



Ask the Experts- Hip Arthroscopy & Hip Preservation

By John P. Salvo, MD

There has been an exponential increase in hip arthroscopic procedures over the last 2 decades. With increasing awareness of hip pathology and how it relates to injury patterns and biomechanics, tremendous advances have been made in the treatment of hip pathology in the athletic and pre-arthritic population. The vast majority of hip arthroscopy cases treat labral tears associated with femoroacetabular impingement (FAI). As with most other aspects of orthopedics, as we make progress in treatment, controversies arise. Current areas of controversy include management of the hip capsule, treatment of the failed hip arthroscopy, and hip dysplasia.

We've asked national leaders on these topics Dr. John Christoforetti, Dr. Dean Matsuda, and Dr. Allston Stubbs from the MASH (Multicenter Arthroscopic Study of the Hip) group to describe their evidence based approach to these problems. We'd like to thank them for taking the time to share their wisdom and experience with us.

How do you manage the capsule in a typical patient with a labral tear and CAM FAI? Do you routinely do a "T" capsulotomy? Do you close your inter-portal capsulotomy?

Matsuda: I routinely connect my capsular portals (from standard anterolateral and modified midanterior portals) and make a vertical extension only as needed to visualize and perform sufficient femoroplasty for cam decompression as visualized with a 70 degree arthroscope. I do not routinely close the inter-portal capsulotomy. My indications for arthroscopic capsular closure include: A. dysplasia, B. excessive proximal femoral anteversion, and C. the hyperlax (typically female) patient.

Christoforetti: Our approach is to use a laterally based interportal capsulotomy without a vertical or "T" limb. Severe or distal (towards the intertrochanteric line) anterior CAM deformities would be the rare exceptions. Using mobile limb positioning and traction sutures secured in the distal capsule along the capsulotomy allows comprehensive access for treatment without violation of the zona orbicularis. A single absorbable suture is used to anatomically approximate the medial portion of the interportal capsulotomy to reduce the tendency of adhesions healing the distal flap to the anterior femoral neck.

Stubbs: My hip arthroscopy technique comprises two distinct portals: anterolateral and modified anterior. To change the fulcrum from the capsule to the skin, I advocate a capsulotomy of 5 to 8 mm for each portal as needed. I do not advocate a routine interportal capsulotomy or T-type capsulotomy. Visualization is optimized with portal-camera-instrument placement, limited capsulotomy, and mobilization of pathology to the field of view. Capsulotomy closure or capsulorrhaphy is considered in cases of hips at risk for instability.

Briefly take us through your approach in regards to capsular release, closure, or plication.

Stubbs: Capsular release is considered in cases where capsular contracture is present such as arthritis, Perthes disease, and adhesive capsulitis. Capsular closure is considered in cases where operative exposure of the capsule compromises the capsuloligamentous complex or the zona orbicularis. Capsular plication is considered in cases where subjective or objective instability is present; specifically, patient history, physical examination, radiographic and intraoperative assessment that suggests capsular incompetence or insufficiency.

Christoforetti: Initial establishment of the anterolateral working portal allows direct visualization to guide mid-anterior portal access under traction, leaving 1 cm of capsule in the proximal limb for eventual closure. Following interportal capsulotomy, an anterograde passing device is used to secure the distal flap of capsule. Upon case completion, the traction suture aids in tensioning distal capsule tissue during placement of a final repair suture. The camera is positioned in the mid-anterior portal along with the traction suture and the anterolateral portal is used to place and tie the stitch through closed cannula with standard instrumentation.

Matsuda: Inter-portal capsulotomy is performed with initial "dry" arthroscopy using an arthroscopic knife to connect the anterolateral and modified midanterior portal. Descending vertical limb of T-capsulotomy is titrated to size/extent of cam deformity and decompression needed. Arthroscopic closure only of vertical limb (if any) from distal to proximal.

What is your approach to the failed hip arthroscopy patient?



Christoforetti: Our approach focuses on identifying the safest way to reduce the anxiety and frustration common in this patient group. Detailed history taking and physical examination precedes careful review of prior records. We strive to reinforce that the patient made a good selection for surgery and support the decision making of the initial provider in order to reduce anxiety and facilitate recovery. Systematic assessment of new plain radiographs often including MRI scanning with and without arthrogram to determine postoperative changes in the capsule can help. Lidocaine tests to areas suspicious for residual pain generation are performed under ultrasound guidance with careful pre and post-testing examination. This process rules out standard surgical complications and reported areas commonly associated with residual symptoms including untreated concomitant pathology or structure/activity demand mismatch.

Matsuda: Typically I see insufficient bony resection of deformities from femoroacetabular impingement. Initially will remove any adhesions, followed by revision acetabuloplasty (if needed), labral refixation (if reparable), labral reconstruction (if nonreparable or insufficient quality or quantity), and revision femoroplasty (if indicated) until two things are surgically achieved: A. Resolution of ongoing impingement (confirmed on arthroscopic dynamic examination) and B. Restoration of labral fluid seal with intimate contact of native labrum and labral graft against chondral surface of femoral head.

Stubbs: Reassess primary diagnosis as secondary to either an intraarticular or extraarticular source via history, physical examination,

diagnostic injections, and radiology. Reassess surgical treatment via operative records and radiology. In the setting of a correct primary diagnosis and surgical treatment, common sources of failure include adhesions, rehabilitation issues, and progressive arthritis. In the setting of diagnostic or surgical technique concerns, common sources of failure include residual capsulolabral dysfunction and impingement, excessive acetabular dysplasia and femoral torsion, and advanced arthritis.

When do you recommend a labral reconstruction? What type of graft do you use?

Matsuda: In general, younger adult patient without significant osteoarthritis that has labral insufficiency in terms of A. quantity (e.g., previously resected labral segment, hypoplastic labrum, irreparable torn labrum) or B. quality (e.g., severely damaged, degenerative, or ossified labral tissue). Another indication is for microfracture chondroplasty of the acetabular rim in cases of labral insufficiency; the graft not only restores labral function but acts as a buttress to aid vital containment of the superclot. I prefer distal hamstring autografts (either gracilis or if larger graft needed, then semitendinosis) harvested through small knee incision familiar to many ACL surgeons or semitendinosis allograft. I use a technique which permits graft tensioning on the acetabular rim and graft overlap with the remaining native labrum, both in hopes of restoring the labral fluid seal.

Stubbs: Labral reconstruction is a useful technique in both primary and revision surgery. One should consider a labral reconstruction in

the setting of labral insufficiency secondary to hypoplasia, irreparable tearing, or iatrogenic debridement. Labral reconstruction should be avoided in situations of poor patient compliance, severe chondromalacia, and compromised patient nutrition. Iliotibial band autograft or tensor fascia lata allograft are preferred graft types.

Christoforetti: We reserve labrum reconstruction for cases of postoperative labrum insufficiency that results in symptoms of microinstability. This limits most applications to the revision surgical setting. Our graft of choice is autograft iliotibial band and suture anchor fixation.

What are the considerations for patients with hip dysplasia with regards to hip arthroscopy?

Christoforetti: We consider all patients with lateral or anterior acetabular undercoverage to be at higher risk for recurrent symptoms following hip arthroscopy for labrum surgery. By partnering with an open hip preservation surgeon, we use a team approach to assess the patient's symptoms, activity goals, and structure to recommend non-operative, arthroscopic, open, or combined strategies. The only hard and fast rule we try to follow is avoiding iatrogenic destruction or removal of capsulolabral tissue in this patient group. In addition, we approach every operative case with an exam under anesthesia and traction positioning protocol that forces us to observe for any occult signs of instability that preoperative planning may have underestimated.

Stubbs: The optimal role of hip arthroscopy in the setting of hip dysplasia is still being defined. Radiographic measurements such as Wiberg's lateral center edge angle,



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Sharp's angle, Tonnis angle, the anterior center edge angle, and Shenton's Line are useful screening metrics. A team approach to the dysplastic hip will ensure that the patient is able to make an informed decision on the goals of surgical treatment. Combined procedures involving hip arthroscopy and acetabular osteotomy may be an optimal solution for some patients.

Matsuda: Despite divergent outcomes in several studies and fully acknowledging that the jury is still out on this topic, I lean towards arthroscopic treatment of patients with borderline or mild dysplasia oftentimes with co-existing cam FAI. Key surgical steps in the borderline dysplastic patient include A. no rim reduction (although

I do freshen the bony rim in cases of labral repair), B. labral restoration either via primary repair or, if needed, reconstruction in which case I would use a larger (e.g. semitendinosus) graft to replace a hypertrophic labrum, C. conservative capsulotomy followed by capsular plication, and D. close clinical and radiographic follow-up to detect if any early signs of worsening (e.g., pain in non-impinging positions, subtle joint narrowing) in which case timely conversion to peri-acetabular osteotomy (PAO) may prevent or delay premature hip arthroplasty in typically young patients.

Hip Arthroscopy Expert Pearls

Management of the Hip Capsule:

1. Indications for arthroscopic capsular closure include: dysplasia, proximal femoral anteversion and the hyperlax patient. (Dean Matsuda, MD)
2. Capsular release is considered in cases where capsular contracture is present such as arthritis, Perthes disease, and adhesive capsulitis. (Allston Stubbs, MD)
3. Capsular plication is considered in cases where subjective or objective instability is present. (Allston Stubbs, MD)

Approach to Revision Surgery:

4. Reassess the primary diagnosis via history, physical examination, diagnostic injections, and radiology. Reassess surgical treatment via operative records and radiology. (Allston Stubbs, MD)
5. Lidocaine tests to areas suspicious for residual pain generation are performed under ultrasound guidance with careful pre and post-testing examination. (John Christoforetti, MD)
6. The goals of revision surgery are: A. Resolution of ongoing impingement and B. Restoration of labral fluid seal with intimate contact of native labrum or labral graft against the chondral surface of the femoral head. (Dean Matsuda, MD)

Labral Reconstruction

7. Consider a labral reconstruction in the setting of labral insufficiency secondary to hypoplasia, irreparable tearing, or iatrogenic debridement. (Allston Stubbs, MD)
8. We reserve labral reconstruction for cases of postoperative labrum insufficiency (John Christoforetti, MD)

Hip Dysplasia

9. The only hard and fast rule we try to follow is avoiding iatrogenic destruction or removal of capsulolabral tissue in this patient group. (John Christoforetti, MD)
10. A team approach with combined procedures involving hip arthroscopy and acetabular osteotomy may be an optimal solution for some patients. (Allston Stubbs, MD)