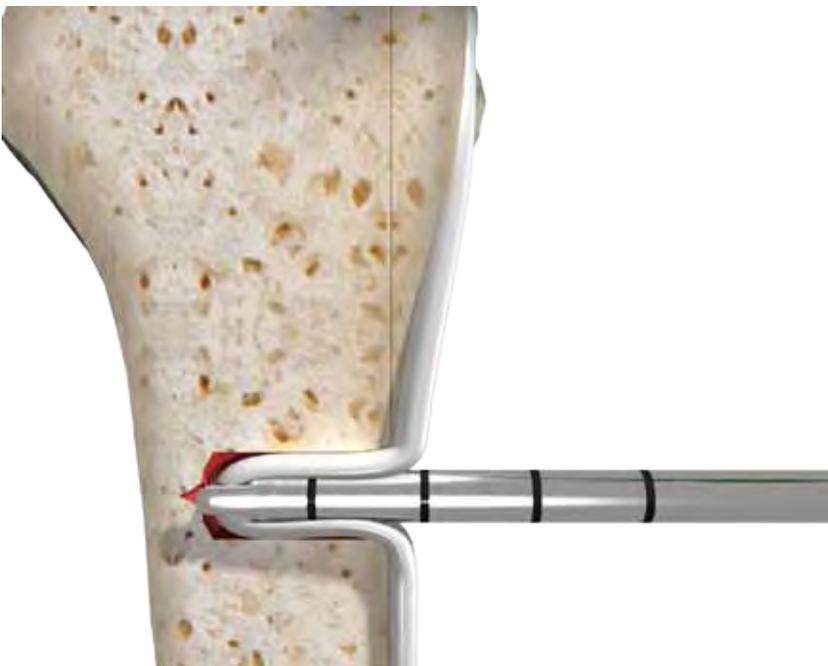


Figure 8

Place a 1.5 mm drill pin through the cannulation in the tendon fork. Gently tap the pin into the posterior cortex to secure the tendon to the base of the hole. To facilitate insertion, place the strike cap on the top of the pin to provide a flat surface for impaction (Figure 9). At this point, release the tension on the proximal tagging suture. Remove the strike cap followed by the tendon fork.

Select the appropriate 7 mm, 8 mm, or 9 mm BIOSURE interference screw that corresponds to the width of the prepared tunnel. Place the screw over the guide wire and advance it until it is flush with the surrounding humeral cortex (Figure 10). Take care to avoid countersinking the screw, as this may compromise fixation.

Remove the guide wire and assess the fixation by placing traction on the tendon. If the guide wire is difficult to extract, replace the strike cap to facilitate removal. Use a knife to remove any excess tendon by cutting the remaining proximal tendon from the superior aspect of the tunnel as it exits the screw-tunnel interface (Figure 10).

Irrigate the wound and remove the retractors, allowing the pectoralis major to cover the tenodesis site. Close the wound using a standard layered closure of both subcutaneous and skin layers.

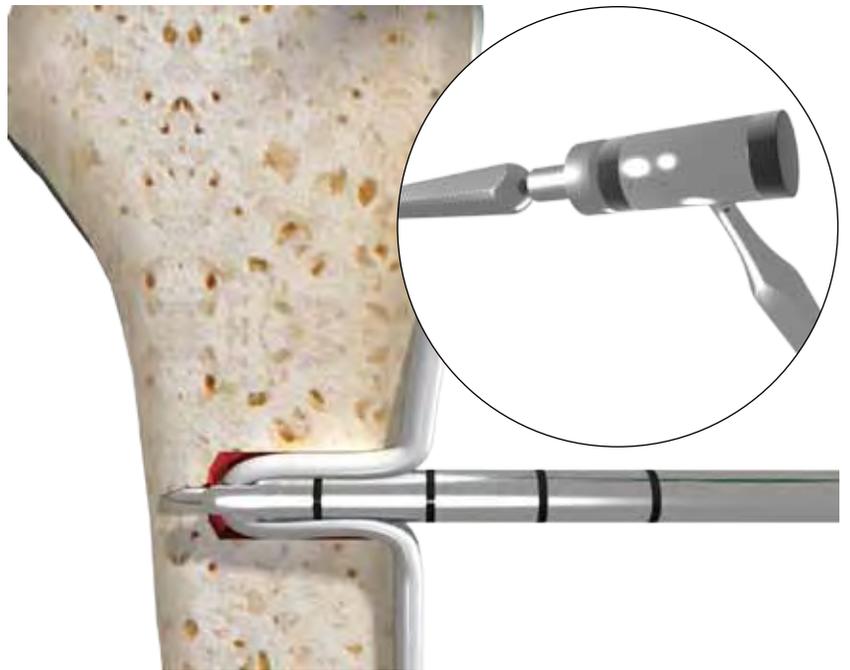


Figure 9

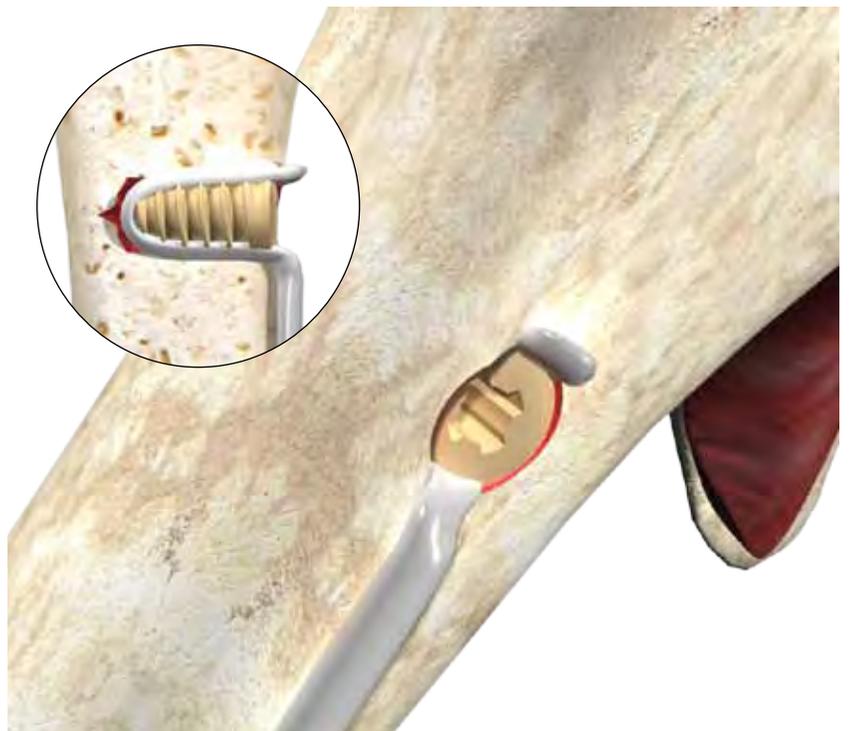


Figure 10

Additional Instruction

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

Ordering Information

To order the instruments used in this technique call +1 800 343 5717 in the U.S. or contact your authorized Smith & Nephew representative.

BICEPTOR[®] Tenodesis Repair Sytem

BICEPTOR Tenodesis Repair Disposable Kits

Kits include a BIOSURE[®] PK Interference Screw, 1.5 mm guide pin, and 2.4 mm guide wire.

REF	Description
72202299	7.0 x 15 mm BICEPTOR Repair Kit
72202300	8.0 x 15 mm BICEPTOR Repair Kit
72202301	9.0 x 15 mm BICEPTOR Repair Kit
72202357	7.0 x 25 mm BICEPTOR Repair Kit
72202358	8.0 x 25 mm BICEPTOR Repair Kit
72202359	9.0 x 25 mm BICEPTOR Repair Kit

REF 72202302 BICEPTOR Tenodesis Instrumentation Set Includes:

REF	Description
72202190	BICEPTOR Driver
72202193	7 mm Tendon Fork
72202192	8 mm Tendon Fork
72202191	9 mm Tendon Fork
72202194	Bi-grip Pin Puller
72202198	7.0 mm Endoscopic Drill XL
72202297	8.0 mm Endoscopic Drill XL
72202298	9.0 mm Endoscopic Drill XL
72202195	7.0 mm BICEPTOR Tap
72202196	8.0 mm BICEPTOR Tap
72202197	9.0 mm BICEPTOR Tap

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