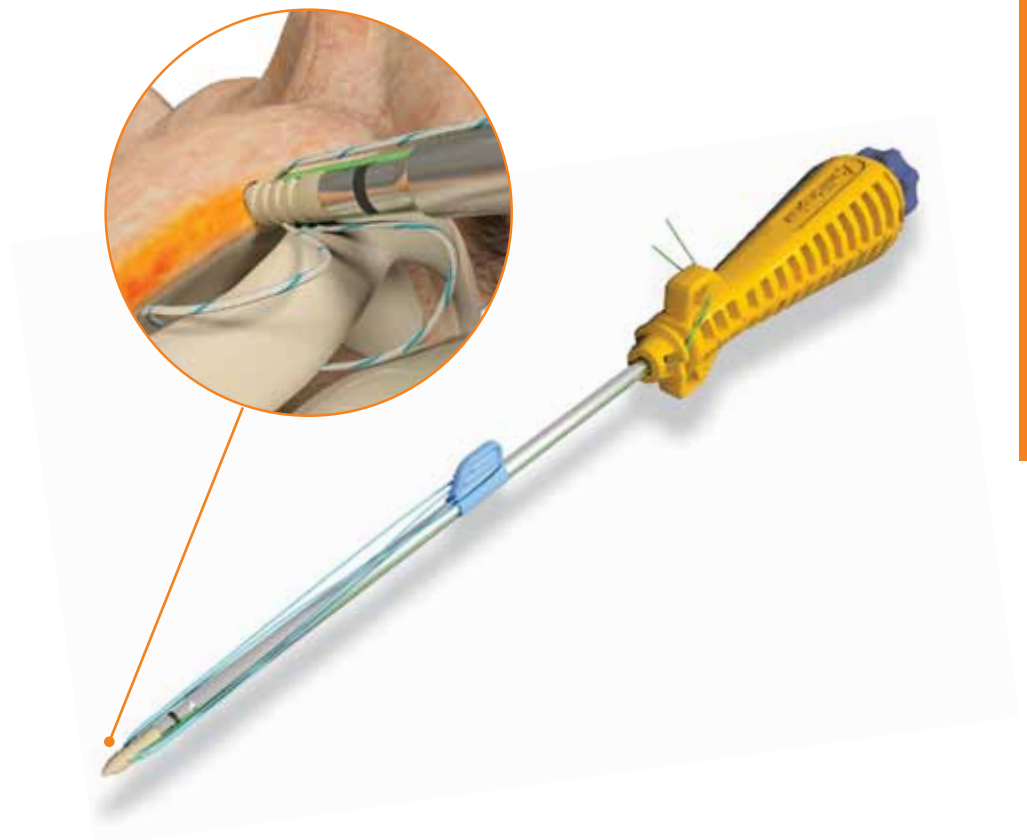


Arthroscopic Hip Labral Repair Using the BIORAPTOR[◇] Knotless Suture Anchor

Hip Series Technique Guide as described by:
Srino Bharam, MD



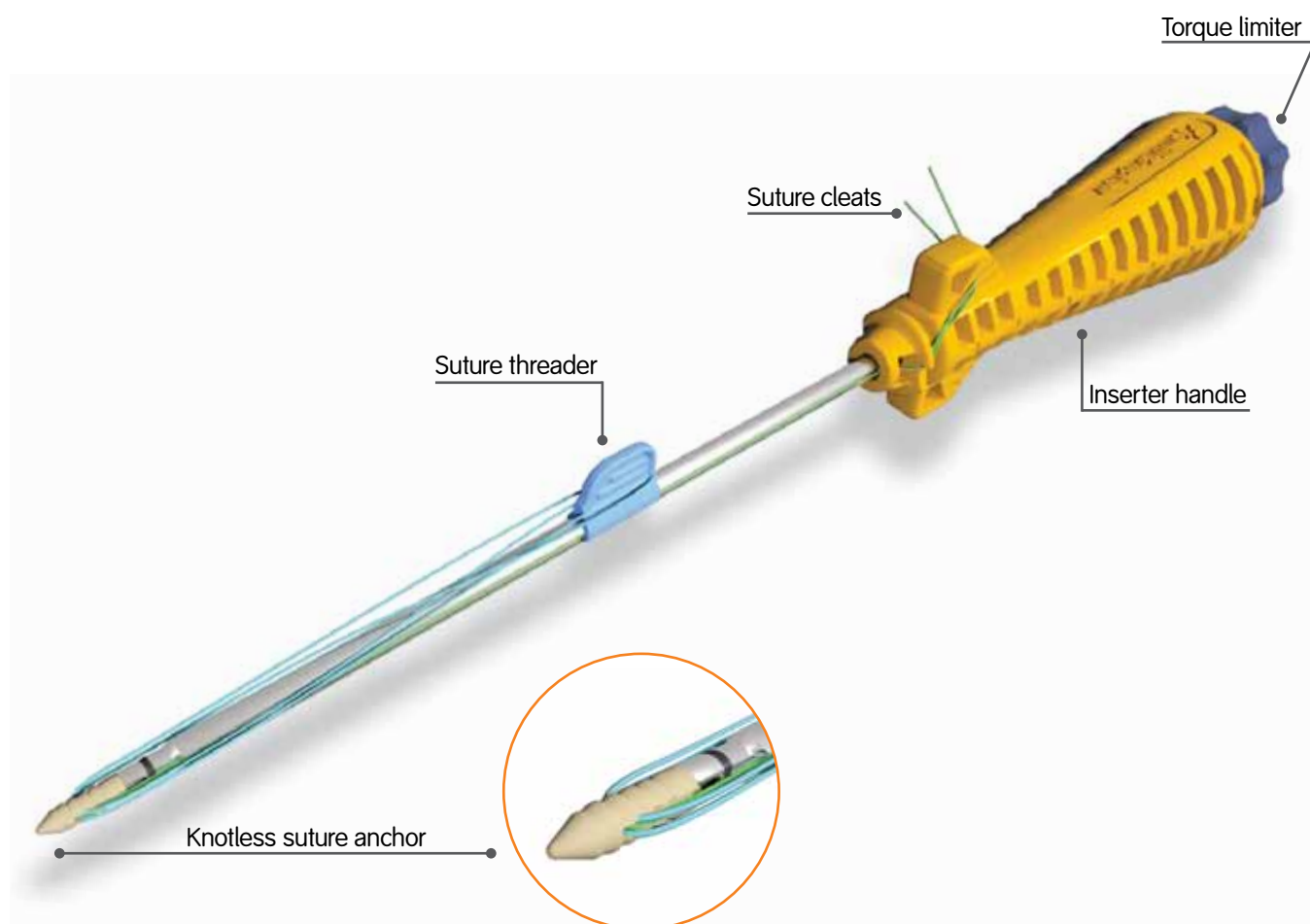
Arthroscopic Hip Labral Repair Using the Smith & Nephew BIORAPTOR[◇] Knotless Suture Anchor

Introduction

The Smith & Nephew BIORAPTOR Knotless Suture Anchor for labral repairs is intended to provide secure fixation of the labrum to the acetabular rim. The anchor's unique design allows capture of suture limbs that are passed through the labrum and secured within the anchor by an inner plug. Suture tension is set after implantation and is independent of anchor depth. This technique offers the surgeon complete control over the amount of suture tension, as well as the desired tissue shift, without knot tying or a knot stack in the joint.

As described by:

Srino Bharam, MD
Sports Medicine/Hip Service
Lenox Hill Hospital
New York, NY
Clinical Assistant Professor
NYU School of Medicine
New York, NY



Patient Preparation

1. Position the patient in either the supine or lateral position on a fracture table or a hip distractor table.
2. Use a padded, extra-wide bolster to protect the perineum.
3. Place both feet in well-padded boots.
4. Position the non-operative leg in slight abduction and neutral rotation.
5. Place the operative leg in slight flexion and internal rotation with neutral abduction.
6. Apply gentle inline traction to the operative hip, with countertraction to the non-operative leg.
7. Using fluoroscopy, confirm joint distraction of approximately 10 mm.

Portal Placement

1. Establish the anterolateral portal first, locating it 1 cm anterior and 1 cm superior to the tip of the greater trochanter.
2. Insert a 17-gauge arthroscopic needle under fluoroscopic guidance through the capsule, avoiding labral and femoral head cartilage.
3. Inject 20–30 cc of normal saline into the needle to confirm pressurized back-flow and intra-articular placement.
4. Insert a nitinol wire through the needle.
5. Place a cannula trochar assembly over the nitinol wire.
6. Perform a diagnostic arthroscopic examination using a 70° arthroscope to assess the location, size and morphology of the labral tear and associated chondral and impingement lesions.
7. Establish the anterior portal approximately 1 cm lateral to the ASIS (anterior superior iliac spine) and in line with the anterolateral portal.
8. Place the needle under direct arthroscopic visualization.
9. Insert a nitinol wire and place a 5.0 mm cannula and trochar assembly over the wire to establish a second portal.

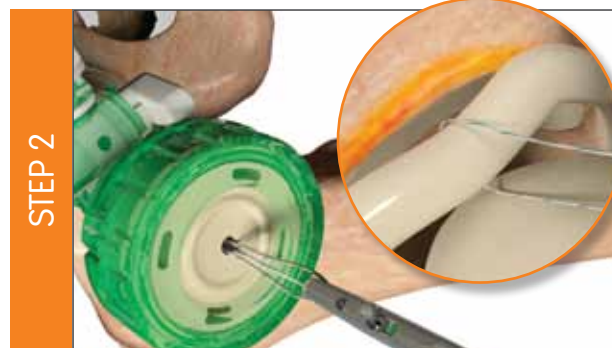
Alternatively, a mid-anterior portal can be used to optimize suture anchor placement. This portal should be placed at a 45° angle and 4–6 cm distal (may vary slightly with patient size) from the anterolateral portal.

Labral Repair Preparation

1. Prepare the acetabular rim for labral repair. A capsulotomy may be performed with a banana blade to improve instrument maneuverability and access to the acetabular rim.
2. Perform capsular elevation off the acetabular rim using arthroscopic shavers and/or flexible radiofrequency probes.
3. For associated pincer-type impingement (anterior acetabular overcoverage), perform acetabular rim trimming with a high speed burr to remove the excessive acetabular overhang. Labral detachment may be completed with a banana blade to facilitate rim resection.
4. If there is associated pincer-type impingement, trim the rim using the high speed burr to remove the excessive acetabular overhang. Complete labral detachment performed with a banana blade may be needed to facilitate rim resection.



1. Using a suture passing device such as an ARTHRO-PIERCE® or ARTHRO-ROUND XL Suture Passer, pass one end of a 40" strand of suture around or through the labrum. This step may be done through a disposable cannula or percutaneously.



2. Using the same device, retrieve the two ends of the suture and bring them outside of the joint. Clamp both limbs of the suture tails to prevent suture slippage.

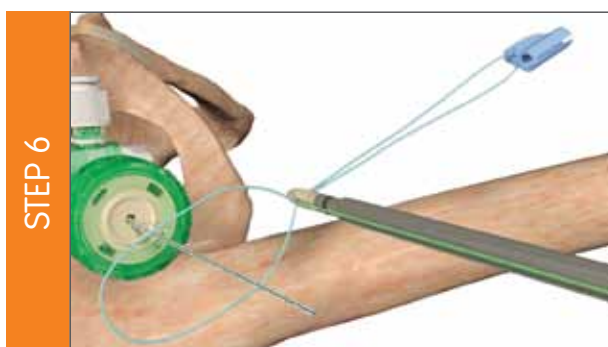


3. Using the proper drill guide and obturator, place the distal tip of the guide onto the bone at the desired implantation site. It is suggested to place the guide 1–2 mm onto the rim of the acetabulum to aid visualization. Remove the obturator.



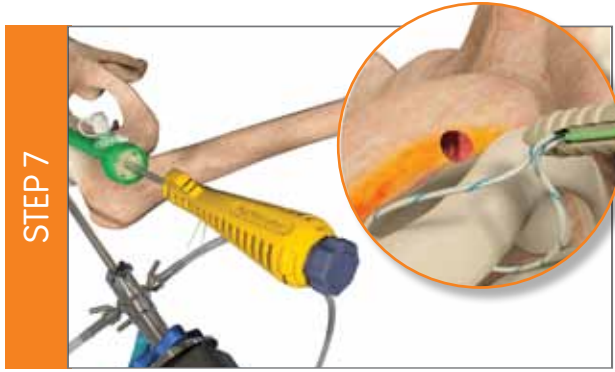
4. While firmly holding the guide in place, use the appropriate drill bit to prepare the insertion site:
 - a. The depth stop on the drill bit will bottom out on the proximal end of the guide when the proper hole depth is reached.
 - b. The wide viewing window on the guide can be used to gauge proper hole depth by advancing the drill bit until the black band on the drill is aligned with the center of the wide viewing window.
5. While holding the guide steady, remove the drill bit from the insertion site by backing the drill bit axially out of the hole.

Note: Bone quality determines which size drill bit to use. Use a 3.0 mm drill bit for predrilling hard bone. In all cases, surgeon judgment should prevail.

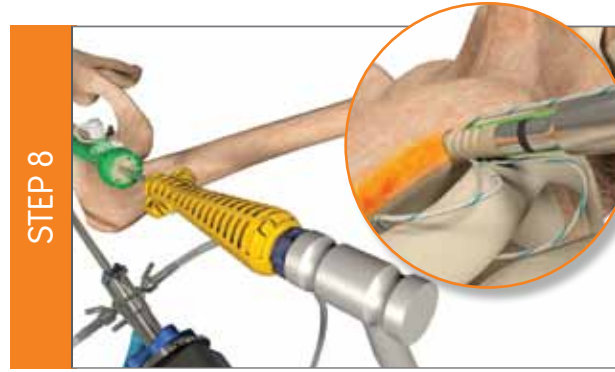


6. Remove the hemostat clamp from the suture tails. Using standard sterile technique, remove the BIORAPTOR® Knotless Suture Anchor from its packaging. While holding the anchor handle, push the suture threader tab forward to release the suture threader loop. Thread the free ends of the suture through the suture-threading loop. Remove the suture threader tab from the shaft of the insertion device, and pull to feed the sutures through the anchor eyelet.

Technique (continued)

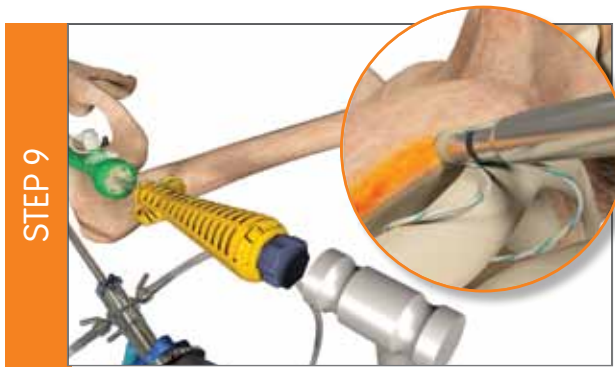


7. Advance the loaded suture anchor into the operative cannula. Leaving some slack in the suture, advance the anchor to the prepared bone site. Do not attempt to tension the suture at this time.

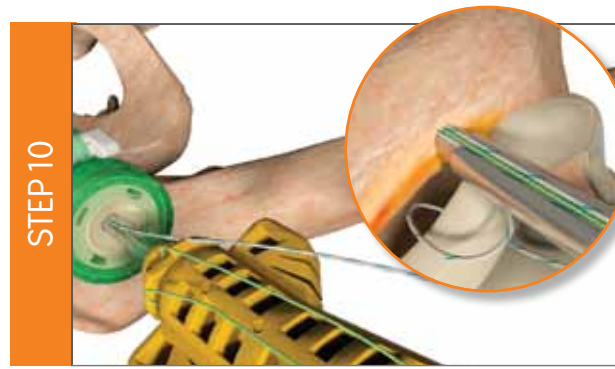


8. Orient the anchor such that the free limb sutures entering the anchor are facing the tissue. Ensure that the sutures are not twisted around the anchor.

Note: Ensure that the anchor is aligned with the drilled hole to achieve proper implantation.

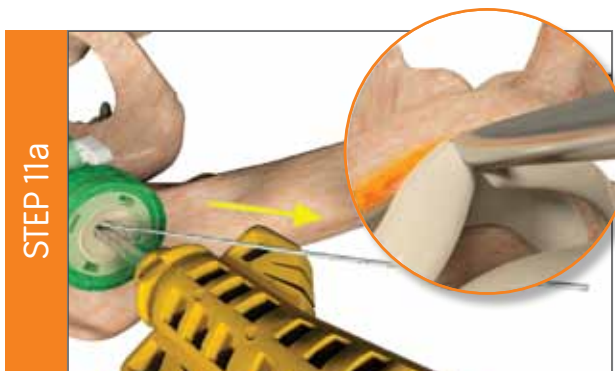


9. Establish and maintain axial alignment of the suture anchor with the prepared insertion site. Place the tip of the anchor into the prepared hole. Use a mallet to tap the inserter handle until the laser mark is flush with the cortical bone. This places the suture anchor approximately 2–3 mm below the bone surface.

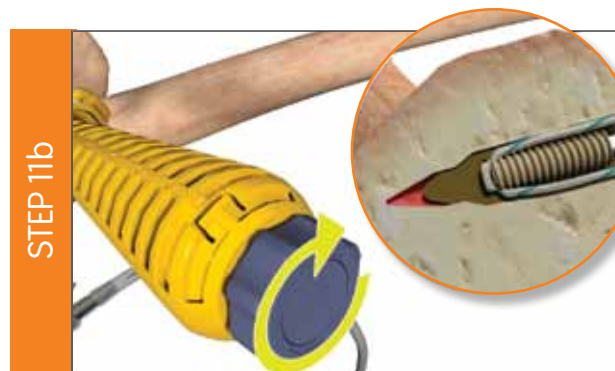


10. Unhook both ends of the retention suture from the inserter cleats and pull one end to remove the suture from the handle. Discard the retention suture.

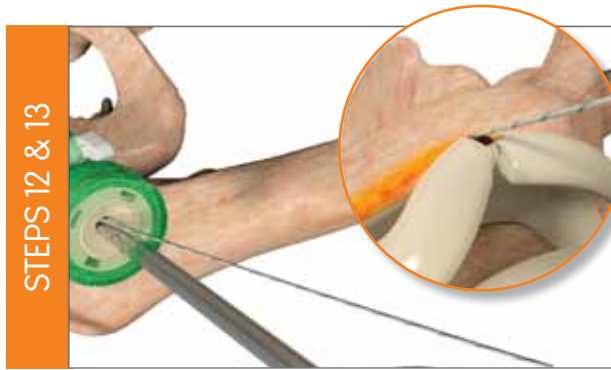
Note: The retention suture must be removed prior to applying tension.



- 11a. Apply tension to the suture and lock the suture. Maintain slight downward pressure on the inserter handle while manually pulling the free suture limb(s) and remove the free ends of the suture(s) from the inserter handle. Manually pull the suture(s), individually or together, to apply the desired tension.



- 11b. If desired, secure the free ends of the suture using the cleats located on the inserter handle. While maintaining slight downward pressure on the inserter, locate the torque limiter on the proximal end of the inserter handle and rotate it clockwise approximately eight turns until several clicks are heard.



12. Slowly disengage the suture anchor from the inserter by pulling straight back or tapping the distal end with a mallet. Do not wiggle the handle to disengage the anchor.
13. Discard the insertion device and cut the excess suture.



14. Repeat with additional anchors until the desired final repair is completed.

Technique Pearls

1. After suture passing, prepare the drill hole in a location that will optimize the desired tissue shift.
 2. To aid suture tensioning, secure one end of the suture into the inserter cleats. Pull the other end to tension the suture. Alternate securing suture ends and tensioning the suture until the desired tension is achieved.
 3. Do not wiggle the inserter handle during removal. Pull it straight back or tap it out with a mallet. The inner driver runs down the entire length of the anchor, and wiggling the handle could compromise anchor security.
 4. Prior to removing the inserter, rotate the knob counterclockwise until a click is heard. This will help ease the release of the inserter from the anchor.
 5. Use a guide wire to maintain prepared hole location and alignment during the anchor insertion process. Remove the guide wire before placing the anchor into the hole.
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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

Some of the more common instruments for hip repair are listed below. Call +1 800 343 5717 in the U.S. or contact your authorized Smith & Nephew representative to order any of the following components.

REF Number	Product
72202397	BIORAPTOR® Knotless Suture Anchor, hip
72202399	BIORAPTOR Knotless Inline Drill Guide, spike tip
72202400	BIORAPTOR Knotless Inline Drill Guide, crown tip
72202793	BIORAPTOR Knotless Inline Obturator, cannulated
72202792	BIORAPTOR Knotless Inline Obturator, blunt
72201395	BIORAPTOR Knotless Drill Bit, 3.0 mm
7209350	Arthroscopy Needle, 17-gauge, 6"

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

Courtesy of Smith & Nephew, Inc., Endoscopy Division

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Endoscopy
Smith & Nephew, Inc.
Andover, MA 01810
USA

www.smith-nephew.com
+1 978 749 1000
+1 978 749 1108 Fax
+1 800 343 5717 U.S. Customer Service

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