



## Technique of

# Minimal Incision Total Hip (MITH<sup>SM</sup>)

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## INTRODUCTION

The Minimal Incision Total Hip (MITH<sup>SM</sup>) surgical technique reduces the usual standard posterior lateral incision and expands the viewing area by using retractors and retraction maneuvers that take advantage of skin, fat, fascia and muscle compliances that are encountered at each layer of exposure. It is a reasonable approach to surgery, providing the surgeon has the same internal reference anatomical structures available that they routinely use during total hip arthroplasty. This technique should not compromise the component position, repair of soft tissues, handling of soft tissues or bone, which may lead to a fracture, nerve injury or instability.

## INCISION LANDMARKS

The incision is planned based on anatomical landmarks by palpating the greater trochanter, shaft of the femur, and posterior inferior spine of the pelvis. The standard posterior lateral incision is drawn to give a frame of reference. Referencing the original 12-14" incision, a four-inch incision is planned 2-3 cm from it's apex and posterior between the two endpoints of the longer incision. This new four inch MITH<sup>SM</sup> incision is also moved 2 cm posterior and superior along the line of the MITH<sup>SM</sup> incision toward the posterior inferior spine of the pelvis. This new MITH<sup>SM</sup> incision placement allows entrance over the posterior hip, exactly where a standard posterior lateral skin incision would end.

## ACETABULAR EXPOSURE

After the skin incision, subcutaneous fat is incised down to the fascia. If the fat is abundant and deep, it is important to further extend the incision (usually posterior) to allow adequate visualization. Undermining this incision to shift the skin should be avoided. Such a maneuver risks sub-dermal vascularity of the skin as well as creates a subcutaneous pocket for development of a hematoma, seroma, or abscess.

The fascia is cleaned and incised within the incision routinely as with a posterior lateral incision. A Charnley self-retaining retractor is placed with the closed end toward the head, an anterior shallow hook and a posterior large or deep hook, depending on the patient's pelvic width.

The trochanteric bursa is incised with curved Mayo scissors. If there is abundant fat beneath the bursa, it is elevated and excised using electrocoagulation, making sure to avoid the sciatic nerve. The remaining fat is dissected posteriorly using a lap sponge. Using a finger, the underside of the gluteus medius tendon is palpated and the curved end of a **Hibbs retractor** is placed and pulled anteriorly. (Figure 1)

An 8" curved Pean clamp is placed under the external rotators, from superior to inferior and tagged with sutures. A **90° soft tissue retractor** or an assistant's hand protects the nerve structures posteriorly and the tendons are cut. (Figure 2)

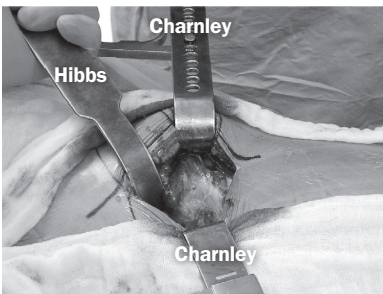


Figure 1

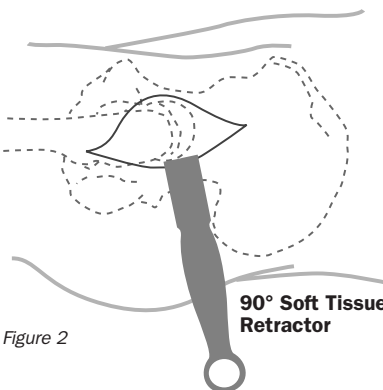


Figure 2

From a site above the lesser trochanter, an 8" curved Pean clamp is placed towards the superior part of the hip joint and the remaining muscle is incised from the femur. At the superior border of this muscle, the medial femoral circumflex artery must be clamped and electrocoagulated. This is a common site of the first major blood loss possibility and can be minimized by vigilant attention to this step.

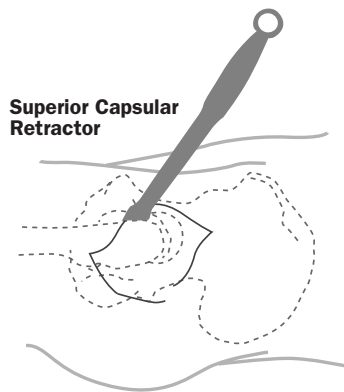


Figure 3

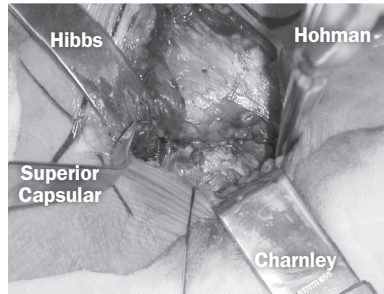


Figure 4

The capsule is now cleaned with a lap sponge, sweeping posteriorly towards the sciatic nerve. A **superior capsular retractor** is placed over the superior capsule and a **blunt Hohman retractor** at the inferior part of the capsule. (Figures 3 & 4)

At times, the capsular attachment to the gluteus minimus must be bluntly elevated from the superior capsule to allow exposure. The first capsular incision is made along the areas parallel to the femur and at a right angle to the femoral neck. A second incision is made in the shape of a T, 90 degrees to the posterior lip of the acetabulum along the femoral neck, exactly in the neck center. Next, both corners are grasped with Kocher clamps and an incision is made along the posterior lip of the acetabulum, inferior and superior, to make a barn door. The retractors are now placed intracapsular and the hip is dislocated with gentle flexion and internal rotation. If resistance is felt, the capsule or external rotators are likely to be cut incompletely and this additional step must be completed. After dislocation, the neck is

marked for the femoral neck osteotomy, which is planned preoperatively from x-ray templates and referenced off of the lesser trochanter or tip of the greater trochanter. After the neck is cut, the head is easily removed with a Kocher clamp.

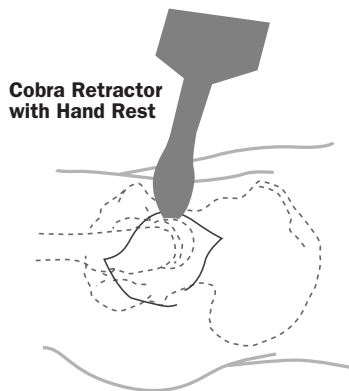


Figure 5

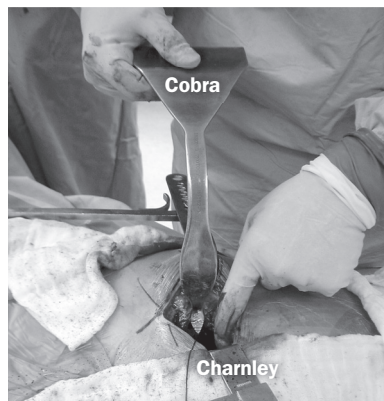


Figure 6

The surgeon now digitally dissects the superior capsule around to its anterior aspect and an 8" curved Pean clamp is placed to bring the capsule anteriorly. The capsule is cut up to its inferior quarter using electrocautery. The leg is placed on a padded Mayo stand and a narrow, pointed **cobra retractor with hand rest** is placed anteriorly and the femur is retracted anteriorly. (Figures 5 & 6) Exposure can also be aided with thigh extension and internal or sometimes external rotation.

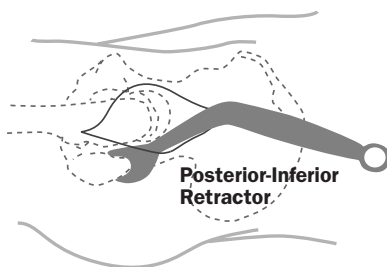


Figure 7

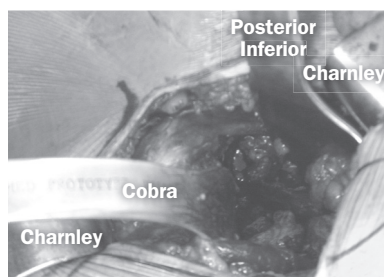


Figure 8

The **posterior inferior retractor** is placed with the point at 6 o'clock and the retractor's axilla resting on the ischium. (Figures 7 & 8) The remaining blade of this retractor is used to retract the remaining capsule from the posterior lip of the acetabulum.

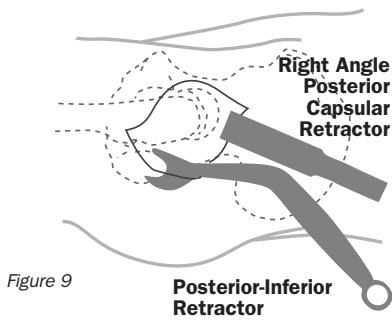


Figure 9

The **right-angled capsular retractor** is a helpful adjunct to retract the remaining tissue either to the posterior or superior. (Figures 9 & 10)

Next, the labrum is excised. The ligamentum teres is then excised. At this excision, a branch of the obturator artery will be encountered posing the second major blood loss possibility. By recognizing that this vessel can retract below the transverse acetabular ligament, this blood loss can be controlled. Clamping and electrocoagulation before pulling and excising the ligament is recommended.

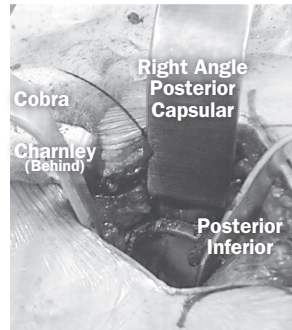


Figure 10

The acetabulum is reamed in the usual fashion. The first reaming is done down to the medial wall with a smaller reamer to make the teardrop disappear. The remaining reamers can progressively increase in size. At times, this exposure can create difficulty for the reamer handle as the surgeon drops their hand to get horizontal. The skin must be pushed down with the plastic sheath of the reamer.

Reaming is easiest accomplished with the surgeon standing anterior to the patient. The surgeon should also avoid the tendency to ream the cup eccentrically, removing the posterior lip and column. This can happen if the reamer follows the softest bone. Superior and anterior force during reaming can avoid this problem. The cup is placed with the bottom on the medial acetabular wall with the posterior cup parallel to the posterior superior 90-degree sector. This will generally place the cup in the appropriate position.

### FEMORAL EXPOSURE

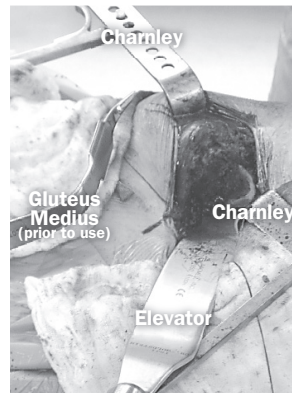


Figure 11

Attention is then placed on the femur, with the surgeon working from the posterior aspect of the patient. An **extra leverage neck elevator** is placed beneath the femoral neck, as the knee is bent 90 degrees and internally rotated 90 degrees, such that the foot points toward the ceiling. (Figure 11)

Next, the **bent Hohman retractor for gluteus medius** is placed anterior to the capsule, around the greater trochanter, to rest on the lateral cortex of the femur. (Figure 12) This allows access to the proximal femur.

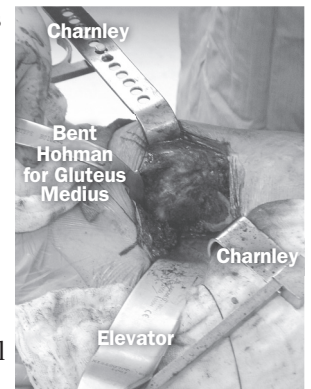


Figure 12

The remaining external rotators are excised and the femoral component is prepared and implanted in the desired fashion.

### CLOSURE

After trialing and implantation of the femoral head ball, the barn door flaps of the remaining capsule are sutured together with absorbable suture, and the remaining anterior capsule flap attached to the anterior lip is brought forward and sutured to the closed barn door flaps. The external rotators are sutured to the gluteus medius tendon above the tip of the greater trochanter. The fascia is closed in a running fashion with a slow absorbable suture and the subcutaneous tissue and skin are closed in the desired fashion. (Figure 13)



Figure 13





# Minimal Incision Total Hip Retractors

*Instruments designed for Minimal Incision Total Hip Surgery using the standard posterior lateral approach*

Designed by  
Wayne M. Goldstein, M.D.



**90° Soft Tissue Retractor**

Product No: 7150



**Gluteus Medius Retractor**

Product No: 7110



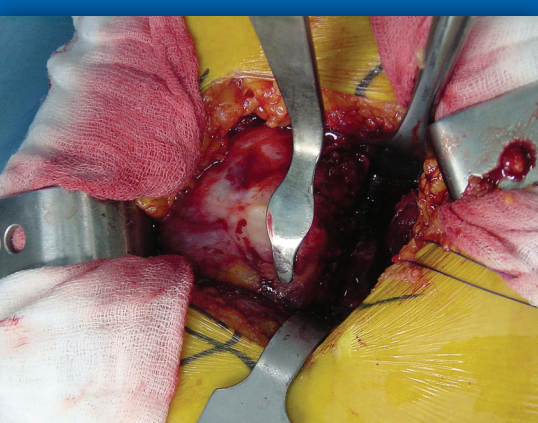
**Cobra Retractor with Hand Rest**

Product No: 7130



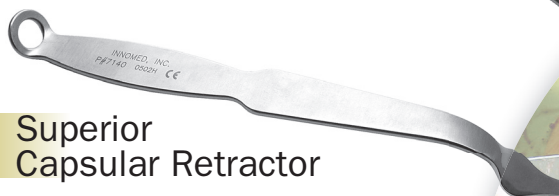
**Blunt Right Angle Posterior Capsular Retractor**

Product No: 7120



**Superior Capsular Retractor**

Product No: 7140



**Right Angle Posterior Capsular Retractor**

Product No: 7180

**Posterior-Inferior Retractors—Right and Left**

Product No's:  
7625-01 [Right]  
7625-02 [Left]



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