



The Beveled Rim Technique for Labral Reconstruction

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Abstract: Arthroscopic trimming of the acetabular rim in labral reconstruction is used to create a suitable bony surface with adequate blood flow, thereby promoting the biological conditions necessary for the healing of the labrum. The aim of this Technical Note is to present an improvement to the current arthroscopic rim preparation technique. The technique involves creating an inward beveled acetabular rim to increase the contact area of the graft on the femoral head, in order to create a greater suction seal and strategically distribute the forces generated during femoral head distraction onto both the labral graft and the acetabular rim.

The acetabular labrum plays a vital role in maintaining the suction seal that is crucial for hip joint stability and integrity.¹⁻⁵ Restoring its natural function is paramount to the treatment of femoroacetabular impingement.³⁻⁹ In cases in which labral tears are deemed irreparable, reconstructive techniques have shown durable results.¹⁰⁻¹³ During labral reconstruction, acetabular rim preparation is used to create an optimal bleeding osseous surface, aiding in both labral healing and the treatment of pincer-type impingement.^{14,15} Clinical studies have consistently shown favorable outcomes with standard acetabular rim trimming combined with labral reconstruction.^{6,10,11,16,17}

This work aims to describe an enhanced arthroscopic technique for preparing the acetabular rim, involving the creation of an inward bevel. This modification is aimed at amplifying peak distractive forces and

enhancing hip joint stability following labral reconstruction.

This study was performed in accordance with the ethical standards in the 1964 Declaration of Helsinki and was carried out in accordance with relevant regulations of the U.S. Health Insurance Portability and Accountability Act. Details that might disclose the identity of the subjects under study have been omitted. This study was approved by the American Hip Institute Research Foundation institutional review board (IRB ID: 5276).

Surgical Technique

Video 1 describes the beveled rim technique in detail.

Patient Positioning

After the induction of general anesthesia, the patient is placed in the supine position on a traction table with 8° to 10° of Trendelenburg without an intermediate post. Bimanual traction is performed with the operative leg in a neutral position and the contralateral leg with 30° of abduction. The surgical limb is then prepared with ChloraPrep (Becton Dickinson, Franklin Lakes, NJ) and draped in the standard fashion. The surgical field is then covered with Ioban (3M Corporation, Maplewood, MN).

Diagnostic Arthroscopy

A comprehensive evaluation of the hip joint is conducted. The extent and severity of any labral pathology present is assessed. Through this thorough assessment, the most suitable approach for restoring the labrum is

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carefully determined. Our decision-making algorithm has been previously published.^{4,18,19}

Beveled Rim Preparation

The chondrolabral junction is critical in the surgeon's decision-making process. When an arthroscopic assessment reveals a macroscopically irreparable labrum, the next step is to evaluate the condition of the chondrolabral junction. If this junction is compromised, reconstruction becomes the procedure of choice (Fig 1).

Once the decision to proceed with labral reconstruction is made, rim preparation is carried out. First, the capsule is lifted around the acetabulum, and the rim and bone are then prepared by removing all nonviable tissue using a radiofrequency wand (Fig 2). After tissue debridement, decortication is performed with a mechanical burr (Round Burr, HL, 8 Flute, 5.0 mm × 19 cm; Arthrex, Naples, FL) to obtain bleeding cancellous bone suitable for healing and chondrolabral integration. Traditionally, the rim is prepared as a flat surface perpendicular ($\sim 90^\circ$) to a line extending from the articular side of the acetabular rim (Fig 3A). For this technique, an inward bevel of 60° is created with the burr around the entire circumference of the acetabulum to increase the contact area of the graft on the

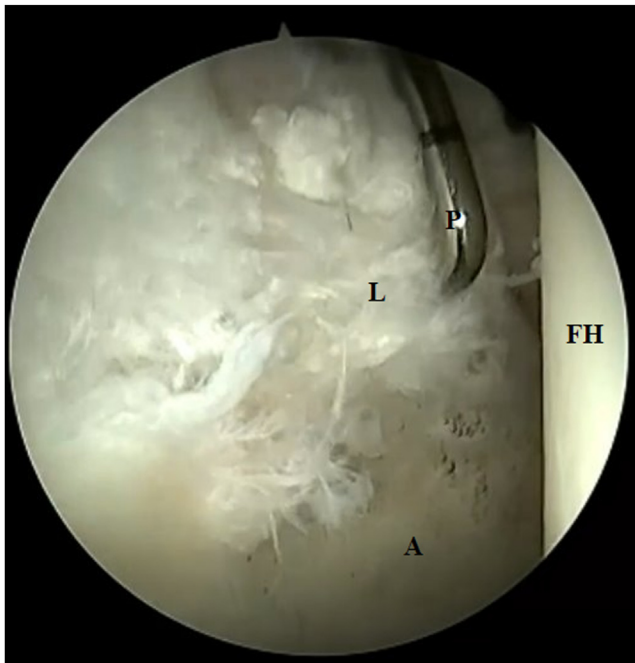


Fig 1. Intraoperative image during a right hip diagnostic arthroscopy and labral assessment depicting settings that indicate labral reconstruction. The labrum (L) is visualized with a 70° arthroscope from the anterolateral portal. Probe (P) is coming from the midanterior portal, and the femoral head (FH) and acetabulum (A) are identified. Labral tear evidenced in a right hip with a complex circumferential labral defect and nonviable tissue.

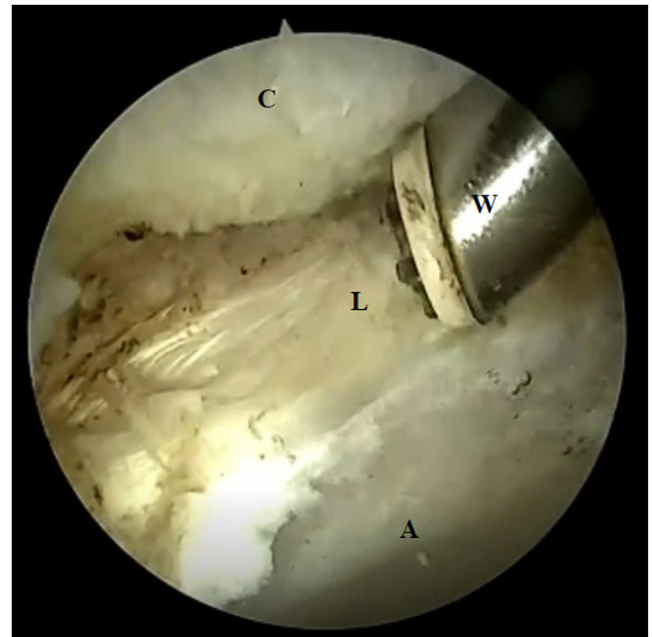


Fig 2. Intraoperative image during right hip acetabular rim preparation visualized with a 70° arthroscope through the anterolateral portal. Complete circumferential nonviable labral tissue (L) debridement is carried out with a radiofrequency wand (W) coming from the midanterior portal. (A, acetabulum; C, capsule.)

femoral head (Fig 3B). Once the rim is prepared, standard labral reconstruction is performed using the knotless pull-through technique with Knotless 1.8 Hip FiberTak anchors (Arthrex) (Fig 4).¹⁸

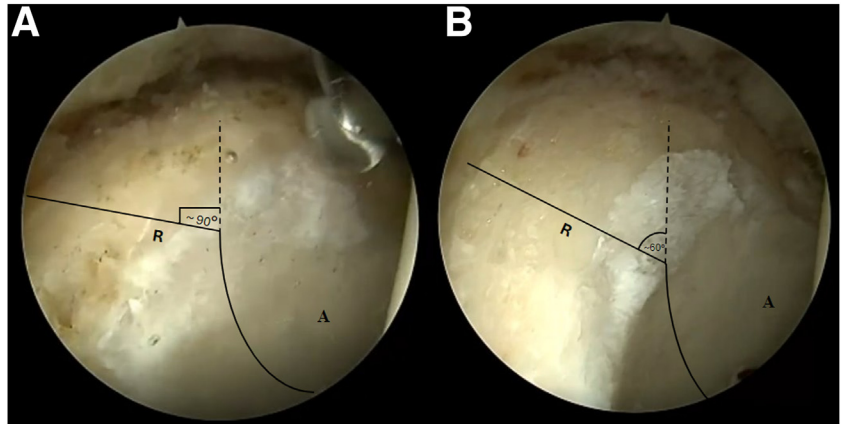
Postoperative Procedure

After surgery, the patient is fitted with a hip brace (DonJoy X-Act ROM Hip Brace; DJO Global, Carlsbad, CA) to restrict movement. Additionally, weight-bearing limitations (20-pound limit) are imposed, and the patient is advised to use crutches for a period of 6 weeks. Sutures are removed in the second week after surgery. Patients begin physical therapy the day after surgery, incorporating passive motion exercises and stationary biking. At the 6-week milestone, a comprehensive therapy plan is initiated to regain full range of motion, weight-bearing capacity, strength, and stability. A biomechanical motion analysis is conducted at the 6-month mark, followed by a tailored 9-week home training regimen designed to finalize the rehabilitation process and facilitate the return to athletic pursuits.

Discussion

Our technique presents an augmentation to traditional rim preparation that provides greater distractive stability. The reasoning for this approach lies in the fact that the beveled edge enhances the graft's contact

Fig 3. Intraoperative images during right hip acetabular rim preparation visualized with a 70° arthroscope through the anterolateral portal. (A) Traditional circumferential rim preparation with a mechanical burr for labral reconstruction, positioned almost perpendicular to the articular side of the acetabulum. (B) Beveled acetabular rim preparation, demonstrating a 60° inward incline (A, acetabulum; R, acetabular rim).



surface with the femoral head. Consequently, this reduces the pressure exerted on the graft and forms a more robust suction seal capable of withstanding greater distractive forces. Moreover, distributing the load more evenly between the graft and the bony rim may help to lessen graft strain. The advantages and disadvantages of the technique as well as technical pearls and pitfalls are described in [Tables 1](#) and [2](#). In conclusion, this method presents a straightforward, cost-efficient approach that aims to increase surgical efficiency, diminish potential failure, and facilitate a proper restitution of the negative seal.

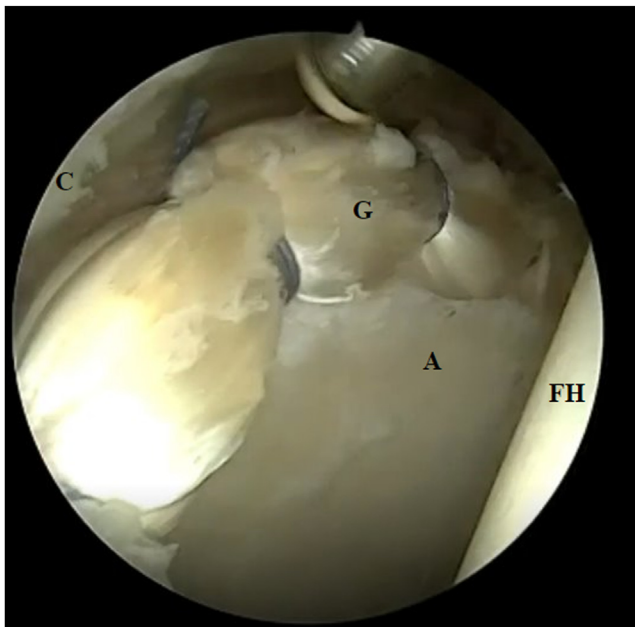


Fig 4. Intraoperative images of labral reconstruction in a right hip using a posterior tibialis tendon allograft; the pull-through technique is visualized with a 70° arthroscope from the anterolateral portal in the right hip. (A, acetabulum; C, capsule; FH, femoral head; G, posterior tibialis allograft.)

Disclosures

The authors declare the following financial interests/ personal relationships which may be considered as potential competing interests: B.G.D. reports financial support was provided by American Orthopedic Foundation; reports a relationship with Arthrex Inc. that includes: consulting or advisory, funding grants, non-financial support, speaking and lecture fees, royalties, and travel reimbursement; reports a relationship with DJO Global that includes: royalties and non-financial support; reports a relationship with Medacta that includes: royalties, consulting or advisory, and non-financial support; reports a relationship with Stryker that includes: consulting or advisory, funding grants, non-financial support, royalties, and travel reimbursement; reports a relationship with Smith & Nephew that includes: funding grants; reports a relationship with Orthomerica that includes: royalties; reports a relationship with Midwest Associates Inc. that includes: non-financial support; reports a relationship with Saint Alexius Medical Center that includes: board membership and non-financial support; reports a relationship with Ossur that includes: funding grants; reports a relationship with Zimmer Biomet that includes: non-financial support; reports a relationship with DePuy Synthes that

Table 1. Advantages and Disadvantages of the Bevel Rim Technique

Advantages	Disadvantages
Increases the contact area between the femoral head and graft.	May slightly increase operative time.
No additional instrumentation required beyond the standard arthroscopic burr.	
No additional cost.	
Increases surface area for graft integration.	
Increases surface area to facilitate anchor placement.	

Table 2. Advantages and Disadvantages of the Bevel Rim Technique

Pearls	Pitfalls
Completely remove native labrum before acetabuloplasty for better visualization.	Not bone preserving—risk of overtrimming. Use cautiously in patients with borderline dysplasia.
Ensure sufficient overlap of graft and native labrum at anastomosis points.	
Use of distal anterolateral accessory portal facilitates maneuverability and access to acetabular rim.	

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