The posterior approach to the hip is commonly used for total hip arthroplasty (THA). Its advantages include preservation of the abductor mechanism, excellent visualization of the acetabulum, and lower incidence of heterotopic bone formation. However, it has been associated with a higher prosthetic dislocation rate than anterolateral approaches. On the other hand, anterolateral approaches have been associated with high incidence of abductor lurch up to 10%. Several reports in the literature, including prospective randomized series, have shown the value of posterior structure repair after a posterior approach in reducing the incidence of postoperative hip dislocation.

This article presents a modified technique of exposing and repairing the posterior capsule. Our modified posterior approach to total hip arthroplasty offers excellent fixation of the hip capsule on the greater trochanter, therefore minimizing the incidence of postoperative dislocation following THA.

**Figure 1:** Posterior exposure of the hip (A). The gluteus maximus muscle is not drawn. Abbreviations: GM=gluteus medius, GMi=gluteus minimus, IG=inferior gemellus, OI=obturator internus, P=piriformis, Q=quadratus, and SG=superior gemellus. Inverted L-shaped musculocapsular incision (B). Posterior capsule and external rotators taken off sharply from its insertion under the greater trochanter.
The patient is positioned in the lateral decubitus position and a posterolateral incision is used. The short rotator muscles and inferior edge of the gluteus medius are exposed. The gluteus medius is retracted superiorly and anteriorly. It is important to identify the cleavage plane between the tendinous piriformis and gluteus minimus muscle. Using a long handle #10 blade pointing toward the trochanter, it is essential to get as close to the bone as possible with the blade and avoid inadvertent section of the gluteus medius tendon. This will constitute the shorter limb of the inverted L-shaped capsular incision.

The piriformis muscle, conjoined tendon (obturator internus and gemelli), and capsule are peeled off as a single layer along their insertion in the piriformis fossa and along the posterior aspect of the greater trochanter (Figure 1A). By adhering strictly to the bone, bleeding from the superior branch of the medial circumflex femoral artery is avoided. This constitutes the vertical limb of the inverted “L” (Figure 1B). The inferior capsule has been sized but not resected, allowing further separation between the proximal femur and posterior wall of the

No fractures of the greater trochanter have occurred using our technique in >150 patients.

Figure 2: Sutures are passed through trochanteric drill holes using suture passer. Both the external rotators and the hip capsule are incorporated into the repair. Figure 3: The posterior flap that is comprised of the posterior capsule and short external rotators are recessed back into the piriformis fossa minimizing internal rotation and therefore the incidence of posterior dislocation. Abbreviations: GM=gluteus medius, GMi=gluteus minimus, IF=inferior gemellus, OI=obturator internus, P=piriformis, Q=quadratus, and SG=superior gemellus.
acetabulum to provide room for acetabular reaming. The anterior capsule also is preserved to help minimize excessive external rotation and anterior dislocation.

Hedley et al\(^6\) reported a complete circumferential capsular excision. In our experience, this was needed only in patients with severe internal rotation contracture. We believe that retaining some of the anterior capsule might reduce the likelihood of an anterior dislocation. Pellicci et al\(^5\) described taking down the short rotators first then doing the posterior capsular incision. Our technique is similar to that of Hedley et al\(^6\) with the muscle in capsule resected as a single layer. The capsular repair will, therefore, be comprised of the piriformis tendon, obturator internus, gemelli tendon, and thickened posterior capsule. This technique provides a tough layer for closure that helps minimize excessive internal rotation of the hip. This decreases the incidence of posterior dislocation by maintaining the attachments of the short rotators to the posterior capsule and integrity of the posterior flap.

During insertion of the acetabular component, the posterior capsule is retracted with a wide Deaver or a self-retaining retractor. Excision of the labrum around the posterior or wall allows a retractor to be placed between the posterior capsule and posterior wall providing excellent exposure of the acetabulum.

Closure of the posterior capsule is undertaken using a 3/32-inch (2.3-mm) drill bit and three #2 Fiberwire sutures (Arthrex, Naples, Fla). The drill bit used generates a hole that is 29% smaller than the one produced by the larger 2.7-mm drill bit used by White et al\(^4\), which was associated with a 0.9% incidence of greater trochanteric fractures. No fractures of the greater trochanter have occurred using our technique in >150 patients.

Four small holes are made approximately 1 cm apart over the greater trochanter using the 3/32-inch drill bit. The entry point of the drill bit should be placed so that the exiting drill bit is in the piriformis fossa, which usually is the strongest point in the repair. When taking these sutures, the sciatic nerve, which is in close proximity to the retracted short rotators, should be avoided. Although some authors recommend using six to eight sutures in their repair,\(^6\) we believe that limiting the number of suture passes to three might theoretically decrease the risk of injuring the sciatic nerve.

Each limb of the thread is passed in two consecutive holes using the suture passer (Figure 2). The hip is put in external rotation while the sutures are tied over the trochanter (Figure 3). Even in the most severely contracted arthritic hips, we were able to find a cuff of capsulotendinous tissue to reattach to the trochanter. The greater challenge that we have encountered is when an increased offset occurs following THA and the length of the capsule may not be adequate to reattach to the piriformis fossa. This has only been encountered on rare occasions, and in this situation, the capsule is repaired to any available point over the greater trochanter.

**SUMMARY**

Various techniques of posterior capsular repair following THA have been reported and studies have demonstrated the merits of posterior capsular repair with respect to decreasing the incidence of dislocation.\(^4\)\(^,\)\(^7\) Our modified technique using three sutures offers excellent fixation of the hip capsule on the greater trochanter. The small drill holes needed for the #2 Fiberwire minimize the risk of a greater trochanteric fracture through the drill holes and osteoporotic bone. To date, we have not experienced any complications or reaction to this material. The importance of a posterior capsule repair has been well documented in the literature.\(^6\)\(^,\)\(^7\) A rigid capsular repair can prevent excess internal rotation and therefore minimize the incidence of postoperative dislocation following THA.

**REFERENCES**


