

BIOKNOTLESSTM RC

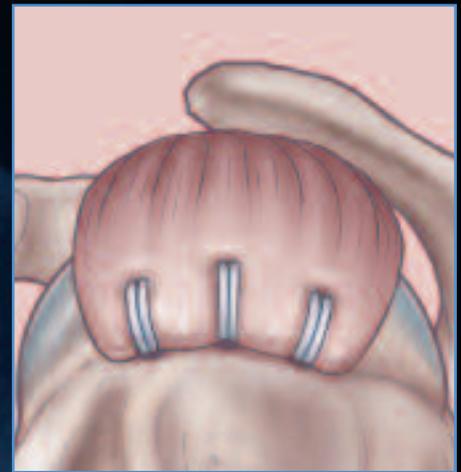
SUTURE ANCHOR



**Surgical Technique for
Arthroscopic Rotator
Cuff Repair**

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Surgical Technique

Arthroscopic rotator cuff repair techniques have been developed in recent years as a natural progression of the advances in arthroscopic shoulder surgery. A good quality arthroscopic rotator cuff repair is technically difficult to achieve. Adequate tendon mobilization and secure tendon fixation can be challenging.

Suture anchors have become a common method of fixation for both open and arthroscopic rotator cuff repairs. Arthroscopic knot tying can be difficult to perform, particularly in the subacromial space. Arthroscopically tied knots are bulky and may cause acromial impingement. Arthroscopic knot quality may be inferior to those tied open, even in the best of hands. For these reasons, the quality of an arthroscopic rotator cuff repair may be inconsistent.

The BIOKNOTLESS RC Suture Anchor is an absorbable anchor that provides a secure, low-profile suture repair without the need for arthroscopic knot tying. Biomechanical testing demonstrates superior suture strength compared to standard suture anchors.

BIOKNOTLESS RC

BIOKNOTLESS™ RC SUTURE ANCHOR DESIGN

The BIOKNOTLESS RC Suture Anchor (**FIGURE 1**) has an appearance similar to the BIOKNOTLESS anchor. The BIOKNOTLESS RC anchor has a wedge-shaped, PLA anchor body with a channel located at the tip. A short loop of either #1 PANACRYL® (white) long term braided absorbable suture or ETHIBOND® (green) non-absorbable suture, called the anchor loop, is attached to the anchor instead of the long suture strands used with standard suture anchors. A second, longer loop of #2-0 ETHIBOND (green) suture, called the utility loop, is linked to the anchor loop and serves as a passing suture. Suture loop management for the BIOKNOTLESS RC suture anchor is similar to the BIOKNOTLESS suture anchor. The utility loop is used to pull the anchor loop through the torn edge of the rotator cuff. The anchor loop is captured in the channel at the tip of the anchor before inserting it into bone. The sides of the anchor are flat to create space for the captured suture loop to pass into the drill hole without suture abrasion.

Although similar to the PANALOK® anchor, the mode of bone fixation is unique for the BIOKNOTLESS RC suture anchor. Due to the anchor size and wedge configuration, it locks into bone by both compression and toggling within the drill hole. (The PANALOK anchor relies on the toggle feature alone to achieve bone fixation.) This offers the BIOKNOTLESS RC suture anchor several biomechanical advantages: excellent pull-out strength in soft bone and minimal pull-back for anchor setting.



Fig. 1

OPERATIVE TECHNIQUE

Patient Set-up & Portals

The procedure can be performed with the patient in either the lateral decubitus position or the beach chair position. The shoulder is examined with the patient under anesthesia.

The author's preference is the lateral decubitus position with the patient tilted 30 degrees posterior. The torso is supported with a vacuum bean-bag. Fifteen pounds of traction is applied to the arm, which is positioned in 30 degrees of abduction and 15 degrees of forward flexion. An impervious stockinette traction system with sterile rope is used for application of traction, which permits easy intraoperative removal of traction, if necessary.

Standard anterior (AP) and posterior portals (PP) are used for arthroscopic evaluation of the glenohumeral joint. Any intra-articular pathology is treated at this time. The undersurface of the rotator cuff tear is examined and debrided, as indicated.

The arthroscope is brought into the subacromial space from the posterior portal (PP). The same posterior skin incision may be used. Anterior inflow is brought into the subacromial space.

A standard inferior lateral portal (ILP) is established approximately 3-4 cm directly lateral to the anterolateral corner of the acromion (**FIGURES 2, 3**). An acromioplasty is performed as indicated.

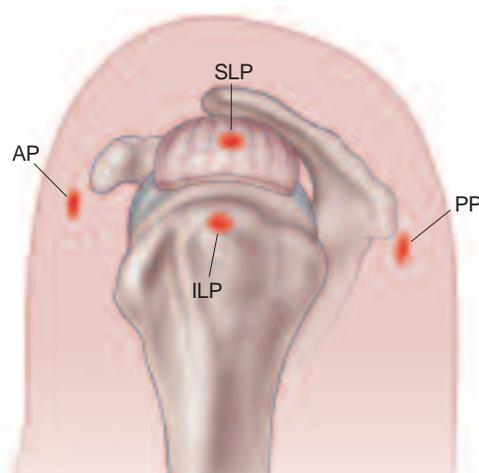


Fig. 2

SUTURE ANCHORS

BIOKNOTLESS™ RC SUTURE ANCHOR REPAIR PROCEDURE

Rotator Cuff Preparation

Rotator cuff preparation involves both debridement and mobilization of the torn rotator cuff. A variety of motorized and manual instruments are effective for debriding the rotator cuff to a stable edge. Evaluation of the rotator cuff tear via both the posterior and lateral portals is essential to understanding the tear configuration. Traction sutures, placed in the rotator cuff edge, are useful for tendon mobilization. Dissection, superior and inferior to the rotator cuff, using electrocautery and shavers, allows for lateral tendon mobilization. Coracohumeral ligament division and/or an interval slide, are valuable, previously described techniques for tendon mobilization, when necessary.

A motorized burr is used to lightly decorticate the greater tuberosity at the repair site. A superior lateral portal (SLP) is established for the rotator cuff repair. The location of this portal should be just off the lateral edge of the acromion (**FIGURE 3**). A superior lateral portal (SLP) provides a more appropriate angle for drilling and anchor insertion (**FIGURE 4**). The portal location, in the anterior-posterior plane, is determined by the location of the rotator cuff tear.

The utility loop of the BIOKNOTLESS RC suture anchor assembly is passed through the rotator cuff at selected sites, from the superior surface to the inferior surface, via the superior-lateral portal (SLP) (**FIGURE 5**).



Fig. 3

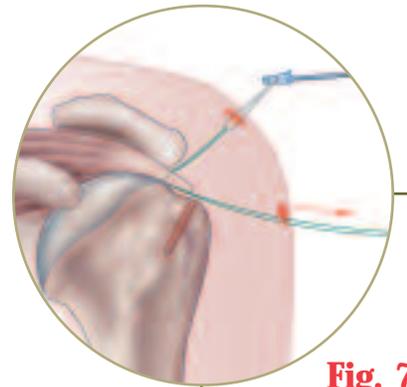


Fig. 7

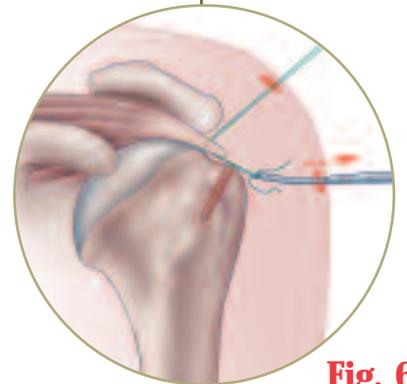


Fig. 6

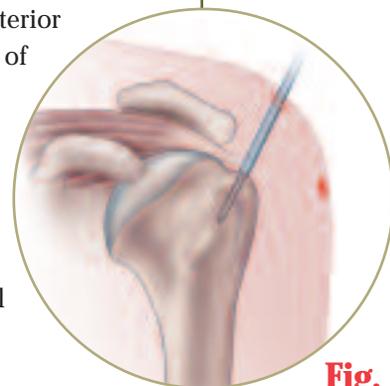


Fig. 4

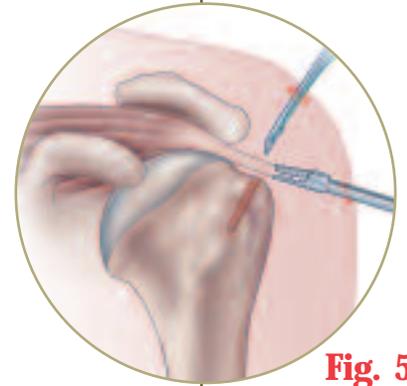
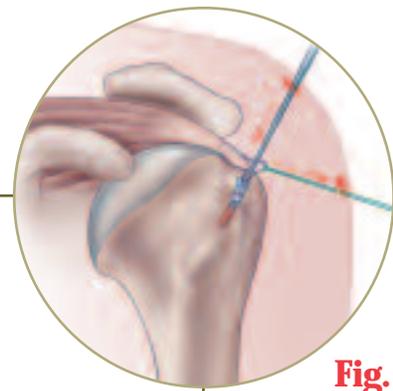
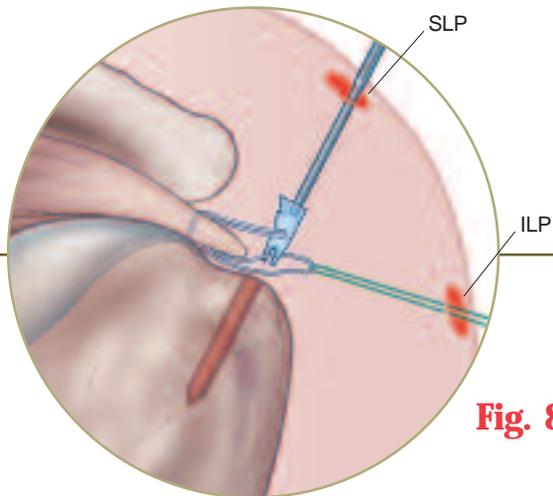


Fig. 5

URGICAL TECH.



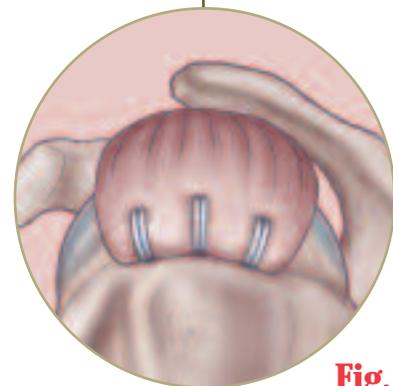
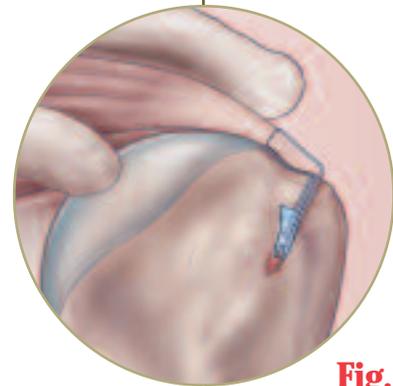
This can be achieved using a variety of arthroscopic suture passing techniques. The utility loop is retrieved and pulled out through the inferior-lateral portal (ILP) (FIGURE 6).

The utility loop is used to pull the anchor loop through the rotator cuff (FIGURE 7). As the utility loop pulls the anchor loop through the rotator cuff, the attached anchor is passed down the superior-lateral cannula while being controlled on the inserter rod.

Once the anchor loop has passed through the rotator cuff, one strand of the anchor loop is captured or snagged in the channel at the tip of the anchor (FIGURE 8). The anchor is then inserted and slowly tapped into the greater tuberosity drill hole (FIGURE 9).

The depth of anchor insertion determines the degree of tissue tension achieved.

The utility loop and inserter rod are then removed (Figure 10). The number of anchors used is determined by the size of the rotator cuff tear. A secure, low-profile repair is achieved (FIGURE 11).



BIOKNOTLESS RC

SUTURE ANCHOR



Indications

The DePuy Mitek BIOKNOTLESS RC Anchor is indicated for use in soft tissue to bone fixation in association with adequate postoperative immobilization as follows: Shoulder - Rotator Cuff Repair

Contraindications

1. Surgical procedures other than those listed in the INDICATIONS section.
2. Pathological conditions of bone, such as cystic changes or severe osteopenia, which would compromise secure anchor fixation.
3. Pathological conditions in the soft tissue to be attached which would impair secure fixation by suture; comminuted bone surface, which would compromise secure anchor fixation.
4. Physical conditions which would eliminate, or tend to eliminate, adequate implant support or retard healing, i.e., blood supply limitation, infection, etc.
5. Conditions which tend to preempt the patient's ability to heal or the healing period, such as senility, mental illness, or alcoholism; attachment of artificial ligaments or other implants.

WARNINGS

As the anchor is absorbable, immobilization by external support should be employed. The DePuyMitek BIOKNOTLESS RC Anchor is designed to lock into cancellous bone.

Use this anchor only with a drill bit 3.5mm in diameter that generates a precise diameter drill hole of at least 25mm in depth.

In the event that a DePuy Mitek BIOKNOTLESS RC Anchor must be removed, over-drill the original insertion hole, or use curettes or osteotomies to open the cortical surface. Carefully remove the cancellous bone to expose the anchor. Use a needle holder or forceps to grasp the anchor and remove it.

A DePuy Mitek BIOKNOTLESS RC Anchor must never be reused. In the event the anchor should dislodge from the inserter or bone site, do not attempt to reattach the anchor to the inserter. In this case, the anchor and inserter should be discarded and a new anchor should be utilized.

As a braided long-term suture, which is essentially absorbed over 1.5 to 2.5 years, PANACRYL long-term suture may act as a foreign body over an extended period of time. The surgeon should consider whether use of long-term absorbable braided suture is appropriate in specific situations such as in wounds that carry an increased risk of infection or contamination.

CAUTION: Federal Law (USA) restricts this device to sale by or on the order of a physician. Consult the package insert for complete product information.

Please consult package insert for indications, contraindications, precautions, warnings and adverse effects.

For more information, call your DePuy Mitek representative at 1-800-382-4682 or visit us at www.depuymitek.com. DePuy Mitek, Inc., 325 Paramount Drive, Raynham, MA 02767

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