Technical Note

Arthroscopic Anatomy and Surgical Techniques for Peritrochanteric Space Disorders in the Hip

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Abstract: Disorders of the lateral or peritrochanteric space (often grouped into the greater trochanteric pain syndrome), such as recalcitrant trochanteric bursitis, external snapping iliotibial band, and gluteus medius and minimus tears, are now being treated endoscopically. We outline the endoscopic anatomy of the peritrochanteric space of the hip and describe surgical techniques for the treatment of these entities. Proper portal placement is key in understanding the peritrochanteric space and should be first oriented at the gluteus maximus insertion into the linea aspera, as well as the vastus lateralis. When tears of the gluteus medius and minimus are encountered, suture anchors can be placed into the footprint of the abductor tendons in a standard arthroscopic fashion. Our initial experience indicates that recalcitrant trochanteric bursitis, external coxa saltans, and focal, isolated tears of the gluteus medius and minimus tendon may be successfully treated with arthroscopic bursectomy, iliotibial band release, and decompression of the peritrochanteric space and suture anchor tendon repair to the greater trochanter, respectively. **Key Words:** Hip arthroscopy—Gluteus medius—Peritrochanteric space.

Recent advances in hip arthroscopy have led to a significant evolution in its use for the treatment of athletes and patients in the general public with a broad spectrum of hip pathology. The increasing enthusiasm for minimally invasive surgery combined with technical advances in hip arthroscopic procedures and magnetic resonance imaging of the hip has led to a dramatic increase in the application of hip arthroscopy for the treatment of symptomatic acetabular labral tears, hip capsular laxity and instability, femoroacetabular impingement, chondral lesions, osteochondritis dissecans, ligamentum teres injuries, and loose bodies (e.g., synovial chondromatosis).[1-9] In addition, Byrd and Jones[10] described treatment of adhesive capsulitis of the hip arthroscopically.

In addition to arthroscopic techniques, many disorders of the lateral or peritrochanteric space (often grouped into the greater trochanteric pain syndrome), such as recalcitrant trochanteric bursitis, external snapping iliotibial band, and gluteus medius and minimus tears, are now being treated endoscopically.[3,11-17] A detailed review of the open and arthroscopic anatomy of the central and peripheral compartments of the hip has been published.[18] Byrd[2] recently published a review of the surgical technique of hip arthroscopy.

In this article we outline the endoscopic anatomy of the lateral compartment, or peritrochanteric space, of the hip and describe surgical techniques for repairs of gluteus medius and minimus tears and release of the

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iliotibial band for external coxa saltans. To our knowledge, this is the first report describing endoscopic repair of gluteus minimus and medius tears.

ENDOSCOPIC ANATOMY AND SURGICAL TECHNIQUE

Entry into the lateral compartment typically follows routine evaluation and treatment of central and peripheral compartment disorders. The anterior portal offers the best access into the peritrochanteric space, placed 1 cm lateral to the anterior superior iliac spine within the interval between the tensor fascia lata and sartorius (Fig 1, thick arrow). The cannula is directed into the peritrochanteric space with the leg in full extension, held in 0° of adduction, with 10° to 15° of internal rotation. It is directed posteriorly and swept back and forth between the iliotibial band overlying the greater trochanteric bursa and the greater trochanter with free motion in this space. The technique is similar to access to the subacromial space in the shoulder, where the iliotibial band is analogous to the undersurface of the acromion. With appropriate portal and cannula placement, a clear space lying between the iliotibial band and the greater trochanter can be relatively easily identified. If in question, cannula placement can be confirmed under fluoroscopy. A distal posterior portal into the peritrochanteric space is placed midway between the tip of the greater trochanter and the vastus tubercle along the posterior one third of the greater trochanteric midline (Fig 1, thin arrow). This portal placement facilitates access distally and proximally for both diagnostic evaluation and operative intervention (e.g., iliotibial band release). A third portal can be placed proximal to the tip of the greater trochanter in line with the distal posterior portal (Fig 1, open arrow). This portal facilitates more proximal work and can also be used for more distal visualization.

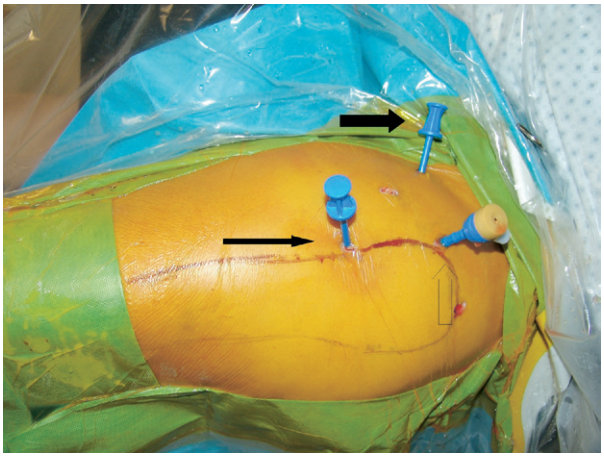

Figure 1. Intraoperative photograph of a left hip with peritrochanteric space portals in place. The anterior portal (thick arrow) is placed 1 cm lateral to the anterior superior iliac spine within the interval between the tensor fascia lata and sartorius. The distal posterior portal (thin arrow) is placed midway between the tip of the greater trochanter and the vastus tubercle along the posterior one third of the greater trochanteric midline. A third portal (open arrow) can be placed proximal to the tip of the greater trochanter in line with the distal posterior portal. This portal facilitates more proximal work and can also be used for more distal visualization.

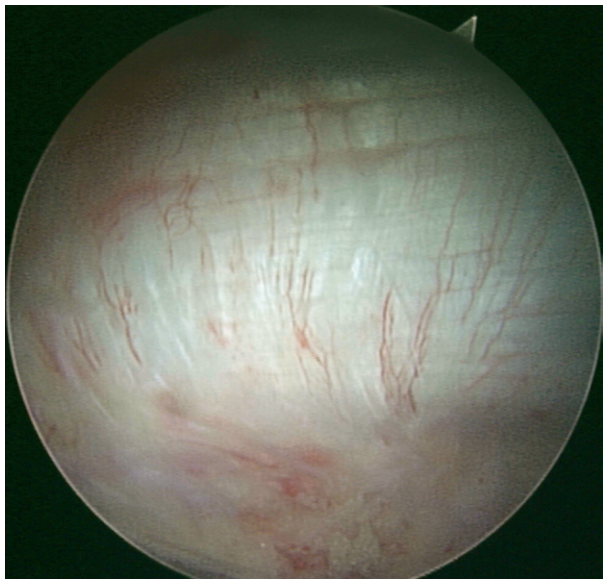

Figure 2. Arthroscopic image of longitudinal lines of vastus lateralis at insertion on vastus tubercle, with visualization immediately anterior to anterior facet.

Anatomically, as the 70° arthroscope is placed into the anterior portal, both the light source and camera are positioned proximally and oriented distally. The initial view includes the insertion of the gluteus maximus into the posterior border of the iliotibial band. This insertion can be palpated and the bursa cleaned from this area with a motorized shaver. As the arthroscopist continues to progress proximally, the longitudinal lines of the vastus lateralis are identified and can be traced up to the insertion at the vastus tubercle, looking immediately anterior to the anterior facet (Fig 2). The gluteus minimus tendon and muscle are visualized anteriorly with the arthroscope source and camera placed laterally, looking anterior superior (Fig 3). As the arthroscope is rotated superiorly, the gluteus medius will come into view with its insertion into the greater trochanter (Fig 3). Further cleaning of the fibrinous bands overlying this area may be re-

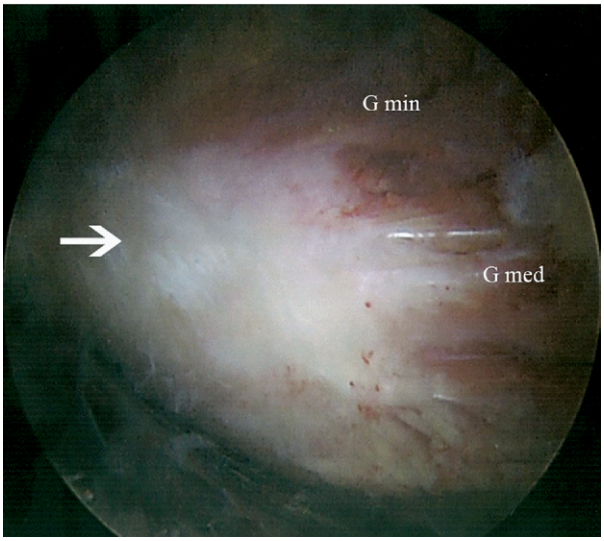

FIGURE 3. Arthroscopic image of a left hip displaying gluteus medius (G med) and minimus (G min) muscle and tendon with insertion into greater trochanter (arrow).

quired for better access and visualization through the posterior portal. The gluteus maximus tendinous contribution to both the linea aspera and the tensor fascia can be visualized by looking laterally. This peritrochanteric space is typically distended with 50 to 70 mm Hg of pressurization. Hemostasis can be obtained with either radiofrequency ablation or standard coagulation. Sometimes fibrinous bands in this area will require excision. Accessory tendinous structures should also be inspected from across the gluteus minimus muscle, which can cross the gluteus minimus and have an insertion posteriorly as previously described by Ganz and colleagues.[19]

Proper portal placement is key in understanding the peritrochanteric space and should be first oriented at the gluteus maximus insertion into the linea aspera, as well as the vastus lateralis. Inspection should proceed in a counterclockwise fashion starting distally and posterior at the gluteus maximus insertion and then proceeding proximally and anterior toward the vastus lateralis and continuing proximally to the gluteus minimus. The fibers of the gluteus medius lie posterior to the minimus and should be thoroughly probed and visualized to identify the presence of full-thickness tendon insertion tears (Fig 4). A thorough knowledge of the normal footprint anatomy is critical in adequately assessing the abductors. Finally, the arthroscope should be turned toward the iliotibial band. In particular, the posterior one third of the iliotibial band is implicated in coxa saltans externus (external snapping hip) and may be causing direct abrasive wear to the greater trochanter. In cases in which there is no clinical concern of an external snapping hip and evaluation of the fibers of the posterior one third of the iliotibial band shows no abnormal contact across the greater trochanter, a thorough evaluation for abductor tendon tears is warranted. If no tears are identified, debridement of the trochanteric bursae alone may provide an adequate soft-tissue decompression of the lateral compartment.

If coxa saltans externus has been noted or if snapping of the iliotibial band over this area has been refractory to nonoperative treatment, a release may be required; it should be performed along the posterolateral portion of the greater trochanter, beginning at the vastus tubercle insertion, extending to the tip of the greater trochanter in a z-type release of 1 cm anterior, 3 cm distal, and 1 cm posterior with slight variations thereof being required by digital and instrumented palpation in view of the particular fibers under the greatest amount of tension.

The gluteus medius tendon should be examined in a manner similar to subacromial examination of the rotator cuff. Gluteus medius tears can be divided into acute and chronic tears, and some authors advocate an analogy to the shoulder in considering indications for debridement versus repair. All tears should have fibrinous, scarred bands released over the maximus or the medius. When a repairable tear is identified, the

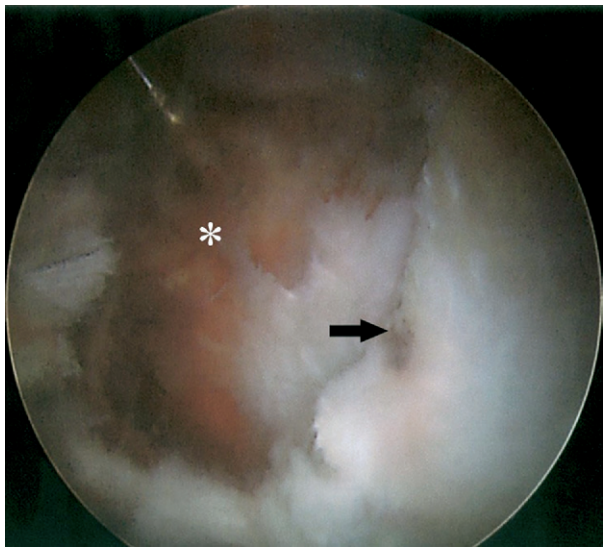

FIGURE 4. Arthroscopic image of a left hip identifying presence of a full-thickness gluteus medius and minimus tendon insertion tear (arrow). The exposed footprint of the tendon on the greater trochanter is easily visualized (asterisk).

edges are debrided with a full-radius shaver and prepared for repair. The attachment site of the tendon at the greater trochanter is prepared with a full-radius shaver similar to preparation of the footprint for rotator cuff tears. Suture anchors can be placed into the footprint of the abductor tendons in a standard arthroscopic fashion. We have used both metal and bioabsorbable sutures depending on the bone quality. Fluoroscopic guidance may be helpful in directing the anchors in the appropriate direction and location. Once the anchors are placed, the sutures are retrieved and passed sequentially through the edges of the prepared gluteus medius tendon with a suture-passing device and tied under arthroscopic visualization with an arthroscopic knot pusher (Fig 5).

DISCUSSION

Several authors have reported the endoscopic treatment of recalcitrant trochanteric bursitis, internal and external coxa saltans, and calcific tendinitis of the gluteus minimus and medius tendons.[11-13,15-17] To our knowledge, this is the first report describing the endoscopic repair of gluteus minimus and medius tendon tears.

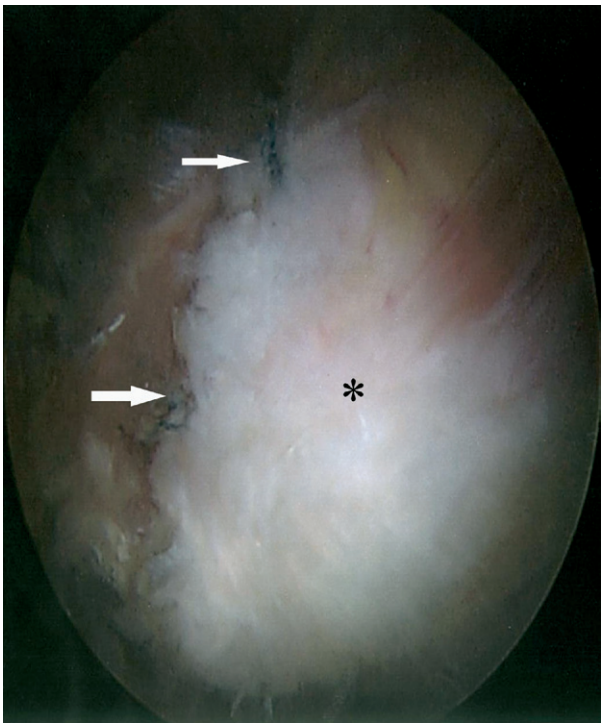

FIGURE 5. Arthroscopic image of repaired gluteus medius and minimus tendons to greater trochanter (asterisk) with sutures (arrows) after they are passed sequentially through edges of prepared tendon with a suture-passing device and tied under arthroscopic visualization with an arthroscopic knot pusher.

CONCLUSIONS

Our initial experience indicates that recalcitrant trochanteric bursitis, external coxa saltans, and focal, isolated tears of the gluteus medius and minimus tendon may be successfully treated with arthroscopic bursectomy, iliotibial band release, and decompression of the peritrochanteric space and suture anchor tendon repair to the greater trochanter, respectively. As the open and arthroscopic anatomy of the hip becomes more clearly defined and surgical indications clarified, the range of available treatment options for disease entities of the lateral peritrochanteric space of the hip will increase and be used to effectively treat disease entities that have classically required open surgical treatment.

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