



# Revision Hip Arthroscopy for Graft Retear and Residual Cam Lesion in a Previously Labral Reconstructed Hip

Allison K. Perry, B.S., Nicholas A. Trasolini, M.D., Safa Gursoy, M.D., Ph.D., Amar S. Vadhera, B.S., Joel Williams, M.D., Shane J. Nho, M.D., M.S., and Jorge Chahla, M.D., Ph.D.

**Abstract:** Persistent pain after hip arthroscopy may be due to residual impingement, hip dysplasia, osteoarthritis progression, labral injury, or insufficient capsular closure. A patient's history, physical examination findings, and imaging studies should be used to determine whether revision hip arthroscopy is indicated. If surgical management is chosen, careful preoperative planning is essential. During revision hip arthroscopy, the presence and location of adhesions should be considered during interportal capsulotomy and T-capsulotomy creation and while applying traction sutures. The presence of a residual cam or pincer lesion and the adequacy of the labrum or labral graft should be assessed and properly addressed. If capsular redundancy is recognized, capsular plication may be performed. The purpose of this Technical Note is to describe an approach to revision hip arthroscopy for labral repair and residual cam lesion resection.

Femoroacetabular impingement (FAI) continues to increase in incidence, likely owing to more widespread diagnostic recognition and clinical understanding.<sup>1</sup> This increasing incidence has led a sharp rise in surgical cases, with a recent study noting an 85% increase in hip arthroscopies in a US insurance database between 2011 and 2018.<sup>2</sup> In the decade prior, from

1999 to 2009, the increase was even more dramatic, with an 18-fold increase in cases reflected in the American Board of Orthopaedic Surgery database.<sup>3</sup> With hip arthroscopy for FAI becoming more widespread, failures have inevitably occurred. Some of these failures can be managed nonoperatively, but others require revision surgery in the form of hip arthroplasty, osteotomy, or revision hip arthroscopy.

The reasons for failure of hip arthroscopy have been well described and commonly include inadequate osteochondroplasty resulting in residual impingement, hip dysplasia, progression of osteoarthritis, and recurrent labral injuries.<sup>4</sup> Treatment of hip dysplasia with periacetabular osteotomy (PAO) has been a reliable solution, both in isolation and with concomitant hip arthroscopy.<sup>5,6</sup> Although rare, reoperation in the form of hip arthroscopy after PAO does occur. In a multicenter study of 391 PAO cases with minimum 2-year follow-up, 8 patients (2%) required ipsilateral hip arthroscopy for persistent pain after PAO.<sup>7</sup>

In cases of recurrent labral injuries, re-repair is an option when tissue quality is sufficient. When labral tissue is deficient or degenerative, labral reconstruction may be more successful in improving patient outcomes.<sup>8</sup> Failures of labral reconstructions have also been described. In a series of patients undergoing hip arthroscopy for failed labral reconstruction, capsulolabral adhesions and residual impingement were the most common findings.<sup>9</sup>

*From the Division of Sports Medicine, Midwest Orthopaedics at Rush, Rush University Medical Center, Chicago, Illinois, U.S.A.*

*The authors report the following potential conflicts of interest or sources of funding: S.J.N. receives research support from Allosource, Arthrex, Athletico, DJ Orthopedics, Linvatec, Miomed, Smith & Nephew, and Stryker; receives intellectual property royalties from Ossur and Stryker; receives publishing royalties and financial or material support from Springer; and is a paid consultant for Stryker, outside the submitted work. J.C. is a paid consultant for Arthrex, ConMed Linvatec, Ossur, and Smith & Nephew, outside the submitted work. Full ICMJE author disclosure forms are available for this article online, as [supplementary material](#).*

*Received August 9, 2021; accepted October 7, 2021.*

*Address correspondence to Jorge Chahla, M.D., Ph.D., Division of Sports Medicine, Midwest Orthopaedics at Rush, Rush University Medical Center, 1611 W Harrison St, Chicago, IL 60616, U.S.A. E-mail: [jorge.chahla@rushortho.com](mailto:jorge.chahla@rushortho.com)*

© 2021 THE AUTHORS. Published by Elsevier Inc. on behalf of the Arthroscopy Association of North America. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

2212-6287/211160

<https://doi.org/10.1016/j.eats.2021.10.003>

However, labral re-tear was also noted in 4 of 28 hips (14%).<sup>9</sup> Techniques for addressing these labral reconstruction tears have not been well established in the literature to date.

In cases in which pain persists or recurs after PAO or labral reconstruction, a systematic approach to determine the root cause of hip pain is critical to direct treatment. In the absence of significant arthritic changes, revision hip arthroscopy may be performed if indicated. In this Technical Note, we describe an approach to revision hip arthroscopy for labral repair and residual cam lesion resection.

## Surgical Technique

### Preoperative Evaluation and Surgical Consideration

When evaluating a patient who has previously undergone hip arthroscopy, care must be taken to obtain a comprehensive physical examination and history of the affected hip because this information will guide management. Special attention should be paid to whether the patient experienced improvement after the initial procedure, which can indicate whether symptoms are recurrent or residual. If physical examination findings indicative of hip joint pathology are present, a diagnostic lidocaine injection may be performed in the clinic setting to ensure that the patient's pain is due to an intra-articular cause. Further imaging may then be obtained to evaluate the cause of pain. When reviewing radiographs and magnetic resonance images, the patient's surgical history should be considered. If previous procedures included acetabuloplasty and/or femoroplasty, radiographs should be carefully reviewed to assess whether under- or over-resection of the acetabular rim or femoral head-neck junction occurred (Fig 1). However, it is important to note that residual bony lesions may not be present on radiographs depending on lesion location, meaning that patients who continue to have groin pain with deep flexion despite conservative management (cortisone injections, physical therapy, and anti-inflammatory medications) may have residual FAI. If labral repair was previously performed, pain may be originating from a labral re-tear, whereas a graft tear may be contributory in cases of previous labral reconstruction. Both of these injuries can be difficult to distinguish from normal postoperative changes on imaging.

### Patient Position

The patient is first placed supine on a traction table (Smith & Nephew, Andover, MA) and is prepared under general anesthesia. To provide adequate traction, the senior author (J.C.) prefers to use the Pink Pad positioning device (Xodus Medical Pink Hip Kit; Smith & Nephew), which allows for post-free distraction. Under fluoroscopy, an air arthrogram is performed to disrupt the suction seal, and adequate distraction is

achieved through adjustment of the distal traction arm. Portal placements are then marked according to superficial surgical landmarks for the anterolateral (AL) portal, modified midanterior portal (mMAP), and distal anterolateral accessory (DALA) portal.

### Joint Access

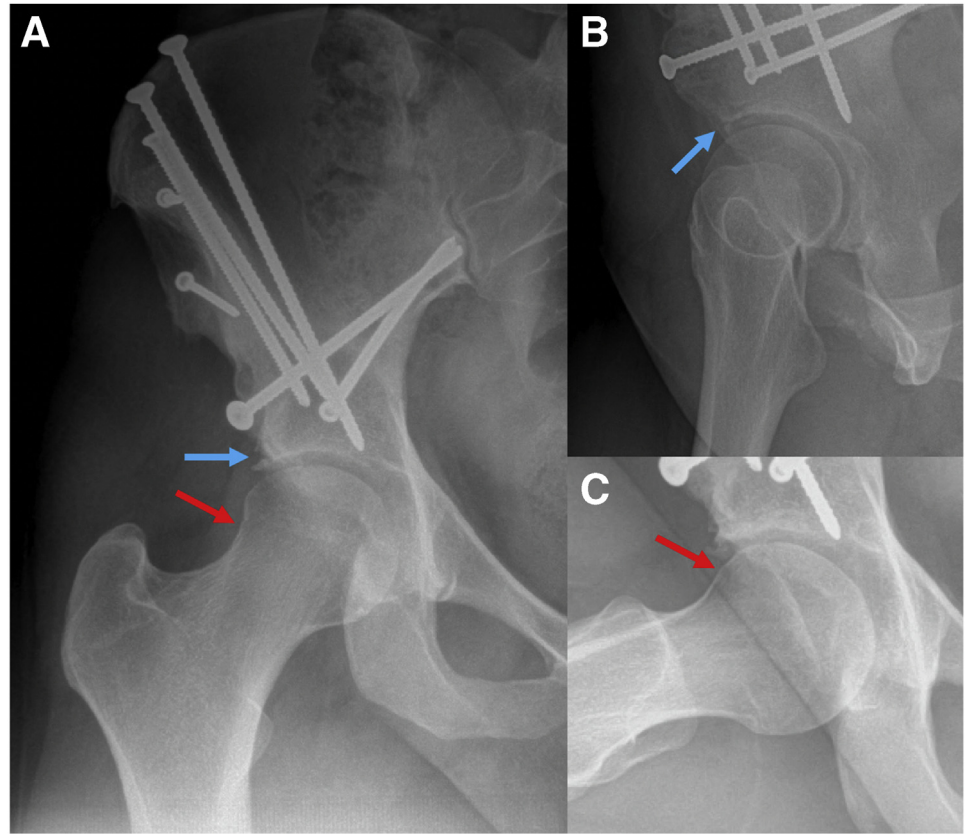
Access to the joint is first achieved under fluoroscopic guidance at the AL portal. Then, while viewing with a 70° arthroscope through the AL portal, the mMAP is created 1 cm distal to the labrum. The scope is moved to the mMAP portal, and a periportal capsulotomy is created at the AL portal location with an arthroscopic blade (Samurai; Stryker, Kalamazoo, MI) (Fig 2, Video 1). The integrity of the capsule should be checked at this time to determine whether additional capsular augmentation or reconstruction procedures need to be performed.

To perform an interportal capsulotomy, the scope is moved back to the AL portal, and an arthroscopic blade is used to connect the mMAP to the previously created periportal capsulotomy (Fig 2). The interportal capsulotomy should be 2 cm or less in length, allowing room for instrumentation while avoiding disruption of the iliofemoral ligament. If the previously performed capsulotomy was enlarged, extra care should be taken to perform as minimal a capsulotomy as possible to avoid potentiating any existing microinstability. Careful diagnostic arthroscopy should then be performed to assess the locations of any adhesions to avoid iatrogenic labral injury during capsule mobilization and definition of the capsular-labral recess. At this point and throughout a revision procedure, the surgeon should be aware that the typical anatomy encountered during hip arthroscopy may be altered in a revision case owing to the presence of adhesions. After removal of scar tissue from previous procedures, traction sutures are passed to reflect the capsular-labral recess (Fig 3, Video 1). The severity of arthrofibrosis may dictate the number of traction sutures necessary to obtain adequate visualization of the central compartment and to create a working space between the capsule and the labrum. The first set of traction sutures is placed at the proximal aspect of the interportal capsulotomy through the mMAP (viewing through the AL portal), followed by placement of a second set of traction sutures at the superolateral aspect of the capsule through the AL portal (viewing from the mMAP) using a suture passer (Pivot Injector II; Stryker).

### Central-Compartment Procedures

By use of a combination of a shaver and radio-frequency probe (Dyonics RF System; Smith & Nephew Endoscopy, Andover, MA) to debride adhesions, the sublabral recess is identified. Care should be taken to remove any adhesions or suture from previous procedures that are preventing adequate visualization of the acetabular rim. Acetabular rim trimming is then

**Fig 1.** Preoperative radiographs. Radiographs in 3 views—standing anteroposterior (A), false profile (B), and Dunn (C)—should be obtained to assess the level of previous resection of cam and pincer lesions, which would be appreciated at the positions indicated by the red and blue arrows, respectively, if present, in a right hip. When evaluating radiographs, clinicians should use caution because residual bony lesions may not be visible on these views, as shown in the presented patient, who previously underwent right hip acetabuloplasty, femoroplasty, labral reconstruction with hamstring allograft, and periacetabular osteotomy and continued to have impingement symptoms despite a lack of visible lesions.

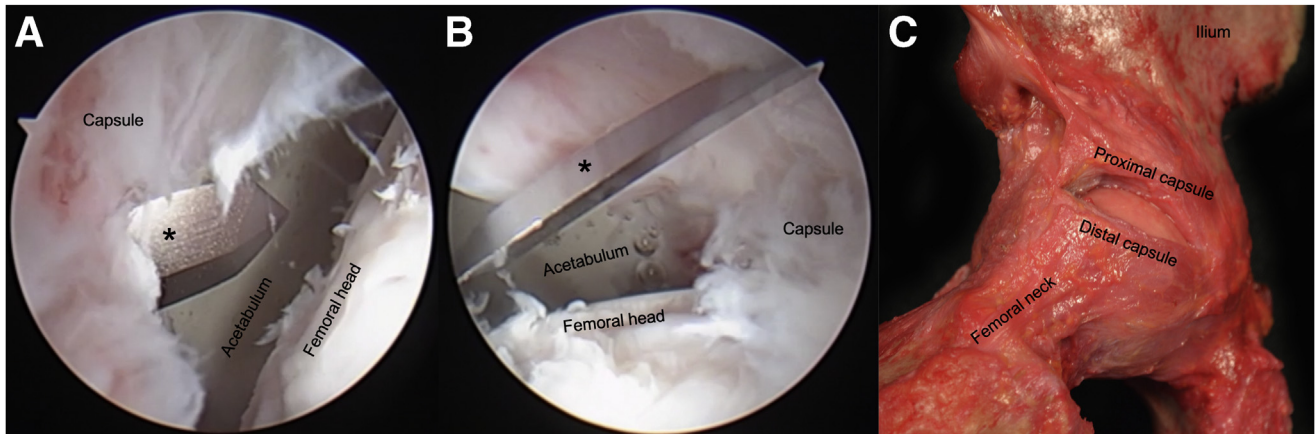


performed through the mMAP and the AL portal to address any residual pincer deformity or to prepare the acetabulum for labral repair (Video 1). Depending on the severity of adhesions, multiple alternating rounds of debridement and acetabular rim trimming may be performed to achieve the proper amount of acetabuloplasty. Diagnostic arthroscopy is performed to determine whether the native or reconstructed labrum is torn or whether the graft is sufficiently fixated. If indicated, labral repair is performed, starting at the 11-o'clock position. While viewing through the mMAP, an arthroscopic cannula (8.5 × 110 mm; Smith & Nephew) is inserted through the AL portal (Fig 4, Video 1). The drill guide is inserted and is placed at the lateral aspect of the tear, and the trajectory is confirmed fluoroscopically. After anchor insertion (1.8-mm Q-Fix Mini; Smith & Nephew), a suture passer (Accu-Pass; Smith & Nephew) is used to create a horizontal mattress stitch. The arthroscope is then moved to the AL portal for creation of the DALA portal, which is used for the placement of anchors from the 1- to 3-o'clock position of the labral tear. The cartilage is visualized to ensure that the chondrolabral junction is not disrupted during anchor placement from the 1- to 3-o'clock position. An arthroscopic shaver (4.5-mm Incisor Plus Platinum blade; Smith & Nephew) is then used to debride any

portions of the articular cartilage surface that are unstable. Further lysis of adhesions is performed as necessary to ensure that the entirety of any labral tear is exposed and repaired.

#### Peripheral-Compartment Procedures

Traction is released, and attention is turned to the peripheral compartment. Prior to performing peripheral-compartment procedures, the presence of a residual cam lesion or previous over-resection should be assessed by evaluating the adequacy of the suction seal through dynamic evaluation (Video 1). Commercial tools, such as the Stryker HipCheck, can also be used to assess the presence of a residual cam lesion or previous over-resection. The capsule is mobilized from the femoral head-neck junction through lysis of adhesions and debridement. After fat pad debridement and dissection of the gluteus minimus and iliocapsularis off the capsule while the hip is flexed to 20°, a T-capsulotomy is created with either a radiofrequency probe or an arthroscopic blade. The size (partial or full) and location of the T-capsulotomy should be determined based on the size and location of the residual cam lesion if present. If the residual cam lesion is large and present at the superolateral aspect of the femoral head-neck junction, a full T-capsulotomy should be considered.

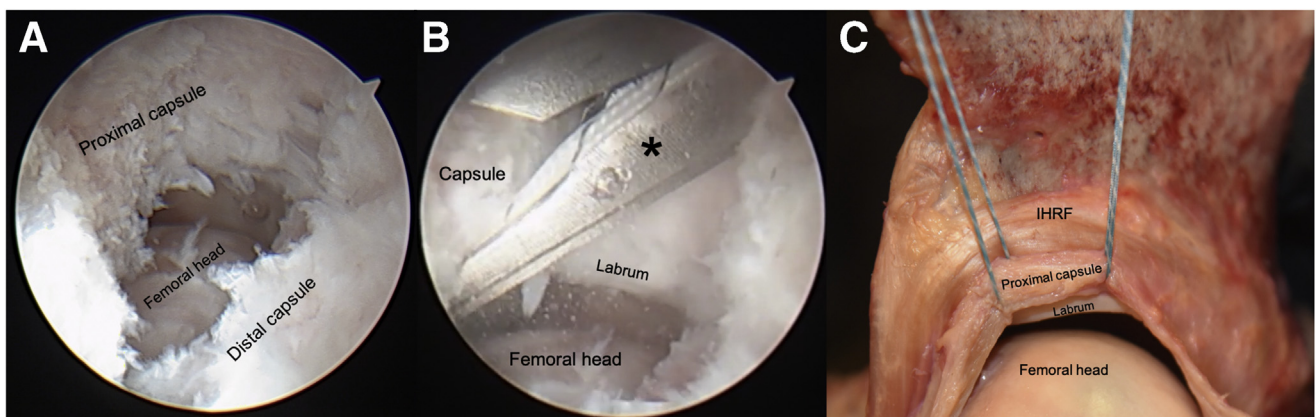


**Fig 2.** Interportal capsulotomy in a right hip. (A) Creation of the periportal capsulotomy at the anterolateral (AL) portal using an arthroscopic blade (asterisk) while viewing through the modified midanterior portal. (B) Creation of the interportal capsulotomy, while viewing through the AL portal, using an arthroscopic blade (asterisk) to connect the modified midanterior portal to the previously created periportal capsulotomy at the AL portal. (C) Completed interportal capsulotomy in a dissected cadaveric right hip.

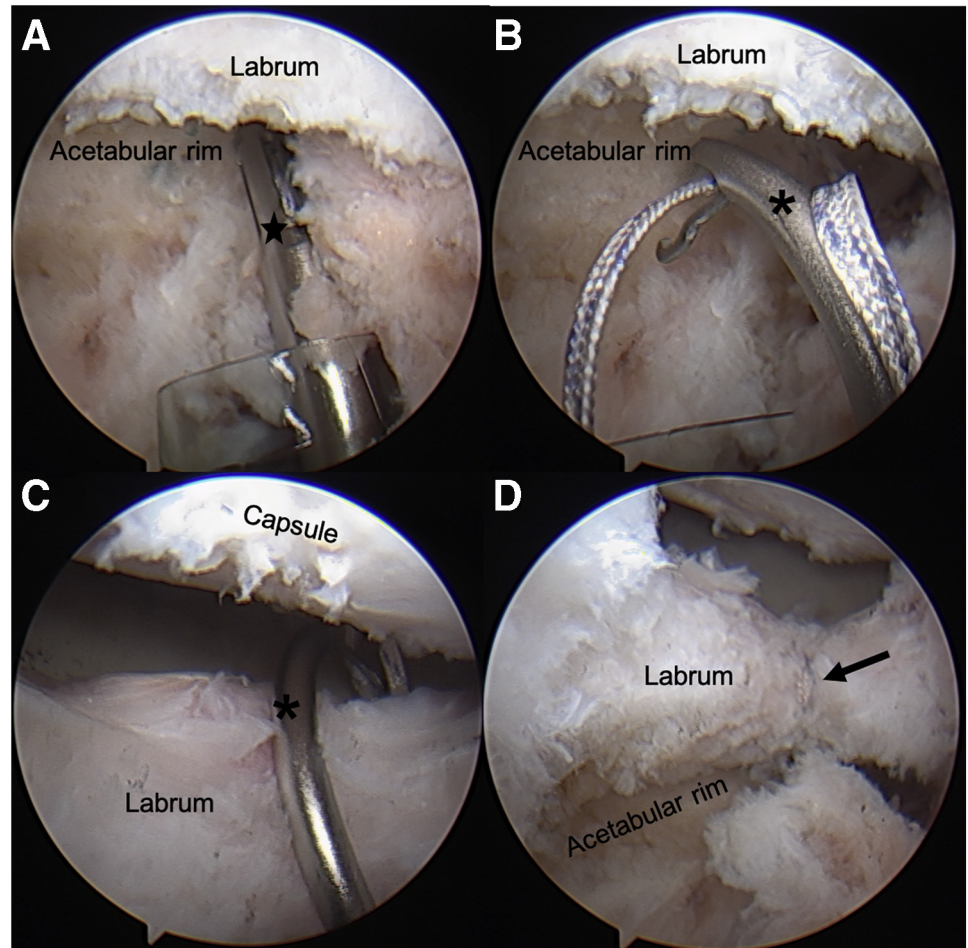
However, if the cam lesion is present at the anterior aspect of the femoral head-neck junction, access may be achieved with a partial T-capsulotomy or through the previously created interportal capsulotomy. Traction sutures may be placed through the DALA and AL portals (viewing through the mMAP) prior to and after T-capsulotomy creation to improve visualization of the cam deformity. If indicated, an arthroscopic burr (5.5 mm; Arthrex, Naples, FL) is then used to remove the residual cam deformity while viewing through the mMAP and working through the AL portal for a left hip or through the DALA portal for a right hip (Video 1). Commercial tools may be used again to ensure that proper resection has occurred, and the adequacy of the suction seal should then again be assessed through dynamic examination (Video 1), followed by any necessary modifications to labral repair and osteochondroplasty.

### Capsular Closure or Plication

After the central- and peripheral-compartment procedures, capsular closure or plication is performed. While viewing from the mMAP, an arthroscopic cannula is placed in the AL portal for a left hip or the DALA portal for a right hip. Starting with the portion of the T-capsulotomy parallel to the femoral neck, a suture-shuttling device (Pivot SlingShot; Stryker) containing No. 1 Vicryl (Ethicon, Somerville, NJ) is inserted into the AL portal, and suture is retrieved from the DALA portal, allowing for proper soft-tissue tension (Video 1). The horizontal portion of the T-capsulotomy is then closed in the same manner using a different type of suture passer (Pivot Injector II). If plication is indicated owing to capsular redundancy, sutures may be passed through the iliofemoral ligament when closing the vertical portion of the T-capsulotomy (Fig 5). After confirmation of watertight capsular closure visually and



**Fig 3.** Traction sutures in a right hip. (A) Working space prior to the application of traction sutures and the presence of adhesions. (B) Application of a traction suture using a suture passer (asterisk). (C) Application of traction sutures in a left-sided cadaveric dissection. Abbreviations: IHRF, indirect head of the rectus femoris.



**Fig 4.** Labral repair. In this right hip that previously underwent labral reconstruction with a hamstring allograft, labral repair is started while viewing through the modified midanterior portal. (A) The drill guide (star) is placed just proximal to the labral tear at the 11-o'clock position of the acetabular rim. (B) A suture passer (asterisk) is used to transfer the suture through the labrum. (C) The suture is pulled through the labrum using a suture passer (asterisk). (D) The suture is subsequently tightened and cut to create a secure knot (star).

with a probe, the procedure is terminated with portal closure and intra-articular and periarticular anesthetic injections.

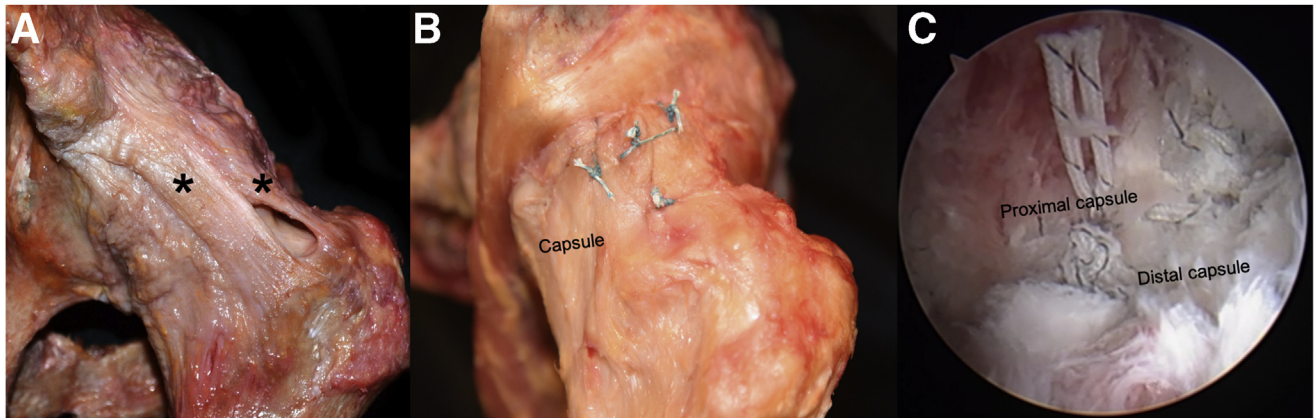
### Rehabilitation

After revision hip arthroscopy, rehabilitation can be considered within 4 overlapping phases: Phase 1 (0-6 weeks) should focus on protecting the joint and avoiding irritation, phase 2 (3-10 weeks) should focus on noncompensatory gait and progression, phase 3 (8-16 weeks) should focus on returning the patient to his or her preinjury level, and phase 4 (16-32 weeks) should focus on a safe return to sport. The patient should not sit for greater than 30 minutes for the first 3 postoperative weeks and should avoid active lifting of the surgical leg for the first 4 postoperative weeks. Passive range of motion should be limited to 90° of flexion and 30° of abduction for 2 weeks and to 0° of extension, 30° of external rotation with 90° of hip flexion, 20° of external rotation in a prone position, and 20° of internal rotation with 90° of hip flexion for 3 weeks after surgery. The patient may begin to discontinue using crutches after 3 weeks (or 6 weeks if

microfracture is performed) and can fully bear weight when his or her gait is pain free and noncompensatory.

### Discussion

Management of persistent or recurrent pain after multiple prior hip operations is challenging. A systematic approach to both the diagnostic workup and surgical procedure is crucial to identify the primary sources of symptoms and to direct treatment accordingly.<sup>10</sup> The key portions of the diagnostic workup include radiographs (standing anteroposterior, false-profile, and Dunn views), magnetic resonance imaging with consideration of intra-articular contrast, and computed tomography if complex bony deformity is suspected. Close attention should be paid to the joint space on standing anteroposterior views to determine whether articular cartilage loss is present. The lateral and anterior center-edge angles can be measured to reassess acetabular coverage, and the femoral head-neck junction should be scrutinized for residual cam deformity. Image-guided intra-articular injections can then be performed to identify whether the primary pain generators are intra-articular.



**Fig 5.** Capsular plication. (A) During capsular plication, sutures should be passed through the iliofemoral ligament (asterisks) when closing the vertical portion of the T-capsulotomy, as shown in a cadaveric dissection of a left hip. (B) Completed capsular closure in a left cadaveric hip. (C) Arthroscopic view of completed capsular closure in a right-sided revision hip arthroscopy case through the modified midanterior portal.

The key considerations at the time of surgery start with careful portal placement to avoid iatrogenic cartilage or labral damage, thorough diagnostic arthroscopy, critical evaluation of capsular integrity, and release of adhesions to define tissue planes (Table 1). In the case of a prior labral repair, repair integrity and tissue quality should be assessed. This is no different in the case of a prior labral reconstruction because both retears and tissue loss can occur. If tissue quality is sufficient for repair, careful acetabular rim preparation is performed with

consideration of the lateral center-edge angle to prevent over-resection. When central-compartment procedures are completed, further capsulotomy should be tailored to the size and location of a planned revision osteochondroplasty. In revision scenarios, fluoroscopic guidance with thoughtful use of internal rotation, external rotation, and flexion is used to prevent over- or under-resection.<sup>13</sup>

The pitfalls of revision hip arthroscopy begin during the diagnostic workup (Table 1). Failure to identify residual bony deformity (including residual cam

**Table 1.** Pearls and Pitfalls

**Pearls**

- Preoperatively, a combination of diagnostic intra-articular injections, physical examination, and imaging should be used to ensure that the pain is intra-articular.
- If the previous capsulotomy was enlarged, caution should be used to create as minimal an interportal capsulotomy as possible while still allowing for adequate access.
- Prior to performing an interportal capsulotomy, the integrity of the capsule should be assessed to determine whether capsular augmentation or reconstruction is necessary.
- Careful diagnostic arthroscopy should be performed to assess the location of adhesions to avoid iatrogenic labral injury during definition of the capsular-labral recess and capsule mobilization.
- If adhesions are severe, additional traction sutures should be used to aid in plane definition between the capsule and labrum.
- In previously labral reconstructed hips, the integrity of graft fixation after acetabuloplasty should be carefully assessed to determine whether repair or reconstruction is needed.
- If labral repair is indicated, the lateral center-edge angle should be considered to prevent over-resection during acetabular rim preparation. To check for the presence and location of a residual cam lesion or previous over-resection of a cam lesion, commercial intraoperative guidance tools may be used prior to and after femoroplasty.
- A residual cam lesion at the superolateral aspect of the femoral head-neck junction may be accessed with a full T-capsulotomy, whereas a lesion at the anterior aspect may be accessed with a partial T-capsulotomy or through the interportal capsulotomy depending on lesion size.
- If capsular redundancy is identified, capsular plication may be used when performing capsular closure.

**Pitfalls**

- Failure to identify bony lesions associated with pain will impede proper surgical planning.
- Failure to identify the presence of adhesions may lead to iatrogenic labral injury during interportal capsulotomy creation.
- Creation of a large interportal capsulotomy or T-capsulotomy can lead to microinstability if not properly closed.<sup>11</sup>
- Failure to use an adequate number of traction sutures will make visualization during central- and peripheral-compartment procedures difficult.
- Failure to properly assess the adequacy of labral graft fixation may lead to residual pain and further revision procedures.
- Improper assessment of the presence and size of a cam lesion can lead to a residual cam lesion or over-resection, which is associated with an increased risk of revision hip arthroscopy.<sup>12</sup>
- Failure to recognize and correct capsular redundancy can lead to microinstability.<sup>11</sup>

lesions, over-coverage, or under-coverage) is the first problem that can arise. Next, failure to identify and safely redefine the tissue planes can make revision arthroscopy challenging. Finally, inadequate capsular closure can result in postoperative microinstability, dislocations, or inferior outcomes.<sup>14-17</sup>

Revision hip arthroscopy after prior labral repair has thus far shown promising results, with systematic reviews reporting consistent improvements in patient-reported outcomes and function.<sup>18</sup> Revision hip arthroscopy after labral reconstruction also occurs. In a recent study of 91 labral reconstructions with minimum 10-year follow-up, 7 cases of revision arthroscopy after reconstruction were identified, with 6 of 7 being performed primarily for lysis of adhesions.<sup>19</sup> No repairs of previously reconstructed areas of the labrum were performed in this cohort. In another series looking specifically at 28 cases of reoperation after labral reconstruction, reconstructed labral tears were identified in 14% of cases (4 of 28).<sup>9</sup> Treatment of labral graft tears has not been well established in the literature. The presented technique attempts to demystify these tears with a reproducible approach to their recognition and repair.

In summary, revision hip arthroscopy after prior labral reconstruction can be performed following a systematic approach to diagnosis of residual or recurrent pathology. The presence of a prior PAO need not complicate the procedure, as long as the anterior and lateral center-edge angles are considered during acetabular rim preparation. Repair of the previously reconstructed labrum is technically feasible, but further studies are needed to determine the healing capacity of the reconstructed labral tissue after refixation.

## References

- Hale RF, Melugin HP, Zhou J, et al. Incidence of femoroacetabular impingement and surgical management trends over time. *Am J Sports Med* 2021;49:35-41.
- Zusmanovich M, Haselman W, Serrano B, Banffy M. The incidence of hip arthroscopy in patients with femoroacetabular impingement syndrome and labral pathology increased by 85% between 2011 and 2018 in the United States [published online May 5, 2021]. *Arthroscopy*. <https://doi.org/10.1016/j.arthro.2021.04.049>.
- Colvin AC, Harrast J, Harner C. Trends in hip arthroscopy. *J Bone Joint Surg Am* 2012;94:e23.
- Bogunovic L, Gottlieb M, Pashos G, Baca G, Clohisy JC. Why do hip arthroscopy procedures fail? *Clin Orthop Relat Res* 2013;471:2523-2529.
- Larsen JB, Mechlenburg I, Jakobsen SS, Thilleman TM, Søballe K. 14-Year hip survivorship after periacetabular osteotomy: A follow-up study on 1,385 hips. *Acta Orthop* 2020;91:299-305.
- Maldonado DR, LaReau JM, Perets I, et al. Outcomes of hip arthroscopy with concomitant periacetabular osteotomy, minimum 5-year follow-up. *Arthroscopy* 2019;35:826-834.
- Clohisy JC, Ackerman J, Baca G, et al. Patient-reported outcomes of periacetabular osteotomy from the prospective ANCHOR cohort study. *J Bone Joint Surg Am* 2017;99:33-41.
- White BJ, Patterson J, Herzog MM. Revision arthroscopic acetabular labral treatment: Repair or reconstruct? *Arthroscopy* 2016;32:2513-2520.
- Locks R, Bolia IK, Utsunomiya H, Briggs KK, Philippon MJ. Revision hip arthroscopy after labral reconstruction using iliotibial band autograft: Surgical findings and comparison of outcomes with labral reconstructions not requiring revision. *Arthroscopy* 2018;34:1244-1250.
- Arakgi ME, Degen RM. Approach to a failed hip arthroscopy. *Curr Rev Musculoskelet Med* 2020;13:233-239.
- O'Neill DC, Mortensen AJ, Cannamela PC, Aoki SK. Clinical and radiographic presentation of capsular iatrogenic hip instability after previous hip arthroscopy. *Am J Sports Med* 2020;48:2927-2932.
- Cvetanovich GL, Harris JD, Erickson BJ, Bach BR Jr, Bush-Joseph CA, Nho SJ. Revision hip arthroscopy: A systematic review of diagnoses, operative findings, and outcomes. *Arthroscopy* 2015;31:1382-1390.
- Larson CM, Wulf CA. Intraoperative fluoroscopy for evaluation of bony resection during arthroscopic management of femoroacetabular impingement in the supine position. *Arthroscopy* 2009;25:1183-1192.
- Domb BG, Chaharbakshi EO, Perets I, Walsh JP, Yuen LC, Ashberg LJ. Patient-reported outcomes of capsular repair versus capsulotomy in patients undergoing hip arthroscopy: Minimum 5-year follow-up—A matched comparison study. *Arthroscopy* 2018;34:853-863.e1.
- Sugarman EP, Birms ME, Fishman M, et al. Does capsular closure affect clinical outcomes in hip arthroscopy? A prospective randomized controlled trial. *Orthop J Sports Med* 2021;9:232596712096311.
- Owens JS, Jimenez AE, Shapira J, et al. Capsular repair may improve outcomes in patients undergoing hip arthroscopy for femoroacetabular impingement: A systematic review of comparative outcome studies. *Arthroscopy* 2021;37:2975-2990.
- Beck EC, Nwachukwu BU, Chahla J, Clapp IM, Jan K, Nho SJ. Complete capsular closure provides higher rates of clinically significant outcome improvement and higher survivorship versus partial closure after hip arthroscopy at minimum 5-year follow-up. *Arthroscopy* 2021;37:1833-1842.
- Bessa FS, Williams BT, Polce EM, et al. Indications and outcomes for arthroscopic hip labral reconstruction with autografts: A systematic review. *Front Surg* 2020;7:61.
- Philippon MJ, Arner JW, Crawford MD, Bolia IK, Briggs KK. Acetabular labral reconstruction with iliotibial band autograft: Outcome and survivorship at a minimum 10-year follow-up. *J Bone Joint Surg Am* 2020;102:1581-1587.