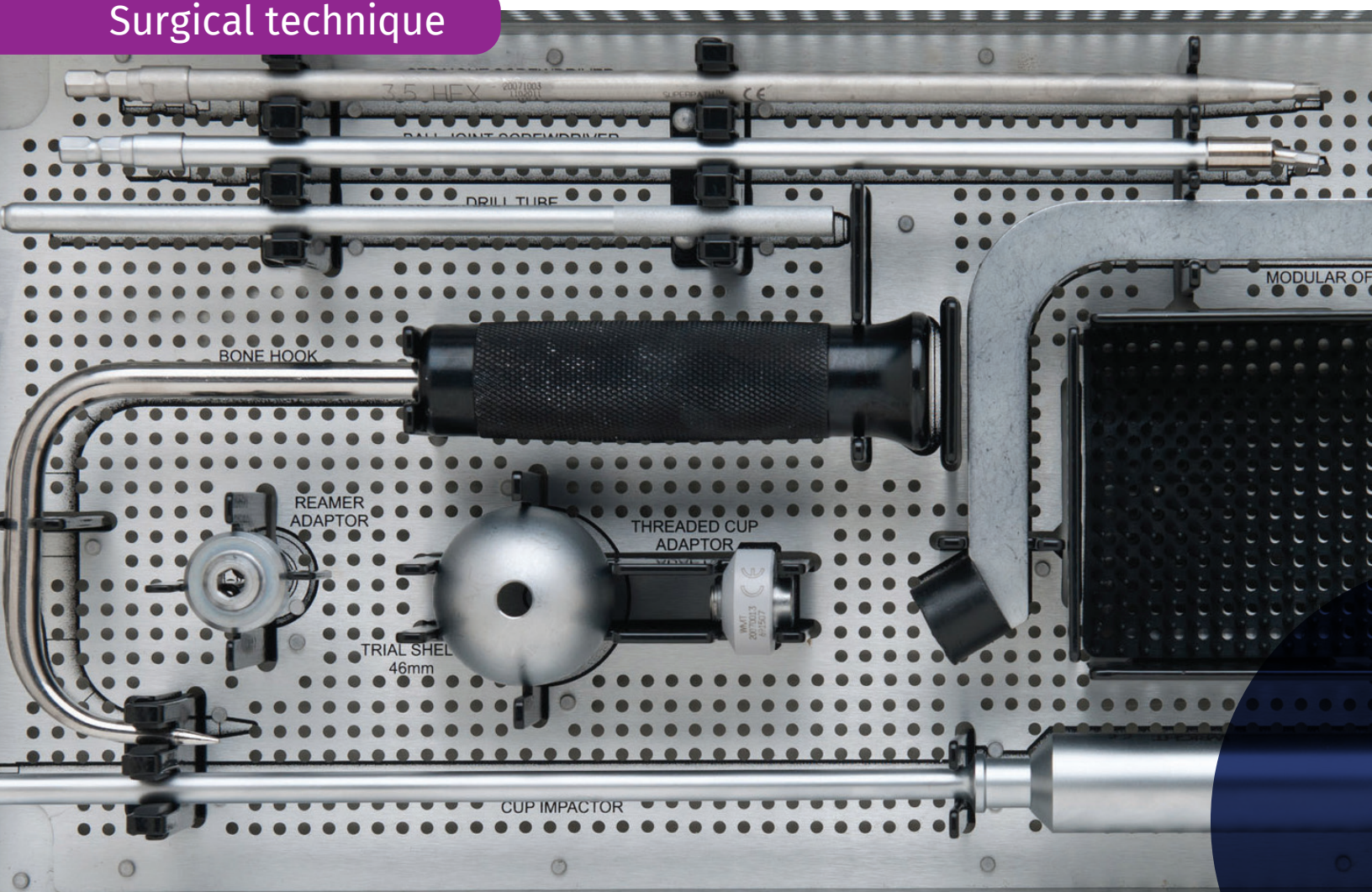


SuperPath®

DIRECT SUPERIOR PORTAL ASSISTED TOTAL HIP APPROACH

Surgical technique



SUPERPATH® DIRECT SUPERIOR PORTAL ASSISTED TOTAL HIP APPROACH

Indications and Warnings

General risks

Please consult product package insert for additional risk information, this can be found under Prescribing Information on ortho.microport.com, and then selecting any brand of MicroPort hip implants. Please consult the product package insert for information on cleaning and handling of MicroPort instruments, this can be found under Prescribing Information on ortho.microport.com, and then selecting “Cleaning and Handling of MicroPort Instruments.”

Inspect instruments **prior to use** for items that may cause unacceptable functional deterioration that exceeds the instrument’s use life:

- 1. damage during shipment or storage;
- 2. visual cues such as worn surfaces, dull edges, corrosion, pitting, cracking, or discoloration; and,
- 3. difficulty to move, lock, or mate pieces.

Indications

Intended Use
MicroPort® total hip systems are intended for use in total hip arthroplasty for reduction or relief of pain and/or improved hip function in skeletally mature patients.

Please consult the package insert Instructions for Use for information regarding a specific MicroPort implant.

Indications for Use

- 1. non-inflammatory degenerative joint disease such as osteoarthritis, avascular necrosis, ankylosis, protrusio acetabuli, and painful hip dysplasia;
- 2. inflammatory degenerative joint disease such as rheumatoid arthritis;
- 3. correction of functional deformity; and,
- 4. revision procedures where other treatments or devices have failed

Rough grit blast surfaces and the hydroxyapatite and titanium plasma spray coatings applied to implant surfaces are intended for uncemented arthroplasty.

Hemi Unipolar Head is indicated for use in hemiarthroplasty for reduction or relief of pain and/or improved hip function in skeletally mature patients, for replacement of the femoral head of the hip joint due to degenerative bone disease, trauma, non-union, or avascular necrosis.

Bipolar Hip System is indicated for the following conditions:

- 1. Pathological fractures of the femoral neck;
- 2. Non-union of femoral neck fractures;
- 3. Aseptic necrosis of the femoral head and neck; and,
- 4. Primary pathology in the young involving the femoral head but with a non deformed acetabulum.

Please consult the package insert Instructions for Use for information regarding a specific MicroPort implant.

Important

Proper surgical procedures and techniques are the responsibility of the medical professional. The following guidelines are furnished for information purposes only. Each surgeon must evaluate the appropriateness of the procedures based on his or her personal medical training, experience, and patient condition.

Prior to use of the system, the surgeon should refer to the product package insert for additional warnings, precautions, indications, contraindications and adverse effects.

Instructions for Use package inserts are also available by contacting the manufacturer. Contact information can be found on the back of this surgical technique and the package insert is available on the website listed.

**Package inserts can be found under:
Prescribing Information on ortho.microport.com/ifus**

Please contact your local MicroPort Orthopedics representative for product availability.

Table of contents

INDICATIONS & WARNINGS	1
FOREWORD	3
INTRODUCTION	3
SURGICAL TECHNIQUE	4
	4
	5
	6
	7
	8
	8
	9
	10
	10
	10
	11
	11
	12
	13
	13
	14
	14
	15
	15
	15

Foreword

With over 15 years of clinical experience, this technique has evolved since its first inception in the early 2000s. Originally, it existed as two distinct approaches: PATH®, created by Dr. Brad Penenberg, and SuperCap®, created by Dr. Stephen Murphy.

In its current form, SuperPath® embodies a philosophy of approaches, rather than a singular, stepwise form. In this way, we believe we have created a truly adjustable alternative to traditional hip surgery and other minimally-invasive approaches. With the hard work of multiple inspired surgeons and engineers combining their

experiences, ideas, designs, and intellectual property, the current toolset and technique facilitates a smooth workflow and a truly original re-evaluation of traditional hip surgery.

As an advanced technique, this is meant to be a welcome challenge to your practice. Because it is completely adjustable to the standard posterior approach, we hope to mitigate anxiety, frustration and potential complications during your learning curve. This should be safe, reproducible and fun.

We believe this technology to be transformative for your patients and your practice, and we hope that you are as excited about this technology as we are.

Sincerely yours,

Jimmy Chow, MD
St. Luke's Medical Center

This surgical technique was developed in collaboration with: **Jimmy Chow, MD**
// Phoenix, Arizona

Introduction

The posterior approach is often considered to be the “gold standard” approach for total hip arthroplasty (THA). It is a widely used approach, allowing excellent visibility of the joint and precise placement of the components.

The Supercapsular Percutaneously Assisted Total Hip (SuperPath®) approach is a highly-versatile, tissue-sparing modification of the standard posterior approach that uses the proximal third of its more traditional form.

The femur can be prepared either in situ in a manner similar to an intramedullary (IM) rod or ex situ, adhering to a more traditional and familiar workflow. Likewise, the acetabulum is prepared either with a cannula through a percutaneous incision or more traditionally through a single incision with highly-specialized offset tools.

This tissue-sparing approach allows for the preservation of the iliotibial band (ITB), external rotators, and hip capsule, all of which influence post-operative function of the hip. Preservation of these structures can encourage faster post-operative recovery, reduced intra-operative blood loss, and increased post-operative stability without requiring hip movement precautions after surgery. Additionally, any of these structures can be selectively released during surgery, allowing expanded exposure at the surgeon's discretion and comfort level.

While performing in situ femoral preparation, accessing the femur through the trochanteric fossa with the femoral head intact is designed to partially absorb hoop stresses during broaching and discourage risk of fracture associated with the insertion of noncemented femoral components. Offset is directly determined after broaching the femur with the head in situ. When the appropriate broach is seated, the face of the broach is used as a

resection guide permitting precise resection of the neck and allowing recreation of the patient's native offset.

While performing ex situ femoral preparation, a provisional high neck cut is performed and the femur is presented prior to broaching. This is designed to be similar to traditional hip techniques. Once the femur is broached, the remaining bone can be removed using either a calcar planar or saw.

When using an accessory incision to prepare the acetabulum, a cannula is inserted posterior to the proximal femur. Both reaming and impaction handles can pass through this cannula, allowing for full visualization of anatomical landmarks during preparation and implantation. Working through a cannula, the leg can be moved to access all boundaries of the acetabulum, regardless of patient anatomy. Using the Alignment Handle and Blunt Trocar, the risk of damaging the sciatic nerve is minimized, with a safe zone posterior to the femur of at least 2.5cm.

When using a single incision to prepare the acetabulum, specialized angled reamer and impactor handles are used. This more closely mimics a traditional workflow, while maintaining the minimally-invasive nature of the procedure.

As with any new procedure, there is a learning curve associated with SuperPath®. For surgeons using the posterior approach, however, the position of the patient on the table and anatomical landmarks are all familiar. Additionally, the SuperPath® approach offers an extensile option of being directly converted to the standard posterior approaches if necessary, providing the surgeon with complete freedom during the operation without having to reposition the patient.

Surgical technique

Accurate preoperative templating requires good quality standardized radiographs of the pelvis and operative hip.

CAUTION: Preoperative templating is intended for estimation purposes only. Final component size and position should be determined intraoperatively. Accurate pre-operative templating requires good quality, standardized radiographs of the appropriate anatomy.

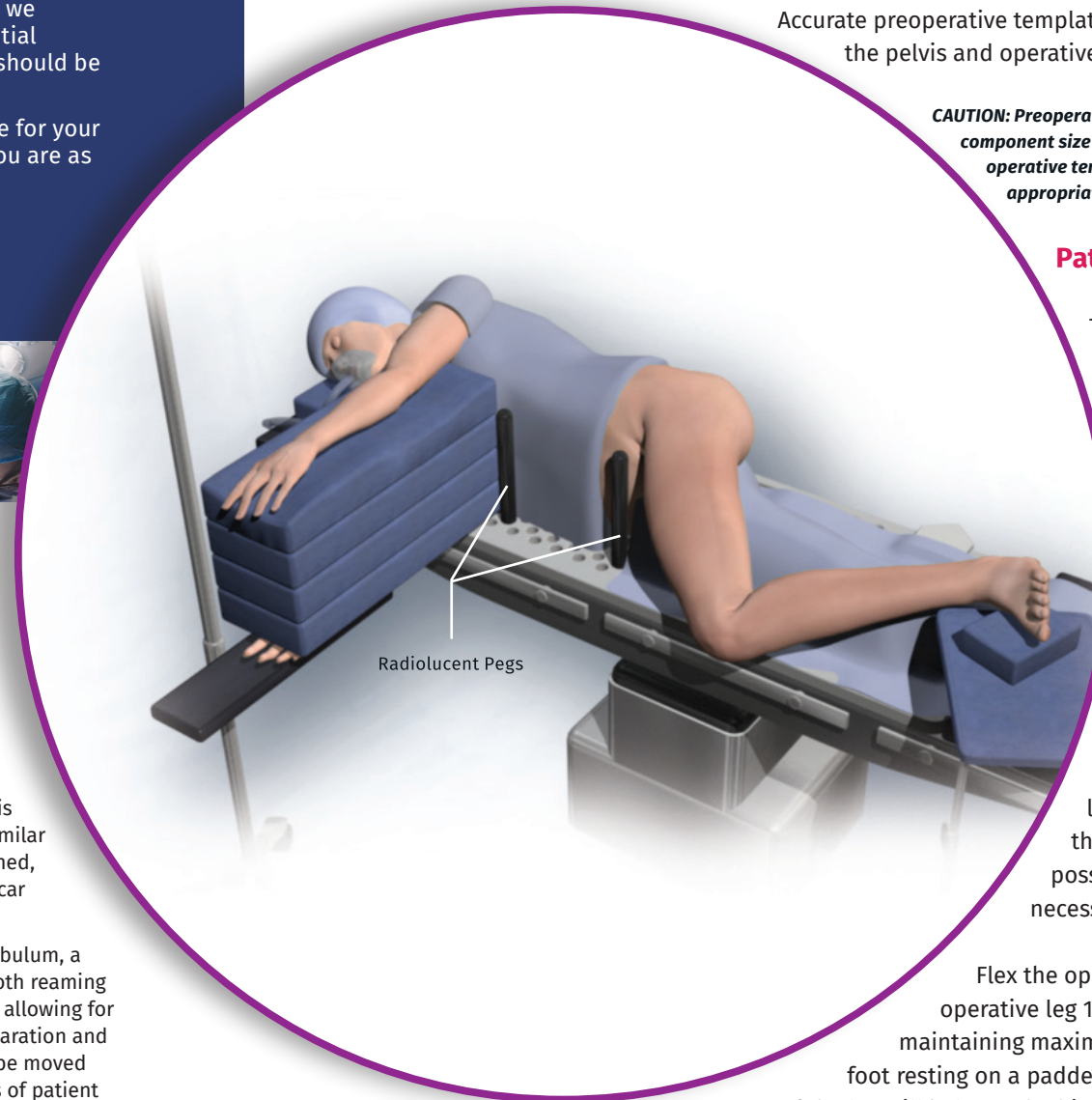
Patient positioning

The patient is placed in the standard lateral decubitus position in a location comfortable for the operating surgeon. Due to the nature of this technique, it is not necessary to bias the location of the patient to the anterior edge of the operating table as maximal leg adduction is not necessary. It is best to use a peg board for patient positioning, with radiolucent pegs in the following locations:

1. Pubic symphysis – long or short peg
2. Sacrum – long peg
3. Chest level, just below breasts – long peg
4. Shoulder blades – long peg

To ensure appropriate pelvic rotation, bias the hip to lean slightly posteriorly. It may be necessary to position the patient with up to 20° of posterior bias. If this is not possible, “airplaning” the operative table posteriorly may be necessary to achieve a neutral pelvic rotation.

Flex the operative hip 45° - 60° and internally rotate the operative leg 10° - 15° to present the greater trochanter upward while maintaining maximum laxity of surrounding soft tissue. With the operative foot resting on a padded mayo stand and the leg in slight adduction, the weight of the leg will balance the hip, bringing the pelvis to neutral rotation. This is the “home position” of the technique as the operative leg will remain there for most of the procedure.

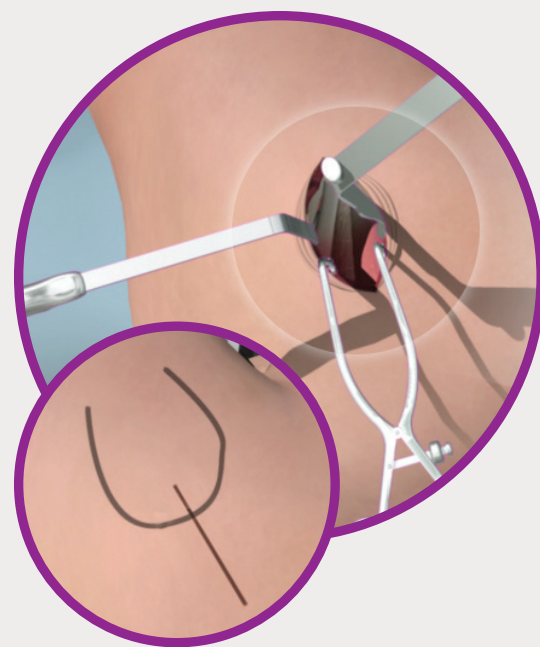




Wing-Tipped Elevator
P/N 20070038



Bent Wing-Tipped Elevator
P/N 20070040



Soft tissue dissection

Palpate the tip, anterior edge, and posterior edge of the greater trochanter. The incision is initiated at the tip of the greater trochanter and extended 6 - 8cm proximal, in line with the femoral axis. If anatomic landmarks are difficult to palpate, a shorter incision is made and extended proximally or distally as required. The incision is made to the level of the gluteus maximus investing fascia. The fascia is then incised using electrocautery, starting at the tip of the greater trochanter to avoid incursion of the ITB and extending in line with the main incision.

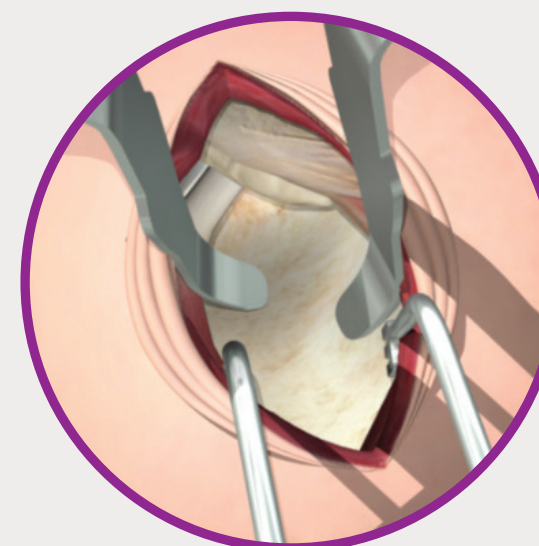
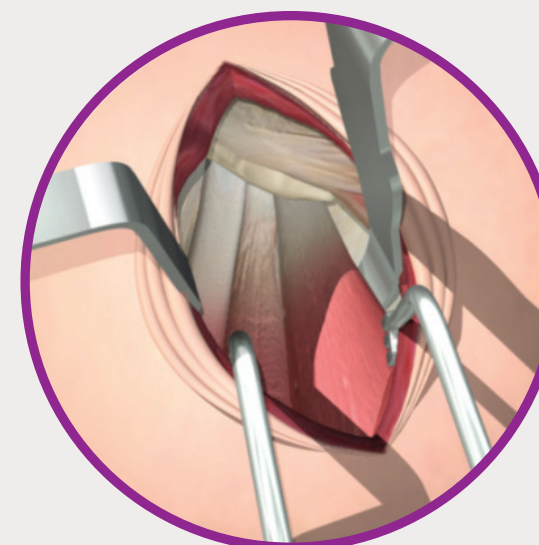
The operative leg can be flexed, extended or adducted to adjust visualization through the main incision. Two Wing-Tipped Elevators (angled versions may also be used) are used to split the gluteus maximus, exposing the bursa overlaying the gluteus medius. A very thin layer of bursa tissue is carefully incised along the posterior border of the gluteus medius. A Cobb Elevator is placed anteriorly under the gluteus medius, then replaced with a Blunt Hohmann Retractor. Have an assistant use gentle pressure to maintain position of the retractor while protecting the gluteus medius. The blade of the Blunt Hohmann Retractor should not be forced beyond 90° from the wound and should now be resting in the interval between the gluteus medius and gluteus minimus.

During the learning curve, it can be helpful to start with a more traditional posterior approach and begin to minimize your incision and release less short, external rotators - eventually resulting in the release of no short, external rotators, with the possible exception of the piriformis, particularly in tight hips.

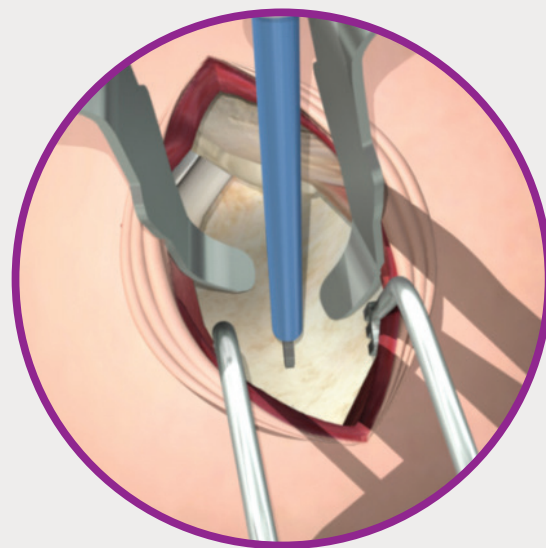
Capsular exposure

With an assistant abducting and externally rotating the hip (raise the knee while keeping the foot on the Mayo stand) to decrease tension in the external rotators, place a Cobb Elevator posteriorly between the piriformis tendon and the gluteus minimus. The sciatic nerve will be protected by the external rotators.

The Cobb Elevator is then replaced with a Blunt Hohmann retractor, with the Blunt Hohmann now resting between the posterior capsule and the external rotators. The blade of the Blunt Hohmann should not be forced beyond 90°, and the handles of the Hohmann Retractors should be parallel to one another. The knee is then lowered, and the leg returned to the “home position.” If excessive force is generated by the piriformis tendon, it can be released at this time under direct visualization.



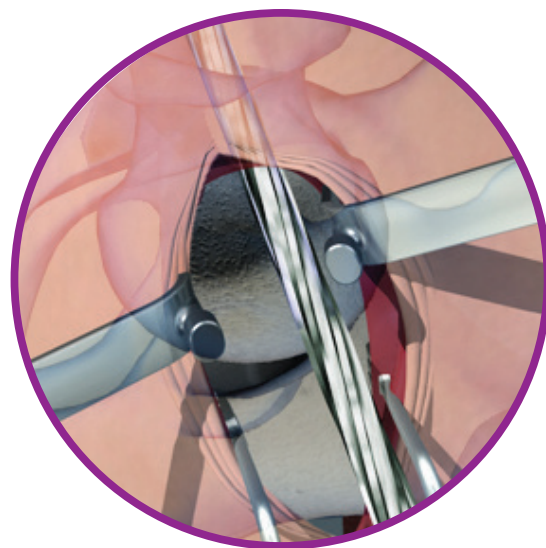
Blunt Hohmann Retractor
P/N 20073114



Capsular incision

Use a Cobb Elevator to gently push the posterior border of the gluteus minimus anteriorly to expose the underlying capsule. The capsule is then incised in-line with the main incision using electrocautery. Electrocautery with a long tip should be used to incise the trochanteric fossa to prevent bleeding of the anastomosis around the base of the femoral neck. Ensure complete preparation of the entire saddle portion of the femoral neck and greater trochanter using electrocautery. Over-preparation is much better than under-preparation in regards to reducing bleeding amongst the many recurrent vessels in this area. The capsulotomy is extended from the saddle of the femoral neck to 1cm proximally on the acetabulum. Carefully peel the 1cm capsular attachment subperiosteally off of the acetabular rim, extending 1cm anteriorly and posteriorly. Limit this part of the dissection to only 1cm in all directions, and have an assistant notify you of any foot movement as the sciatic nerve lies 2 - 5cm posteriorly. The capsular incision should be a simple, straight line and will be repaired like a rotator cuff at the end of the case.

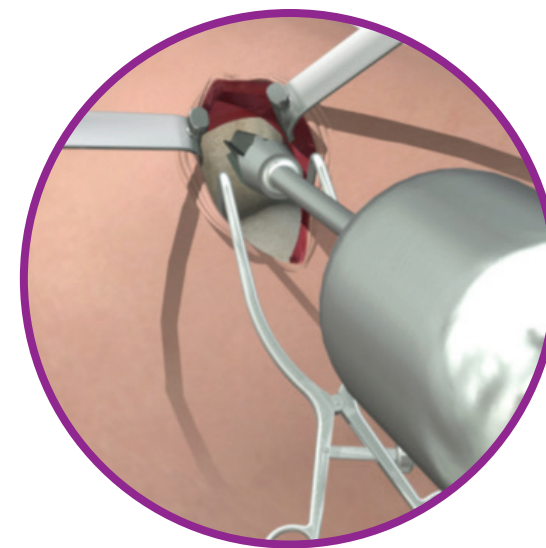
At this time, additional releases can be performed from inside-out by subperiosteally



releasing the posterolateral capsule from the posterior femoral neck and medial greater trochanter. This can allow partial or complete release of the piriformis and superior gemellus without compromising their capsular insertions. If an ex situ femoral preparation is planned, a slightly more generous form of this release may be helpful.

With an assistant lifting the knee to decrease external rotator tension, a Cobb Elevator is placed intra-articularly between the posterior capsule and the posterior femoral neck.

The Cobb Elevator is then replaced with the Blunt Hohmann Retractor that was previously located at the posterior capsule, and the leg is returned to the "home position." The anterior Blunt Hohmann Retractor is re-positioned intra-articularly in a similar fashion. The capsule is tagged for identification during repair, and the piriformis fossa, the tip of greater trochanter and the anterior femoral neck (Saddle) are isolated.



In situ femoral preparation

The femur is reamed and broached with the head intact to minimize the risk of a femoral neck fracture and to allow for more accurate restoration of the patient's native femoral version. With an assistant applying gentle adduction pressure to the knee, the saddle of the femoral neck is presented into the incision. Using a Starter Reamer, enter the femoral canal through the trochanteric fossa. To ensure alignment with the femoral canal insert the Canal Feeler into the prepared trochanteric fossa until it reaches the distal femur.

The Metaphyseal Reamer can be used to expand the proximal opening, ensuring that subsequent instruments are properly aligned and not positioned **in varus**. It is recommended to place a finger on the lateral portion of the greater trochanter while reaming to ensure the greater trochanter is protected from the lateralizing forces.

To allow for easier insertion of the femoral broaches, the Impactor Handle and appropriately sized Round Calcar Punch are utilized.

Begin by opening the superior neck, starting at the reamer opening, and create a slot to the acetabular rim based upon the determined femoral anteversion.



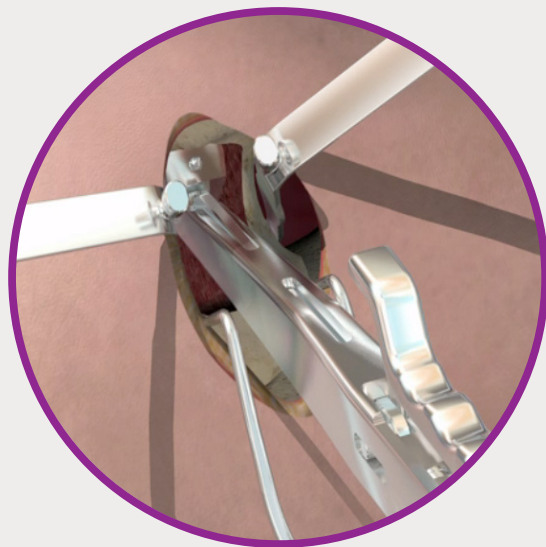
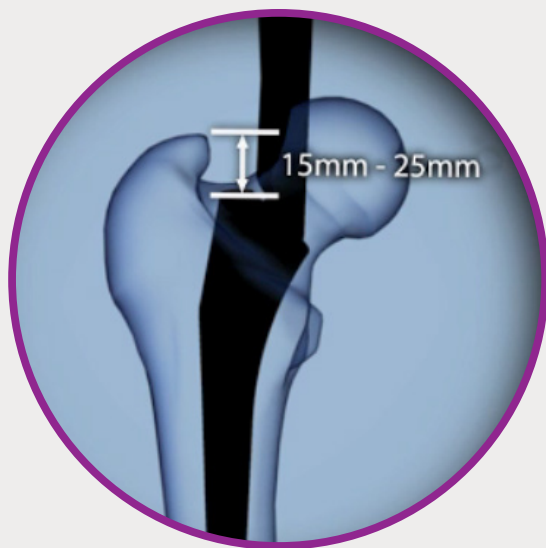
Have an assistant apply additional adduction pressure to maximize the exposure and present the proximal femur for preparation.

The Calcar Curette is then introduced into the femur to prepare the proximal-medial portion of the canal, making sure the surface provides good cortical contact to promote bone on-growth while preventing implant undersizing and subsequent subsidence. It is recommended to be aggressive with the Calcar Curette in order to ensure the broach seats fully.

Ex situ femoral preparation

A provisional high neck osteotomy is made in the femur to reduce the tension of a more formal dislocation maneuver. The femoral head fragment can then either be removed immediately, or left in-place and removed after preparing the femur. A gentle dislocation maneuver is performed to present the proximal femur. The femur is then reamed and broached in standard fashion.





Femoral broaching

To prepare the femoral canal, the broach handle of choice and broaches are utilized according to the appropriate ream-and-broach or broach-only stem selected.

If using the In-Line Broach Handle, broach height can be checked by removing the broach handle and measuring the distance from the lateral shoulder of the broach to the tip of the greater trochanter. This depth is typically between 15 and 25mm based on pre-operative templating.

If using the Slotted Broach Handle, measurement markings on the broach handle facilitate determination of this depth.

Once the final broach is seated and broach handle removed, the face of the broach can then be used as an internal neck cutting guide. When preparing the femur ex situ, a calcar planar may also be used.

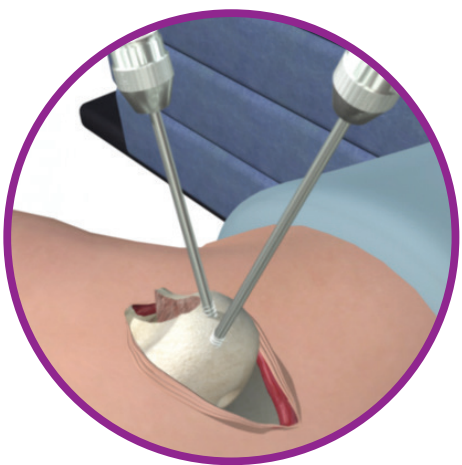
Broach handle compatibility

Implant	In-Line Broach Handle (P/N INLNBRHN)	Slotted Broach Handle (P/N SLBROHAN)
Profemur® Gladiator	X	
Profemur® Preserve	X	
Profemur® Renaissance	X	X
Profemur® TL	X	
Profemur® Z	X	X

Femoral head resection (in situ only)

To bring the plane of the femoral neck osteotomy in-line with the surgical wound and increase laxity of the soft tissue, have an assistant lift the knee in slight hip abduction. An oscillating saw with a narrow blade is used to create the femoral neck osteotomy along the top of the broach. The anterior and posterior sections of the cut are completed using reciprocating saw.

Blunt Hohmann Retractors placed anteriorly and posteriorly protect soft tissue from the saw blade.



Femoral head removal (in situ only)

With the patient in the “home position,” a Schanz Pin is inserted into a solid part of the head, and the pin is levered to rotate the head into maximum adduction. A second Schanz pin is then placed into another solid part of the head. Remove the Blunt Hohman Retractors and have an assistant abduct the leg to create soft tissue laxity. Using the drill chucks still attached, the femoral head is pulled from the main incision.

Should the head be difficult to extract, the first pin can be removed and the head rotated further into adduction before inserting another pin. The femoral head can continually be “walked” into maximal adduction until the ligamentum teres is either torn or is presented so that it may be severed with electrocautery.

Additionally, an osteotome may be used to remove parts of the femoral head to assist removal. Once the femoral head has been removed, the calcar surrounding the broach can be easily inspected.

NOTE: Recommend a minimum of insertion of the pin (~1.5 in) into the solid part of the femoral head. Take care not to insert the pin all the way through and pin the femoral head to the acetabulum.



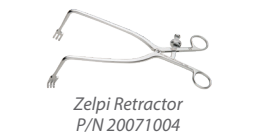
Acetabular preparation

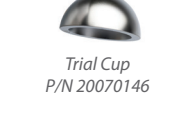
With the leg in the “home position,” two Spiked Hohmann Retractors are placed into the axilla between the capsule and the labrum on both the front and back sides of the acetabulum. Under direct visualization, remove any remaining tissue from the acetabulum, as well as the labrum. The obturator artery is often encountered posteriorly. After removal of soft tissue, bleeding can be controlled using electrocautery (a long tip is recommended).

Place a Zelpi Retractor subperiosteally at the acetabular margin at the proximal incision, and a Romanelli Retractor immediately distal intra-articularly. The combination of these self-retaining retractors will provide soft tissue retraction, rotational stability and create a surface on which to introduce the reamers and the implant into the joint. The Spiked Hohmann Retractors are now removed to allow wound mobility for acetabular preparation. At this point, reaming and implantation can be done through a single-incision using highly-specialized offset instruments, or through a percutaneous incision using a cannula.

Single-incision acetabular preparation

Offset reamers and impaction tools can now be used through the main incision to prepare the acetabulum. Exposure can be facilitated by adducting the hip and having the assistant pull the femur laterally, using a hook inserted into the femoral broach.





Portal assisted acetabular preparation

Percutaneous incision placement

With the leg still in the “home position,” have an assistant insert the tip of the Bone Hook into the top of the broach and retract the femur anteriorly. The Alignment Handle / Portal Placement Guide / Threaded Cup Adapter / Trial Cup Assembly are seated in the acetabulum with the top of the guide perpendicular to the patient’s torso, and the guide shaft tilted 10°-15° from vertical to account for the pelvic tilt of the patient on the table.

The Blunt Trocar and Cannula are inserted until resting against the operative leg. At the point where the Blunt Trocar intersects the leg, a 1cm stab incision is made horizontally. The Blunt Trocar and Cannula are then passed through the stab incision 1-2cm posterior to the femur until they are visible through the main incision.

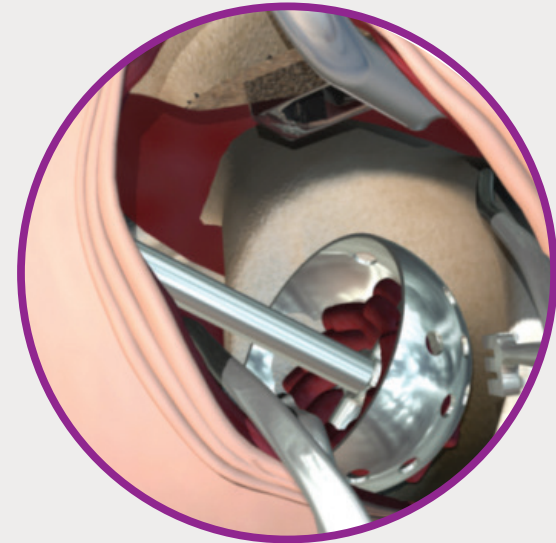
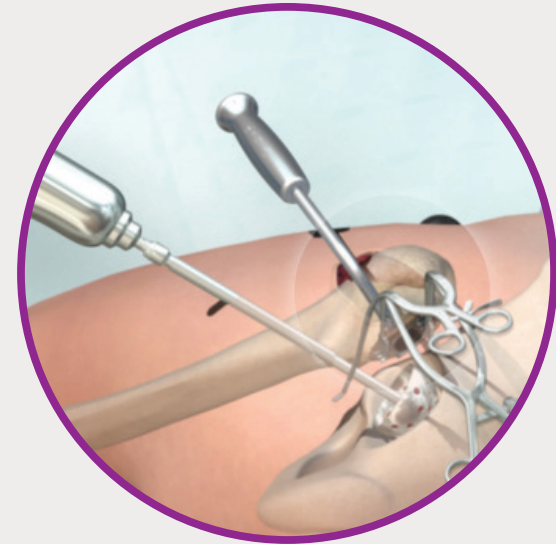
NOTE: The ideal exit point of the cannula is the sulcus posterior to the calcar of the femur.

As with any arthroscopic procedure, if Cannula placement is suboptimal, the surgeon can create a new stab incision and reposition the Cannula. If the Cannula hits the femur, have an assistant place the leg in slight extension to translate the femur anteriorly.

The Alignment Handle / Portal Placement Guide / Threaded Cup Adapter / Trial Cup Assembly and/or Blunt Trocar are then removed, leaving the Cannula in place. The Cannula can be easily moved for directional reaming by positioning the leg.

Acetabular reaming

Using the Reamer Basket Holder, pass the appropriately sized Hex Acetabular Reamer into the main incision using the Zelpi and Romenlli Retractors as a rail system to avoid soft tissue damage. The Reamer Shaft is passed through the Cannula and mated to the Hex Acetabular Reamer in situ. Acetabular preparation is performed using the preferred reaming method. Medial reaming is often carried out through the main incision prior to deepening/ enlarging the acetabulum. When medializing, ream 1-2mm less than the desired depth. The final reamer will be used to ream to the desired level of medialization.



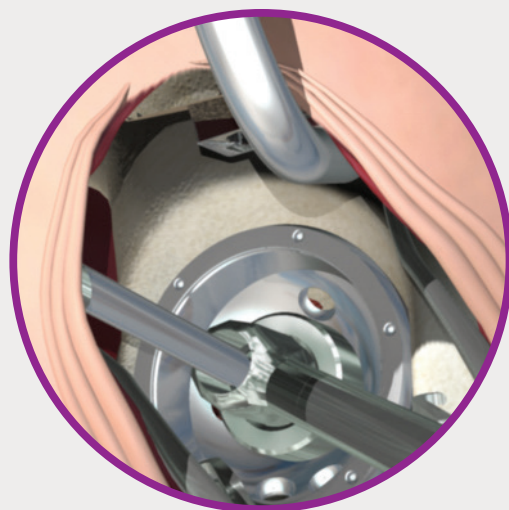
Hex Acetabular Reamer
P/Ns PATHRM40 - PATHRM64
or SPTHRM40-SPTHRM68
or PATHRM40CN-PATHRM70CN



Reamer Shaft
P/N 20070011



Reamer Basket Holder
P/N 20070048



Cup placement

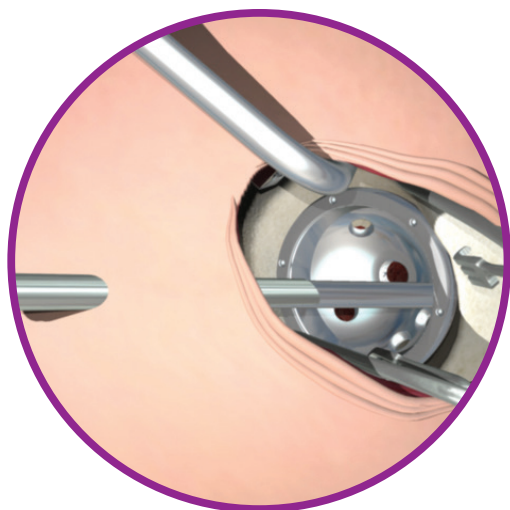
The Threaded Cup Adapter is threaded completely into the apical hole of the acetabular cup, and the assembly is seated on the Alignment Handle. The Alignment Handle is designed to provide 25° anteversion when perpendicular to the torso of the patient, and 40° abduction when perpendicular to the floor

NOTE: For Prime Cup implants, the Prime Cup Impaction Portal Adapter is available and must be ordered separately.

With the acetabular cup in the acetabulum, the Alignment Handle is directly driven to medialize the cup. The Cup Impactor is inserted through the Cannula and the tip of the Alignment Handle until seated in the dimple of the Threaded Cup Adapter. With the Alignment Handle shaft again tilted 10° - 15° from vertical to account for the pelvic tilt of the patient on the table, the Cup Impactor is impacted until the cup is firmly seated. An Alignment Guide is available for attachment on the Cup Impactor.

During cup placement, the anterior and posterior acetabular walls as well as the transverse acetabular ligament (TAL), which follows the native version of the patient's acetabulum, will be visible.

With the cup firmly seated, the Threaded Cup Adapter is unscrewed from the cup using the hex tip of the Cup Impactor, and removed using the Reamer Basket Holder.



Screw placement

Pilot holes for the placement of acetabular screws are created by inserting the Long Drill Tube through the Cannula until it engages the desired hole in the acetabular cup. The Screw Drill is then passed through the Long Drill Tube. Using the measurement markings on the end of the Screw Drill, drilling is carried out to the desired depth. The Screw Drill and Long Drill Tube are removed. Additionally, pilot holes can be created in a similar fashion using the Drill Tube and a Schanz Pin. When using this combination, the Schanz Pin is advanced until bottoming on the Drill Tube. With continued revolutions of the pin, the threaded bone is stripped and a hole with a depth of 30mm is created.

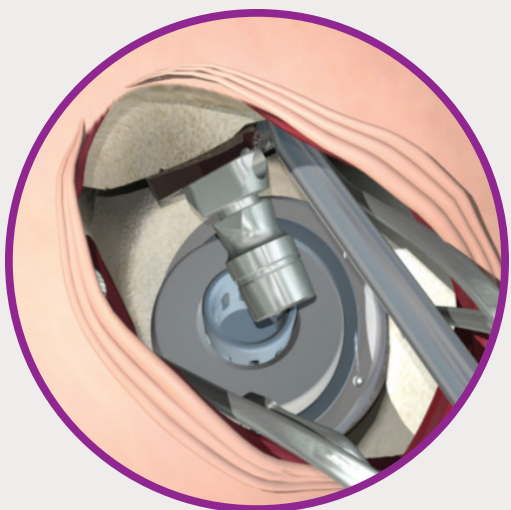
CAUTION: The Screw Drill is only to be used with the Long Drill Tube and is not to be used with the Drill Tube as the depth dimensions will not be accurate.

Screws can be held in position using a set of Screw Holding Forceps through the main incision, and the Ball Joint Screwdriver or Straight Screwdriver is attached to the Ratchet Screwdriver Handle and passed through the Cannula to engage and tighten the screw(s).

In situ trial reduction

Femoral head and neck trials are chosen by measuring the bone resection or using the components identified during pre-operative templating. Insert the Bone Hook into the femoral broach and lift laterally while having an assistant pushing the leg towards the surgeon. This will present the femoral neck in the main incision. Place the Profemur® Metal Trial Neck into the seated broach. A set of forceps with angled tips will facilitate this maneuver. Place the Trial Head in the socket and rotate its opening to a superior-posterior position.

With the tip of the Blunt Trocar inserted into the top of the broach, mate the trial neck into the trial head. During this maneuver, the surgeon controls the leg by pushing and translating the hip under direct visualization through the main incision, while an assistant externally rotates the hip to allow the trial neck to become co-linear with the trial head. At this point, the assistant will abduct the hip in order to drop the trial neck into trial head.



Profemur® Metal Trial Neck
P/Ns APA12102 - APA12154



Trial Head
P/N APA02121 - APA02154



Conserve® Trial Head
P/Ns 41102800 - 41104800



Conserve® Neck Sleeve
P/Ns APA0TSS3 - APA0TSL3



Liner Impactor
P/Ns 20070023 - 20070025



Offset Neck Impactor
P/N 20073009

Trial disassembly

With the leg in the “home position,” an assistant places the tip of the Bone Hook into the top of the broach and applies lateral traction to the leg. Place the tip of the Blunt Trocar into the superior hole in the trial neck. By engaging the side of the Blunt Trocar into the slot near the tip of the Bone Hook and levering the two instruments against each other, the trial neck is disassembled from the broach. The trial components, including the femoral broach, are then removed.

Implant assembly

After the associated tapers are cleaned and dried, the liner implant of the acetabular cup is then impacted into position using the Cup Impactor (through the Cannula) and the appropriate Liner Impactor.

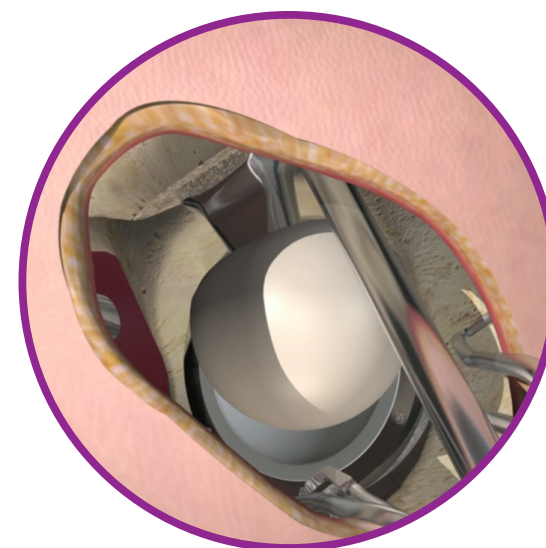
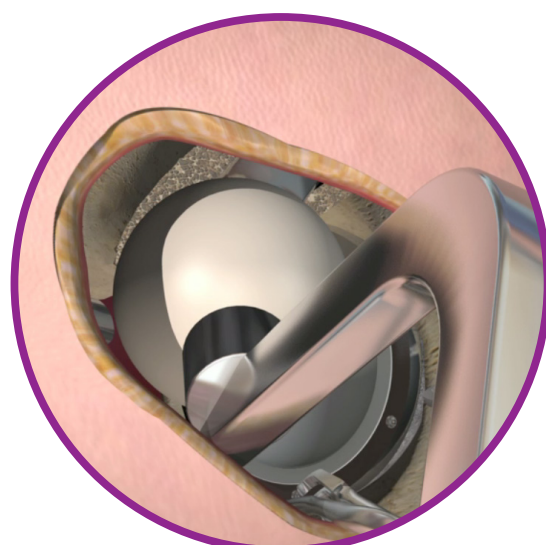
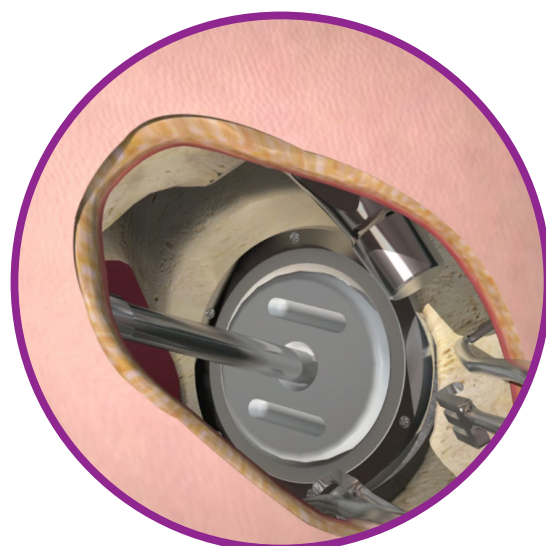
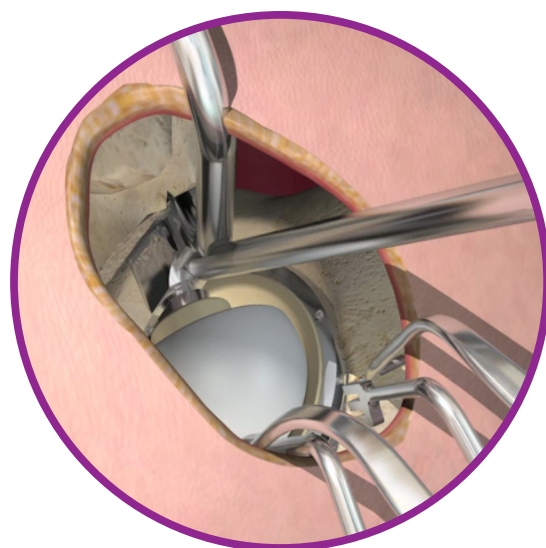
The femoral stem is impacted into position. The depth of the stem from the tip of the greater trochanter can be confirmed using the measurement markings on the end of the Canal Feeler.

For modular implants, the modular neck implant is placed into the femoral stem pocket using a set of forceps with coated, angled tips to protect the neck taper.

ATTENTION: To properly assemble and impact a Profemur® Modular Neck, ensure that the modular neck and stem pocket tapers are clean and dry, and seat the modular neck using the Offset Neck Impactor with three very firm blows from a mallet.

The femoral head can now be impacted onto the neck using the Offset Neck Impactor.

ATTENTION: If using a ceramic head, place a femoral head impactor with a plastic impaction tip on a ceramic femoral head, and align the impactor with the femoral neck axis of the stem implant. With a moderate tap of the hammer in the axial direction, firmly impact the ceramic femoral head on the stem taper until it is fully seated.



Ex situ implant reduction

Insert the tip of the Blunt Trocar into the hole on the lateral shoulder of the stem and push laterally while an assistant brings the hip into flexion to translate the femoral head over the cup. The assistant will then internally rotate the hip by gently dropping the foot toward the floor, which will reduce the femoral head into the cup. Stability of the joint is verified by checking the range of motion and proper leg length, femoral shaft offset, and final component positioning are also confirmed using an intra-operative radiograph.

NOTE: The Offset Neck Impactor can also be used to push laterally and translate the femoral head over the cup during ex situ implant reduction.

Closure

The entire capsule has been preserved, and can be easily re-approximated in-line with the incision. Closure begins by approximating the joint capsule superiorly and inferiorly. If released, the piriformis can be either reattached to the posterior edge of the gluteus medius or incorporated into the capsular closure. The remainder of the incision is closed in standard fashion.

Revisions

If the removal of the implant is required due to revision or failure of the device, the surgeon should contact the manufacturer using the contact information located on the back cover of this surgical technique to receive instructions for returning the explanted device to the manufacturer for investigation. A traditional exposure can be used to extract implants.

Please refer to each specific device surgical technique document to find removal instructions for that device.

Notes

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Notes

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