

Hip Labral Repair Options

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Labrum repair is an important part of hip arthroscopy. Multiple short-term and biomechanical studies have shown that restoring the function of the labrum by repair is preferable to debridement in appropriate situations. There are multiple options for devices to repair the labrum and accessory devices to assist in repair. Options include traditional suture-loaded anchors and newer knotless anchors. There are absorbable, all-suture, and nonabsorbable anchors. This article reviews the anchors, techniques, and accessory devices that are available to the surgeon to facilitate labrum repair. Some of the pitfalls associated with labrum repair and how to avoid them are also discussed. Accessory devices include cannulas and a variety of suture passers.

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Hip acetabular labrum tears place patients at risk for hip arthritis.¹ The decision to debride or repair the torn labrum depends on multiple factors, including the quality of the labrum, the age of the patient, and the presence or absence of a pincer lesion.^{2,3} Multiple biomechanical and short-term clinical studies support preserving the labrum when possible.³ Studies indicate that labral repair is preferable to labral debridement.⁴⁻⁶ The biomechanical data also indicate that labrum function is important, is worth preserving, and can be preserved with repair.^{7,8} Among other things, the acetabular labrum provides support to the articular cartilage, thus shielding the cartilage from shear forces at the edge of the acetabulum.⁹ Cartilage changes usually begin in the same area of the labrum tear, and over time, these changes can lead to full-thickness acetabular lesions and “kissing” lesions on the femoral head, eventually leading to significant osteoarthritis. Labrum repair rather than debridement attempts to halt or slow this progression.

The treatment of pincer-type femoroacetabular impingement requires the destabilization or complete detachment of the completely or partially torn labrum to adequately remove the bony lesion.^{10,11} Partially detaching the labrum also improves access to either debriding, microfracturing, or removing cartilage lesions associated with labrum tears. The labrum should be repaired after iatrogenic detachment. Labrum reconstruction involves the use of autograft or allograft tissue as a substitute for the labrum. In this situation, the tissue is held with anchors in the location of the absent labrum.

Unfortunately, no classification system exists describing labral tears, chondral changes, or the extent of the pincer lesions to guide a surgeon's decision. The essential question is whether it is worth the extra surgical time, the risk of chondral injury, the risk of implant breakage, or the implant cost to repair the labrum rather than debride it.¹² When done without iatrogenic injury, the preponderance of short-term evidence and expert opinion is that the preservation of the labrum is worth the risk.

The purpose of this article was to summarize the options available to the surgeon for labral repair so the surgeon can make a more informed decision when faced with the choice to repair or to debride. I review many of the available anchors and other devices that make suture repair possible.

General Categories

The standard options for repair include the use of anchors. Anchors can be grossly divided into knotless or knotted hip anchors. There are also various size options and absorbable and nonabsorbable versions. It is the responsibility of the surgeon to assure that implants used are Food and Drug Administration approved.

Knotted Anchors

There are several options in this category. Each system uses a drill or punch to make a pilot hole for the anchor, and then the anchor is either tapped or screwed into the acetabular bone.

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Raptor Series

The knotted anchor series by Smith and Nephew (Andover, MA) consists of several options. The Osteoraptor anchor is an absorbable anchor comprised of a hydroxyapatite composite and comes in 2.3-mm and 2.9-mm versions. Both versions are loaded with an Ultrabraid suture. The 2.9-mm version also comes in a double-loaded option.

Another Smith and Nephew knotted anchor is called the Bioraptor PK and is a nonabsorbable 2.9-mm anchor comprised of poly-ether ketone (PEEK) Optima material double loaded with 2 Ultrabraid sutures (Fig. 1). The Bioraptor also comes in a knotless version, which is discussed later.

The insertion of these anchors is via a drill and tap-in method. There is a drill guide that the surgeon keeps in place, removes the drill, and inserts the anchor. Risks include anchor breakage, joint penetration, and the fact that the 2.3-mm Osteoraptor anchors are single loaded so if one suture fails during passage or tying, an additional anchor must be used.

SutureTak

This labrum anchor by Arthrex (Naples, FL) comes in an absorbable version, the Bio-SutureTak, and a nonabsorbable version, the PEEK SutureTak. Both versions are 3.0 mm in diameter and 14-mm long. A hole is drilled in the bone, and the anchor is tapped in. The anchors come double loaded with either 1 or 2 permanent # 2 Fiberwire suture. The implantation system includes a drill and drill guide. Risks include anchor breakage or joint penetration.

Conmed Linvatec

The 3.1-mm Bio Mini-Revo Anchor by Conmed Linvatec (Utica, NY) offers a single-loaded, screw-in absorbable anchor called the Bio Mini-Revo anchor. The anchor is 3.1 mm in diameter and is made of 96 L/4 D polylactic acid. The implant is preloaded on a disposable driver and is prethreaded with 1 #2 Hi-Fi high-strength suture.



Figure 1 The 2.9-mm Bioraptor PK nonabsorbable anchor by Smith and Nephew (<http://www.smith-nephew.com>).

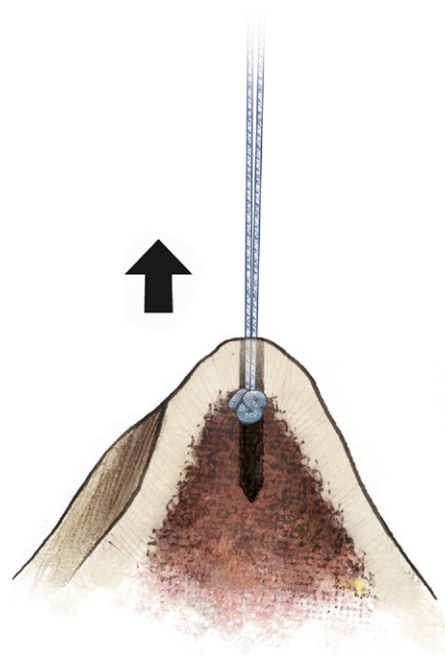


Figure 2 The JuggerKnot all-suture permanent anchor by Biology of Metals (<http://www.biomet.com>).

JuggerKnot

The JuggerKnot by Biomet (Warsaw, IN) is an all-suture anchor system (Fig. 2). A 1.4-mm drill is used to create a hole, which is significantly smaller than the hole needed to implant a more traditional-type anchor. The all-suture anchor is comprised of a # 5 permanent polyester suture and is loaded with a MaxBraid suture (Fig. 3). The anchor folds or balls up and

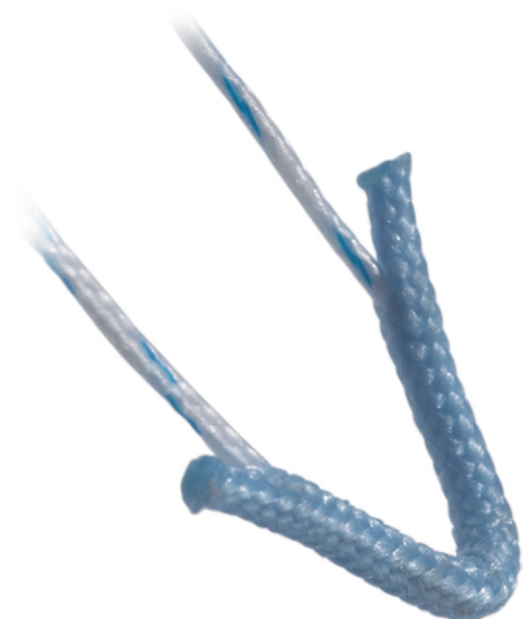


Figure 3 The JuggerKnot anchor deployed. The anchor expands approximately 30%, providing resistance to pullout (<http://www.biomet.com>).

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