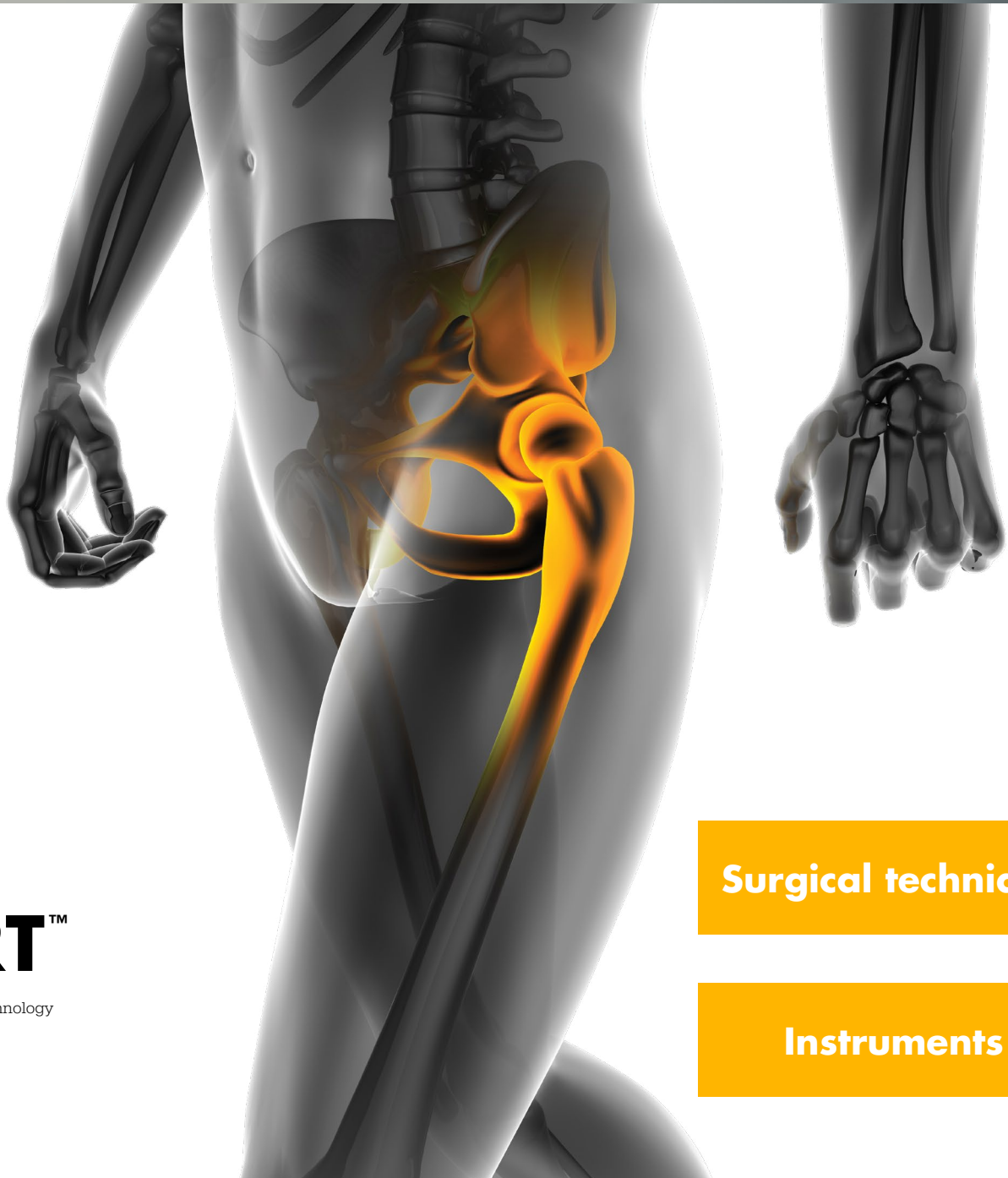


Direct Anterior Approach

Surgical technique



DART[™]
Direct Anterior
Reconstructive Technology

Surgical technique

Instruments

Surgical technique

Contents

Indications and contraindications	3
Instrumentation	4
Surgical technique	
Step 1 - Preoperative planning and patient positioning	8
Step 2 - The portal	10
Step 3 - Exposure of the joint – Lateral Retractors	12
Step 4 - Exposure of the joint – Medial Retractors	13
Step 5 - Preparation of the capsule	15
Step 6 - Removal of the femoral head	16
Step 7 - Acetabular exposure / Preparation of the acetabulum	17
Step 8 - Cup insertion	19
Step 9 - Screw placement	21
Step 10 - Liner insertion	21
Step 11 - Preparation of the postero-lateral capsule	22
Step 12 - Figure 4 position to mark femoral orientation	23
Step 13 - Exposure of the femur / Possible releases	23
Step 14 - Opening the femoral canal	26
Step 15 - Broaching the femur	27
Step 16 - Implantation and closure	28
Catalog information29

This publication sets forth detailed validated procedures for the Direct Anterior Approach. It offers instructions that you should heed, but, as with any such technical guide, each surgeon must consider the particular needs of each patient and make appropriate adjustments when and as required.

Intended use / contraindications

- The Intended User Profile is a licensed orthopaedic surgeon or trained OR support under the supervision of a licensed orthopaedic surgeon.
- The Intended Use of this instrumentation is for performing a Direct Anterior approach to total hip arthroplasty. All medical and surgical indications, contraindications and precautions customarily observed for total hip arthroplasty are applicable.
- The Intended Patient Population includes patients who meet the indications provided in the respective implant IFU (see Product Compatibility).

Warnings and precautions

- Due to different manufacturers employing differing design parameters, varying tolerances, different materials and manufacturing specifications, Stryker Orthopaedics Instrumentation should not be used to implant any other manufacturer's components. Any such use will negate the responsibility of Stryker Orthopaedics for the performance of the resulting implant.
- Instruments made of non-metallic material(s) and fragments thereof may not be visible using certain forms of external imaging (e.g. x-ray) unless otherwise specified, such as radiopaque femoral head trials that are visible.

See package insert for warnings, precautions, adverse effects, information for patients and other essential product information.

Product compatibility

- Compatible femoral stems include:
 - Accolade II
 - Anato*
 - Exeter
 - Insignia*
- Compatible acetabular systems include:
 - Trident
 - Tritanium
 - Trident II
- For indications and device descriptions, please refer to implant specific surgical techniques.

*This product is not CE marked in accordance with applicable EU regulations and directives. Stryker is not marketing or distributing this product in the EU. Any reference to this product is for presentation purposes only.

Cleaning and sterilization

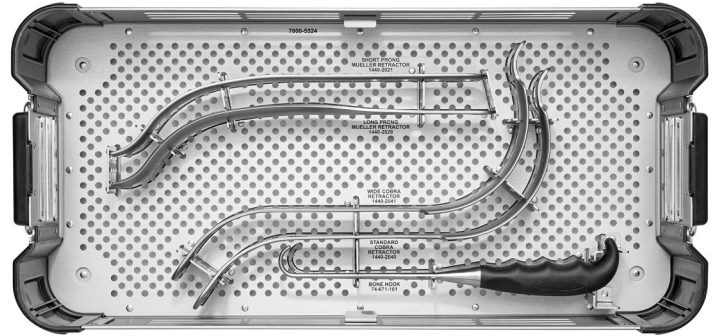
The devices are provided in a non-sterile condition and require cleaning and sterilization prior to use. They are designed for repeated use with an intended serviceable life of five years under normal peri-operative handling, cleaning, and sterilization conditions. Users should reference QIN4382, LSTPI-B, IFU 7041-99 and SLI0001 for detailed instrument cleaning and processing instructions.

The decision to perform a Direct Anterior procedure is ultimately left to the surgeon's professional medical and clinical judgment. It is the surgeon who must carefully evaluate each patient to determine if Direct Anterior surgery is indeed appropriate. In some cases, performing an unfamiliar surgical technique may be associated with clinical risks. Stryker strongly recommends that surgeons complete a formalized training program before attempting these operative techniques on their own.

Instrumentation

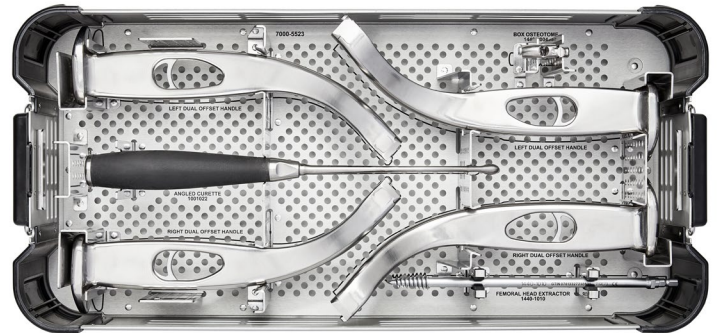
Retractor Tray

Description	P/N	Qty
Curved Hohmann	1440-2030	1
Standard Hohmann	1440-2031	2
Wide Hohmann	1440-2032	1
Deep Hohmann	1440-2033	Optional
Standard Cobra	1440-2040	1
Wide Cobra	1440-2041	1
Long Prong Mueller	1440-2020	1
Short Prong Mueller	1440-2021	1
Bone Hook	74-671-101	1
Lid	6147-0-100	1
Direct Anterior Retractor Tray	7000-5524	1



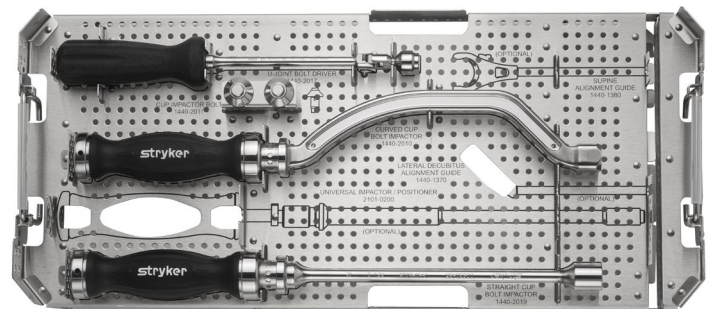
Femoral Tray

Description	P/N	Qty
Femoral Head Extractor	1440-1010	1
Modular Box Osteotome	1440-2004	1
Angled Curette	1001022	1
Left Dual Offset Handle	1440-2000	2
Right Dual Offset Handle	1440-2001	2
Lid	6147-0-100	1
Direct Anterior Femoral Tray	7000-5523	1



Acetabular Tray

Description	P/N	Qty
U-Joint Bolt Driver	1440-2017	1
Straight Cup Bolt Impactor	1440-2019	1
Curved Cup Bolt Impactor	1440-2010	1
Supine Alignment Guide	1440-1380	Optional
Cup Impactor Bolt	1440-2011	2
Acetabular Internal Tray	1440-2093	1
Case	4845-7-600	1



Ensure that components are not visibly damaged prior to use. Examine instrumentation against the tray layout to ensure all parts are accounted for (prior to and following surgery) and available for use.

Instrumentation / Intended use

Retractors

- A variety of retractors including Hohmann, Mueller and Cobra style retractors are supplied in the set.
- These include retractors of different widths and profiles to accommodate various exposure objectives and should be used at the discretion of the operating surgeon.



**1440-2030
Curved Hohmann
Retractor**



**1440-2031
Standard Hohmann
Retractor**



**1440-2032
Wide Hohmann
Retractor**



**1440-2033
Deep Hohmann
Retractor**



**1440-2040 / 1440-2041
Standard and Wide Cobra
Retractor**



**1440-2020
Long Prong Mueller
Retractor**



**1440-2021
Short Prong Mueller
Retractor**

Instrumentation / Intended use (continued)

For acetabular preparation

- The Cup Impactor is designed to interface with Stryker Trident and Tritanium cups via a modular bolt. The bolt provides a method for repeated attachment and detachment of the cup impactor.
- The Supine Alignment Guide offers a visual reference to help estimate cup inclination and anteversion during impaction and is designed to aid the surgeon in placing the acetabular shell in approximately 45° of inclination and 20° of anteversion. (Proper positioning of the shell is at the discretion of the operating surgeon).



1440-2019
Straight Cup Bolt Impactor



1440-1380
Supine Alignment Guide



1440-2010
Curved Cup Bolt Impactor



1440-2011
Cup Impactor Bolt



1440-2017
U-Joint Bolt Driver

Instrumentation / Intended use (continued)

For femoral preparation

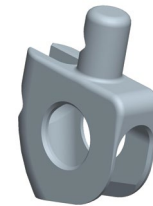
- The Femoral Head Extractor and T-Handle are designed for removal of the femoral head.
- The Bone Hook aids in elevation of the femur during femoral preparation.
- The Angled Curette aids in sounding of the femoral canal prior to broaching and removal of lateral bone.
- The Modular Box Osteotome attaches to the Dual-Offset Handle and helps prepare the superolateral femoral neck.
- The Reverse Cutting Rasp attaches to the Dual-Offset Handle and aids in lateralization and ease of access to the femoral canal.



1101-2200
Large T-Handle
 Available in alternative tray*



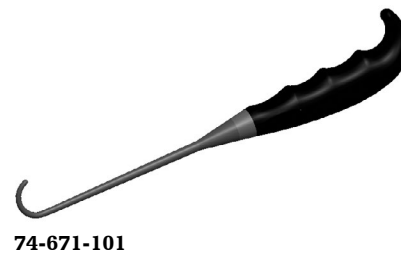
1440-1010
Femoral Head Extractor



1440-2004
Modular Box Osteotome



1001022
Angled Curette



74-671-101
Bone Hook

Dual-Offset Handles

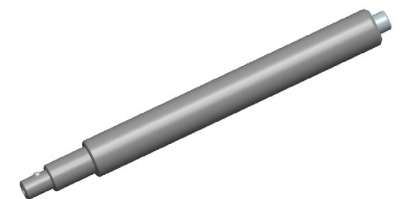
- The Right and Left Dual-Offset Handles are designed to provide soft tissue clearance during preparation of the femoral canal.
- The Quick-Connect Handle may be attached to the Dual-Offset Handle to help provide version control of the broaches.



1440-2001
Right Handle



1440-2000
Left Handle



1440-1040
Quick-Connect Handle
 Available as an optional component*

Step 1

Preoperative planning and patient positioning

Preoperative planning aids in the selection of the appropriate implant style and size for the patient's hip pathology. Preoperative X-ray analysis can be used to evaluate:

- Optimal femoral stem fit
- Prosthetic neck length
- Neck offset
- Acetabular component sizing
- Correct location of the osteotomy

Template planning can be done using acetate templates for printed X-rays or preoperative planning software for digital studies. Refer to the implant-specific surgical technique for details.

Place the patient in a supine position on the operating table to create a predictable and stable pelvis position. One option is to place a hip bump under the pelvis as part of patient positioning to elevate the pelvis. This can facilitate femoral exposure if a special table is not used.



Step 1

Patient positioning



Figure 1

Figure 1 When preparing the femoral canal, the patient's leg will need to be repositioned with the operative leg placed in external rotation, adduction and extension. Place the patient in the supine position. During femoral preparation, adduction of the operative leg will aid in access to the femoral canal. For this reason, a table attachment (such as an armboard) on the nonoperative side may accommodate abduction of the nonoperative leg.

Figures 2-3 Palpate the anterior superior iliac spine (ASIS) and the greater trochanter. Begin an incision two finger breadths lateral (~ 3 cm) and one to two finger breadths distal to the ASIS and extend it distally.

Keep the initial incision small (8-10cm) and extend as needed.

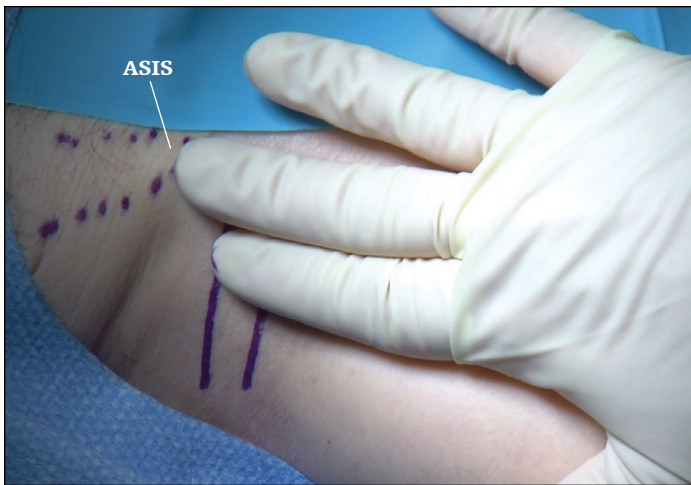


Figure 2

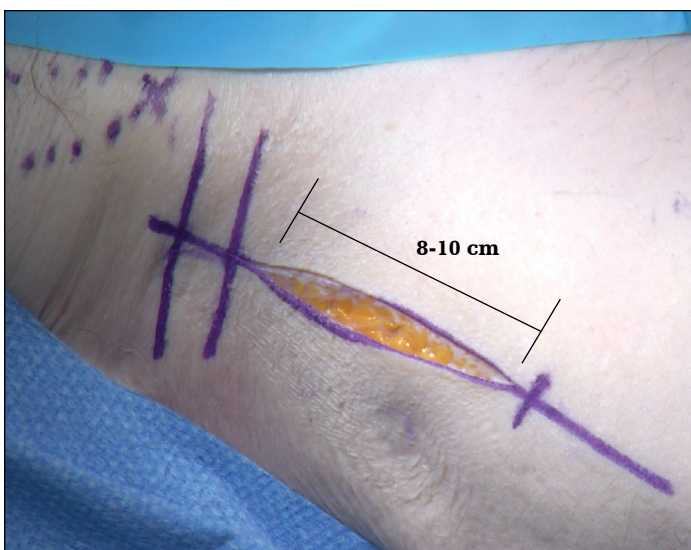


Figure 3

Note:

The location of the incision is significantly more lateral than the traditional Smith-Petersen interval. This is done to help avoid the lateral femoral cutaneous nerve (LFCN) situated near the interval.

Step 2

The portal

Figures 4-7 Once the skin is incised, confirm the location of the tensor fascia latae (TFL). Look for the white fascia of the gluteus medius and perforating vessels of the IT band at the lateral border of the tensor. The main branches of lateral femoral cutaneous nerve will be medial to the tensor.

Palpate the interval between the TFL and the sartorius muscle along its length. Access to this interval will be established strictly lateral under the fascia of the TFL to avoid damage to the LFCN.

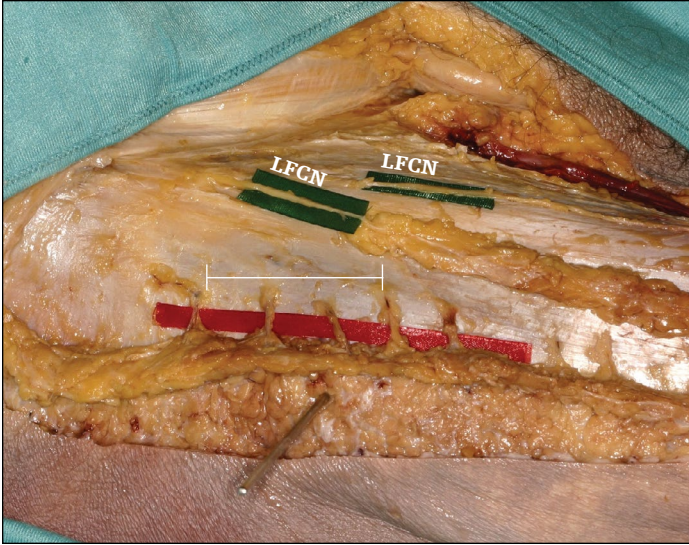


Figure 4 (exposed view)



Figure 5



Figure 6



Figure 7

Step 3

Exposure of the joint – Lateral Retractors



Figure 8



Figure 9



Figure 10

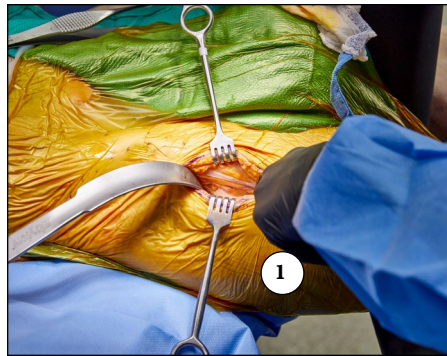


Figure 11

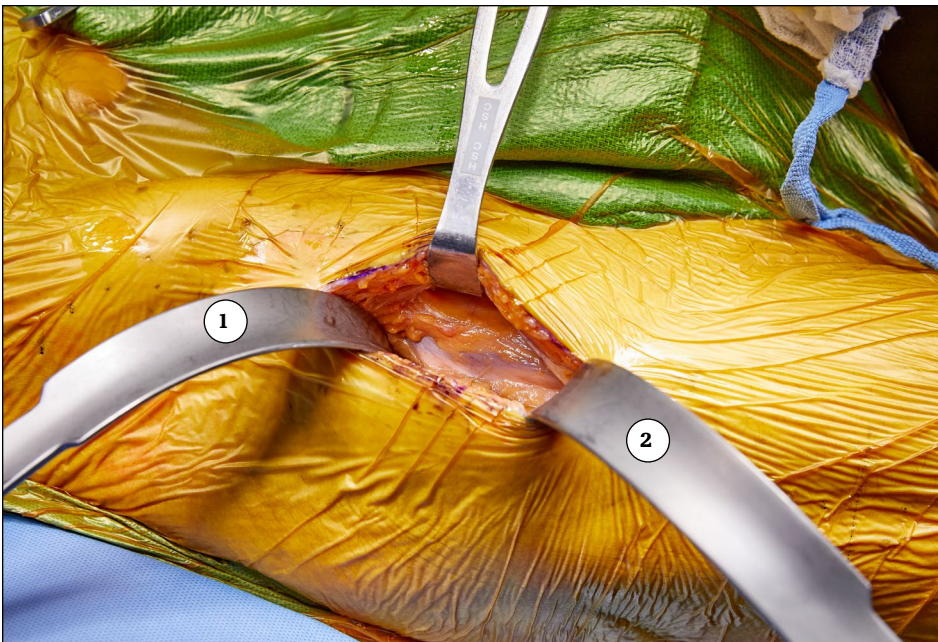


Figure 12

Figure 8 Incise the fascia of the TFL slightly medial to its midpoint and extend the incision in-line with the muscular fibers.

Figure 9 Bluntly dissect the fascia from the tensor and perform the following steps strictly under the fascia. Gently pull the TFL muscle laterally to identify the Smith-Petersen interval. This interval is characterized by a fatty layer and the deep layer of the fascia latae that is covering it.

Figures 10-11 Palpate the supero-lateral region of the femoral neck and place the first blunt retractor (1) in this location.

Figure 12 Place a sharp retractor (2) infero-lateral to the greater trochanter. Use a rake or Hibbs retractor medially.

Note:

Excessive retraction force may result in bone, nerve or soft tissue damage. Proper retractor placement and adequate exposure are strongly recommended and described throughout the technique.

This technique describes the Hohmann Retractors generally as “sharp” retractors and the Cobra Retractors as “blunt” retractors.

Note:

Retractor selection is left to the discretion of the surgeon.

Instruments

Hohmann Retractors

1440-2031, 1440-2032, 1440-2033

Cobra Retractors

1440-2040, 1440-2041



Step 3

Exposure of the joint – Lateral Retractors (continued)

Figures 13-14 Identify the ascending branches of the lateral circumflex vessels and cauterize or suture as necessary. The branches are variable in number and size and can be a source of significant bleeding.

Figure 15 The anatomic dissection shows the proximity of vascular structures and the ascending branches of the lateral circumflex vessels.



Figure 13



Figure 14 (exposed view)

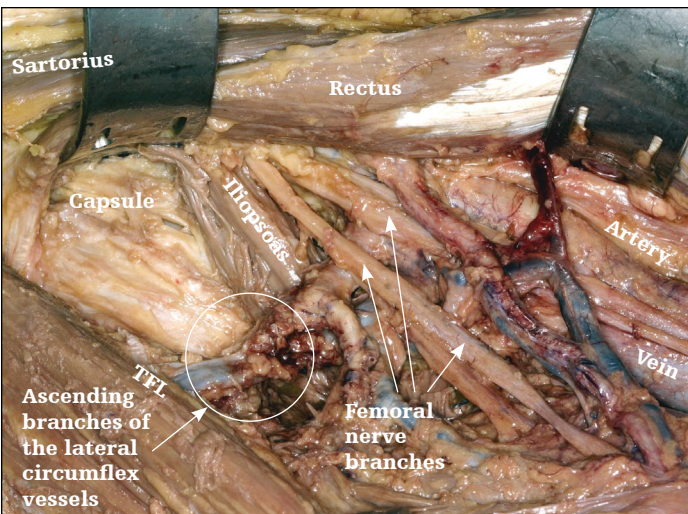


Figure 15 (exposed view)

Step 4

**Exposure of the joint –
Medial Retractors**

Once the vessels are controlled, incise the fascia (i.e., the deep layer of the iliotibial band) between the rectus femoris and the TFL, revealing the vastus lateralis. Cut this strong fascia between the rectus femoris and the capsule with an electrocautery device until the precapsular fat pad is visible.

Figure 16 Palpate the soft spot infero-medial to the neck and proximal to the vastus lateralis muscle.

Figures 17-18 Place a blunt retractor (3) in this location, retracting the rectus femoris and sartorius and more completely exposing the anterior capsule prior to performing the capsulotomy.



Figure 16



Figure 17 (exposed view)



Figure 18

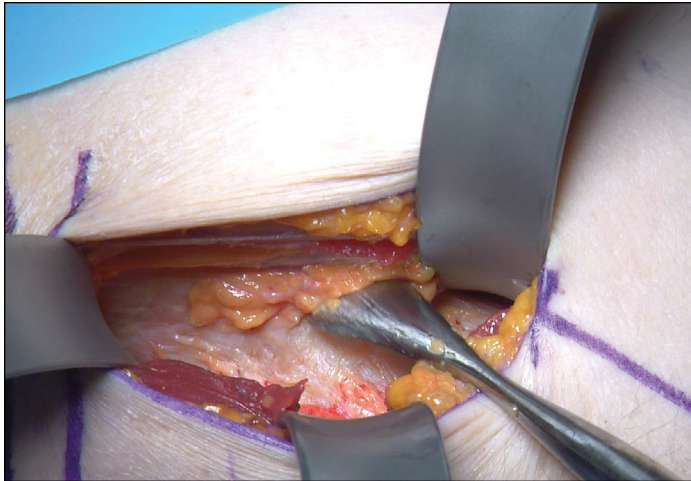


Figure 19

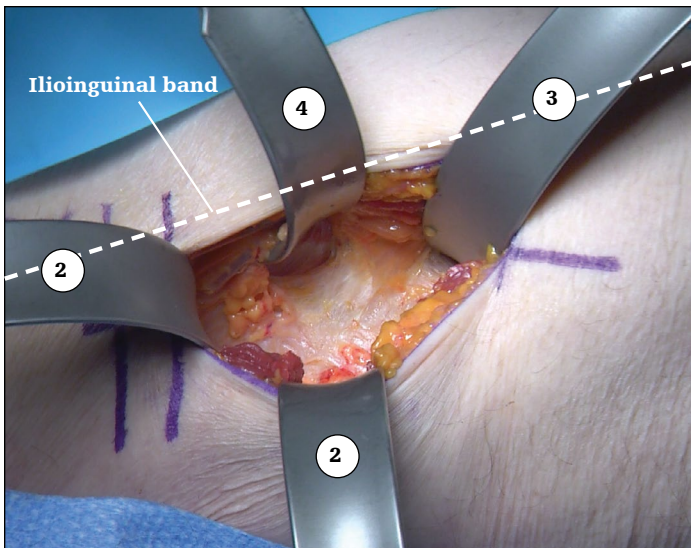


Figure 20

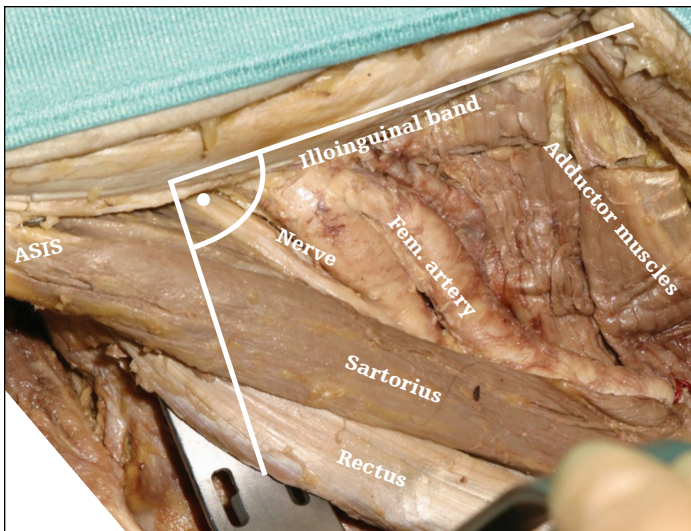


Figure 21 (exposed view)

Step 4

Exposure of the joint – Medial Retractors (continued)

Figure 19 After releasing the fascia under the rectus, flex the hip. For additional exposure, use a Cobb elevator to prepare space for a fourth retractor at the anterior rim of the acetabulum.

Keep the Cobb elevator aligned perpendicular to the ilioinguinal ligament (parallel to the femoral neck) and on bone to help avoid injury to the femoral nerve or the vascular bundle.

Figure 20 For additional exposure, use a fourth sharp retractor (4) (Curved Hohmann recommended)

Figures 21-22 Keep the retractor perpendicular to the ilioinguinal band and under the ilipsoas muscle to help avoid any damage to the neurovascular bundle.

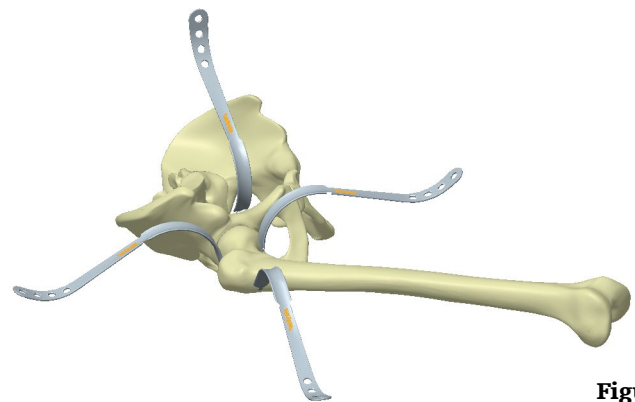


Figure 22

Instruments

Curved Hohmann Retractor
1440-2030



Step 5

Preparation of the capsule

If necessary, incise the reflected head of the rectus femoris at its capsular origin.

Depending on stiffness of the capsule, a variety of capsulotomies or capsulectomies can be performed. However, each method involves careful detachment of the capsule from the femoral neck.

Figures 23-24 Incise the capsule in line with the axis of the femoral neck, beginning near the acetabulum and extending to the intertrochanteric line. This incision may form the center of an H-shaped capsulotomy, with the sidelines of the H extending along the acetabular rim and the intertrochanteric line.

Alternatively, the anterior capsule may be removed. Create an incision parallel to the first, but further medial. Then detach the inferior portion of the capsule along the acetabulum and along the base of the intertrochanteric line. Incise the superior portion along the trochanteric line. Then, cut along the acetabulum and extend distally.

Figures 25-26 Reposition the supero-lateral (1) and infero-medial retractors (3) inside the capsule. The blunt retractors are designed to protect the tip of the greater trochanter during the femoral neck osteotomy.

Carefully clear the "saddle" region between greater trochanter and the neck as this serves as starting point for the neck osteotomy. When the capsule has been prepared for femoral neck osteotomy, the surgeon should have a clear view of the superolateral acetabulum and the saddle and should be able to freely palpate the lesser trochanter.

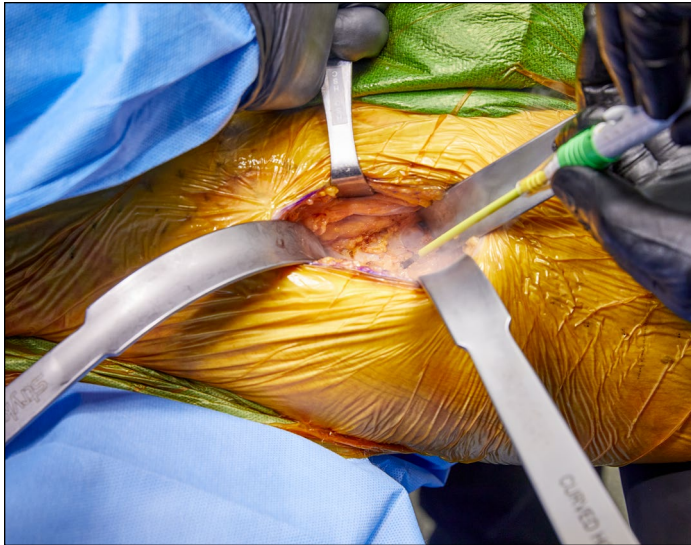


Figure 23

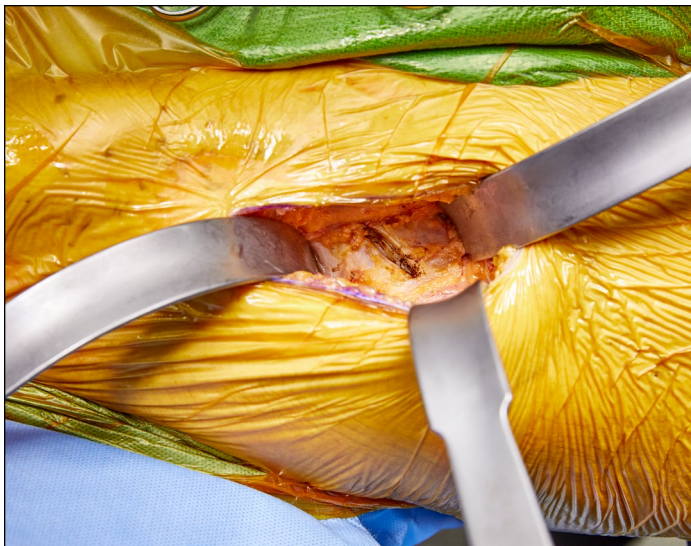


Figure 24

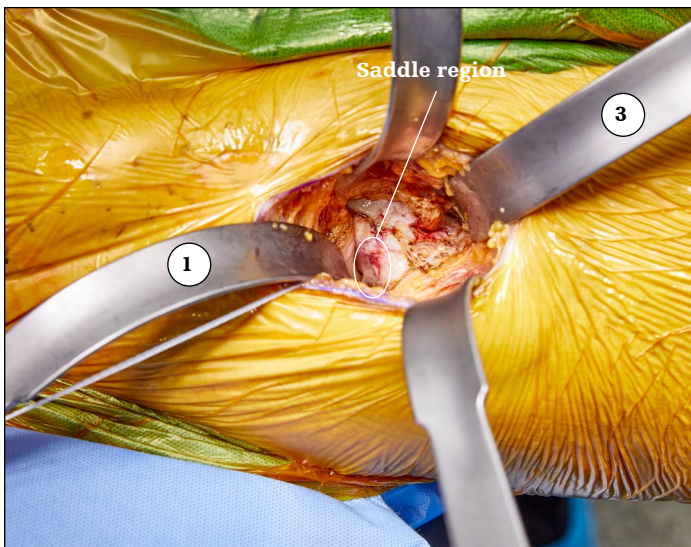


Figure 25

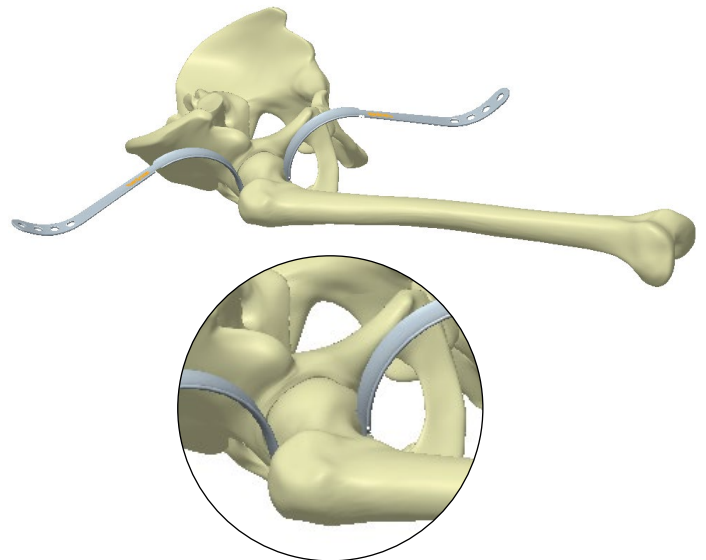


Figure 26

Step 6

Removal of the femoral head

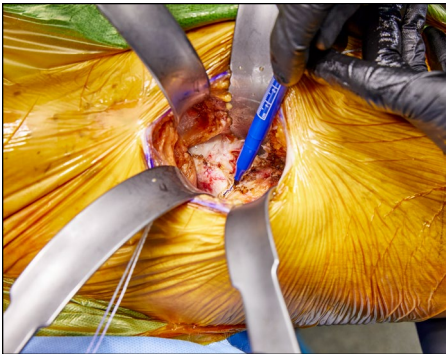


Figure 27

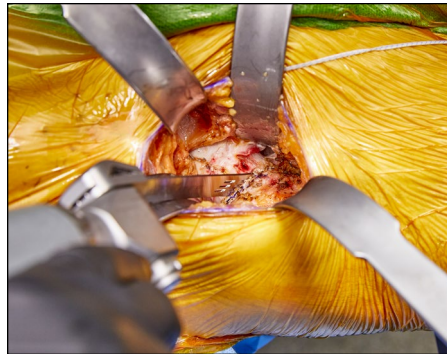


Figure 28



Figure 29a



Figure 29b

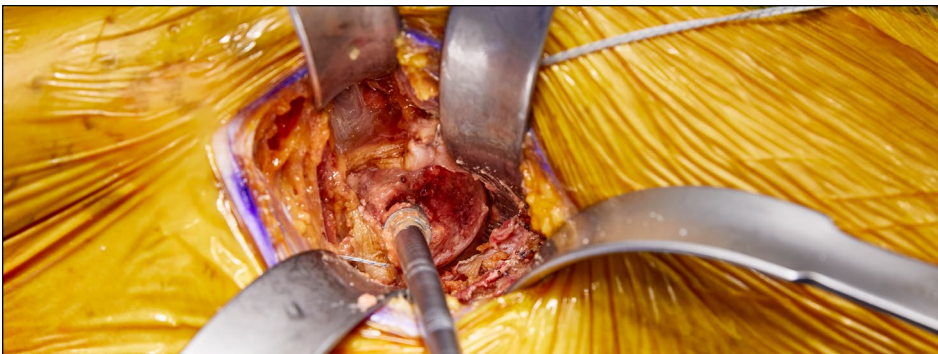


Figure 30



Figure 31

Figures 27-28 Create a double osteotomy of the neck so that a wedge of the neck may be removed prior to the femoral head. Use a narrow or restricted-motion saw to help avoid damage to the greater trochanter and other surrounding structures.

Ensure that both cuts are parallel or create a wedge that is wider at the anterior for ease of removal. Start the proximal cut as close to the femoral head as possible.

Begin the second cut from the saddle region of the neck and extend it to approximately 1cm above the lesser trochanter at approximately a 45° angle or according to your preoperative templating.

Figure 29 Use a Cobb elevator or osteotome to mobilize the neck wedge.

Remove the neck wedge with a towel clamp or tenaculum. Gentle traction on the leg will aid removal of the wedge and the femoral head.

Figures 30-31 Drill the Femoral Head Extractor into the femoral head and slowly pull the head out using a T-Handle.

Note:

Remove any osteophytes at the anterior rim of the acetabulum that may impede removal of the head.

Instruments

Large T-Handle

1101-2200



Femoral Head Extractor

1440-1010

Step 7

Acetabular exposure

Figure 32 Maintain the retractor at the anterior rim of the acetabulum (1). Remove all other retractors. Place a second retractor (2) infero-medial around the transverse acetabular ligament (TAL).

Place a third retractor (3) postero-lateral to the acetabulum. A fourth retractor can also be used to enhance exposure. Occasionally it is necessary to make a small incision of the capsule to facilitate placement of the retractor.

Remove the remainder of the labrum.

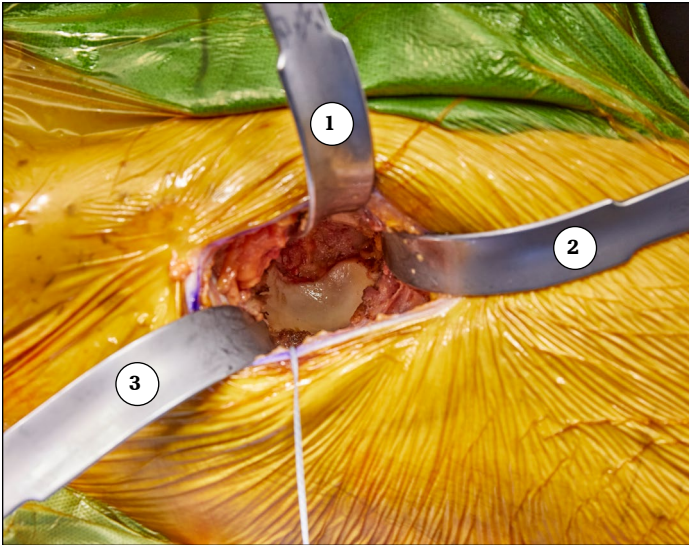


Figure 32



Figure 33



Figure 34

Preparation of the acetabulum

Figure 33 Incise the dorsal capsule (it usually forms a roll in the region directly posterior to the acetabulum).

Figures 34-35 Place a fourth Mueller Retractor (4) at the posterior rim of the acetabulum. This retractor can be held in place by the first assistant or by using weights.

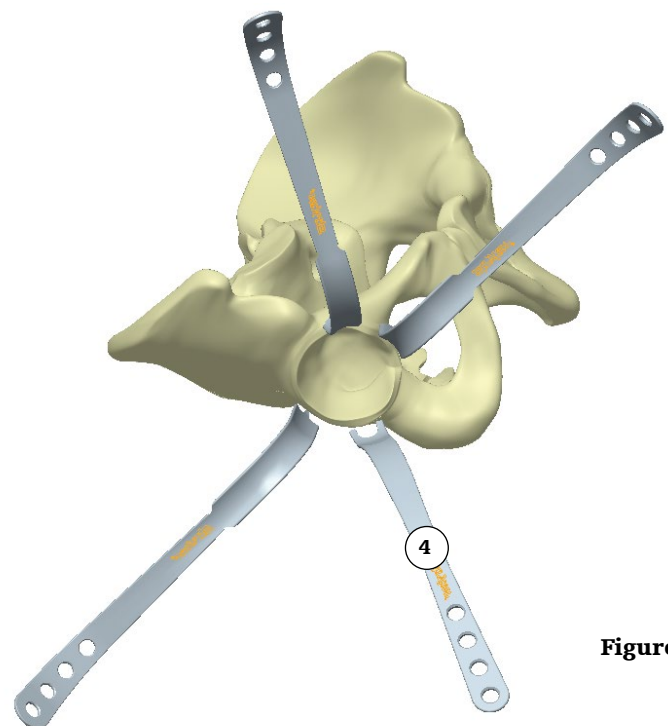


Figure 35

Instruments

Short Prong Mueller Retractor
1440-2021



Step 7

**Preparation of the acetabulum
(continued)**

Figure 36 Select the first reamer as described in the surgical protocol for the planned acetabular implant. Use care introducing and removing the reamer. Use an Offset Reamer Handle to help avoid impingement with lateral tissue and excessive force against the anterior acetabular wall.

Figure 37a, 37b As an alternative, introduce the reamer into the surgical site by hand and then attach the reamer handle. After reaming, use a clamp to retract the locking mechanism of the reamer handle and remove the reamer handle and reamer separately.

**Figure 36****Figure 37a****Figure 37b**



Figure 38



Figure 39



Figure 40

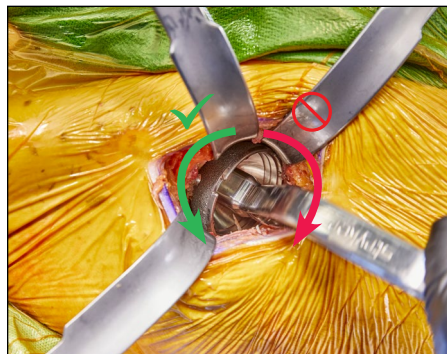


Figure 41



Figure 42

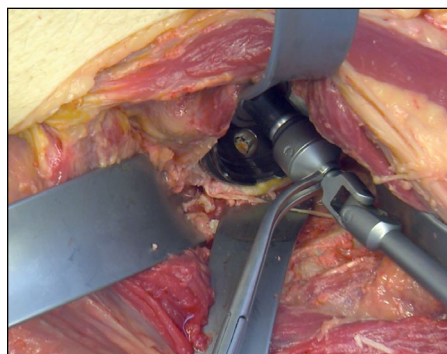


Figure 43 (exposed view)

Step 8

Cup insertion

Implant the cup using the Curved or Straight Cup Bolt Impactor with the Cup Impactor Bolt.

Figure 38 Fully thread the bolt onto the cup.

Insert the cup into the surgical site by hand. Attach the impactor, and adjust final orientation before impacting the cup.

Figures 39-40 Alternatively, insert the cup using the impactor, positioning the cup on the impactor so that any screw holes are oriented as desired.

Impact the cup in a manner consistent with its respective protocol. Avoid misdirected or excessive force.

The impactor may be detached from the bolt. By keeping the bolt attached to the cup, the cup may be assessed for orientation and quickly reattached to the impactor if needed.

Figures 41-42 Using the impactor, remove the bolt by rotating it counterclockwise.

Note:

Do not rotate the impactor clockwise as this will further tighten the bolt into the cup. This may make bolt removal more difficult (Figure 41).

Remove by hand with the Straight Cup Impactor or with the U-Joint Bolt Driver if access to the bolt is limited.

Figure 43 If the cup needs to be repositioned after trial reduction, use the Straight Cup Impactor or the U-Joint Driver to reinsert the bolt. Screw forceps will help control the U-joint driver during reinsertion.

Instruments

Curved Cup Bolt Impactor

1440-2010



Straight Cup Bolt Impactor

1440-2019



U-Joint Bolt Driver

1440-2017



Cup Impactor Bolt

1440-2011





Figure 44

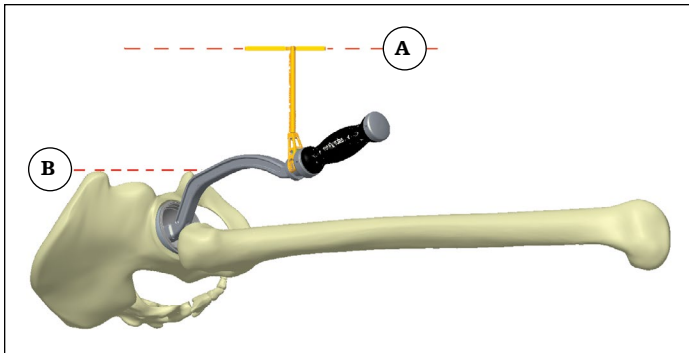


Figure 45

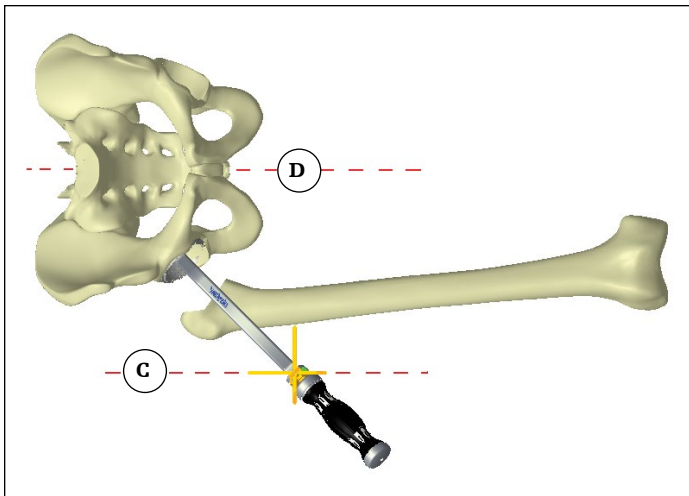


Figure 46

Step 8

Cup insertion (continued)

Supine Alignment Guide (optional)

Note:

The Supine Alignment Guide offers a visual reference to help estimate cup inclination and anteversion.

Figures 44-45 Slide the Alignment Guide onto the Cup Impactor and rotate it around the spindle to the desired location. Align the plane of the two crossbars (line A) parallel to the frontal pelvic plane (line B). The frontal plane passes through the left and right ASIS and the pubic symphysis. This provides a visual approximation of 20° anteversion. Be sure to account for pelvic tilt when aligning crossbars to the floor or OR operating table.

Figure 46 Align the side-specific crossbar (line C) with the mid-sagittal plane of the pelvis (line D). The mid-sagittal plane can be approximated as the long axis of the body. This alignment provides a visual approximation of 45° cup inclination.

Instruments

Supine Alignment Guide

1440-1380





Figure 47



Figure 48



Figure 49



Figure 50



Figure 51

Step 9

Screw placement (optional)

Figures 47-48 If screw fixation is desired, use a flexible drill and drill guide.

Figure 49 Use a u-joint screwdriver or flexible screwdriver to place the screws.

Step 10

Liner insertion

Figures 50-51 Insert the appropriate liner and seat it using a liner impactor. Figure 51 displays the Insert Positioner/Impactor Handle (2111-0000B); however, the surgeon should follow the recommended instrumentation in the surgical technique that matches the liner being implanted.



Figure 52

Step 11

Preparation of the posterolateral capsule

Figure 52 Remove the postero-lateral acetabular retractors. Position the leg in adduction and external rotation. Place a sharp retractor infero-lateral to the greater trochanter. Place a double-pronged retractor posterior to the greater trochanter, between the external rotators and the capsule.

Grasp the posterolateral capsular flap and use electrocautery to dissect the capsular and fatty tissue until the short external rotators are visible (e.g., piriformis, obturator, gemelli).

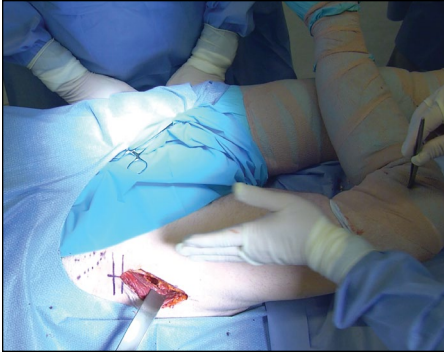


Figure 53

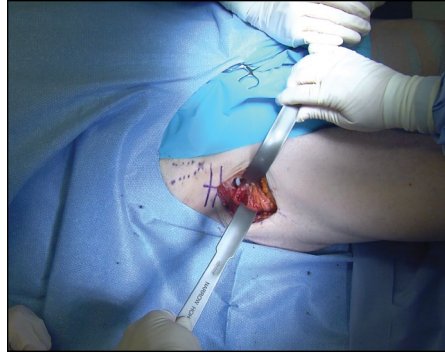


Figure 54

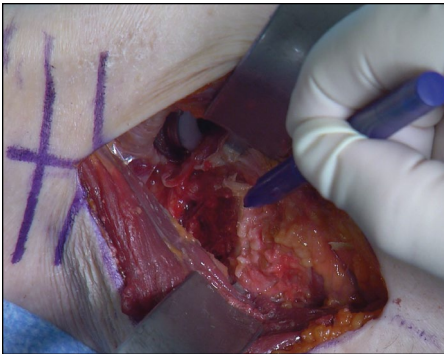


Figure 55

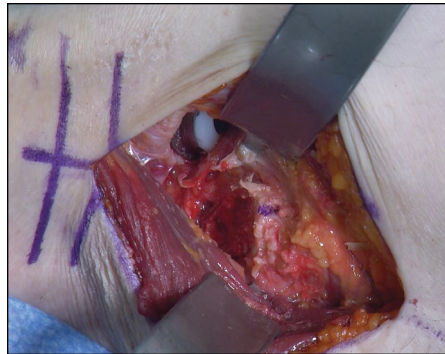


Figure 56



Figure 57

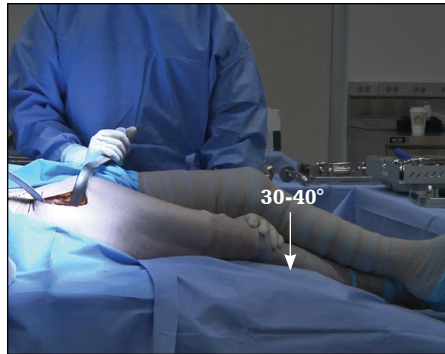


Figure 58

Step 12

Figure 4 position to mark femoral orientation

Note:

Optional for standard OR table users only.

Figures 53-54 Remove all retractors. Externally rotate the leg and flex the knee into a "Figure 4" position. Place one Mueller Retractor medial and one sharp retractor lateral to the femur, exposing the resected calcar region.

Remove any capsular tissue covering the calcar region.

Figures 55-56 Mark the neutral rotation of the femur with electrocautery. Knee flexion is only used for calcar exposure and determination of the neck version.

Step 13

Exposure of the femur

Figures 57-58 For femoral exposure, abduct the nonoperative leg. After extending the leg 30°- 40° with no knee flexion, the foot is externally rotated and is adducted to expose the cut surface of the femoral neck.

Note:

For standard OR table users, leg extension is facilitated by breaking the midpoint of the OR table.

If both legs are draped, the operative leg can be crossed under the nonoperative leg and an assistant's hand in order to support external rotation. Keep the knee of the operative leg extended in order to reduce muscular force at the proximal femur and to increase exposure.



Figure 59

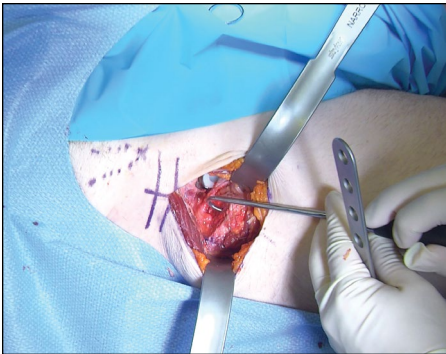


Figure 60

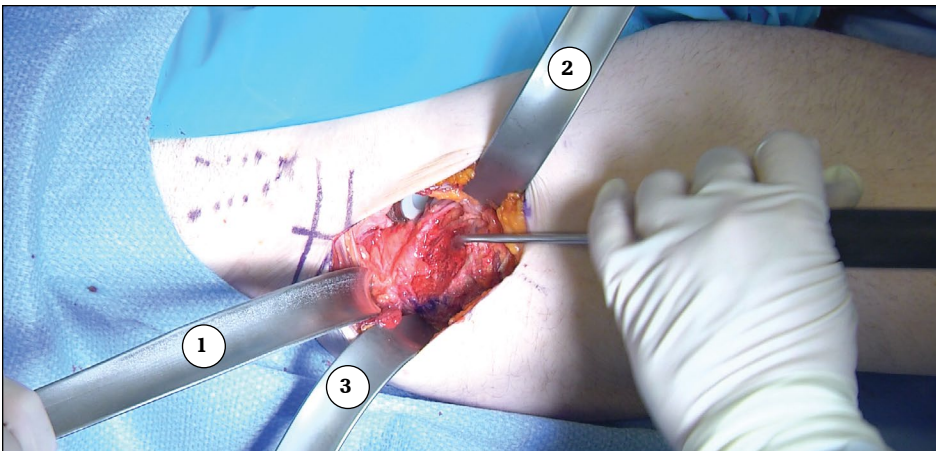


Figure 61

Step 13

Exposure of the femur (continued)

With the patient's perineum positioned at the hinge of the bed, hip extension, rather than back extension, is achieved by lowering the foot of the bed. Putting the patient in Trendelenburg allows more hip extension without risking contaminating the foot of the bed. Prior to leveling the bed, it is important to first raise the foot of the bed to help avoid contamination that may result from removing the Trendelenburg first. If a fracture table or leg holder device is used, follow the manufacturer's instructions to achieve proper patient position.

Note:

For surgeons that use a special table, external rotation, extension and adduction is achieved through manipulation of the table attachment.

Both techniques require this specific leg position which allows for a safe exposure of the proximal femur.

Figures 59-61 Place a Long Prong Mueller Retractor (1) behind the superior aspect of the greater trochanter, in front of the gluteus medius. Place the Bone Hook inside the calcar region of the resected neck and slowly elevate the femur anterolateral. Adjust the Long Prong Mueller as needed to maintain the femoral elevation. Always combine pulling of the bone hook and levering of the retractor to minimize forces to the greater trochanter. Releases of posterior structures may be required to achieve proper femoral exposure.

Note:

In some cases, the tip of the greater trochanter is behind the acetabulum. Pull the Bone Hook first laterally in order to free the greater trochanter and then pull anteriorly.

Place a retractor (2) medial in the calcar region, proximal to the iliopsoas tendon.

If desired, place a second retractor (3) laterally at the proximal femur.

Instruments

Long Prong Mueller Retractor

1440-2020

Bone Hook

74-671-101





Figure 62 (exposed view)

Step 13

Possible releases

Figure 62 The insertion of the gluteus minimus, piriformis, gemellus superior, obturator internus and gemellus inferior are found at the tip of the greater trochanter and in the trochanteric fossa.

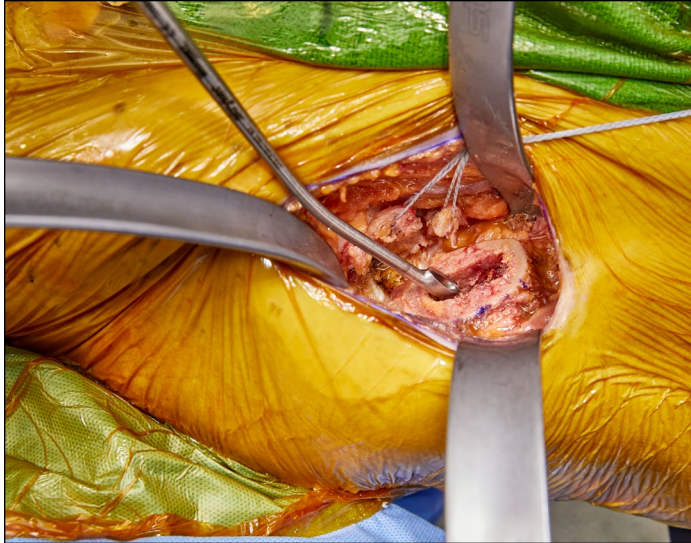


Figure 63



Figure 64



Figure 65

Step 14

Opening the femoral canal

Figures 63-64 Use the Angled Curette to carefully open and sound the direction of the femoral canal.

Use a rongeur or the Modular Box Osteotome to remove bone in the superolateral region of the neck. This step helps minimize undersizing and varus positioning of the femoral broach and stem.

Figures 65-66 The Reverse Cutting Rasp may also be used to lateralize and open the femoral canal. The Rasp operates in one direction and cuts as it is pulled out of the femur.

Ensure the Modular Box Osteotome and Reverse Cutting Rasp are firmly attached to the handle before use. Avoid excessive or misdirected impaction or rasping motions.

Note:

The Quick-Connect Handle may be attached to the Dual-Offset Handle to help provide version control of the broaches.

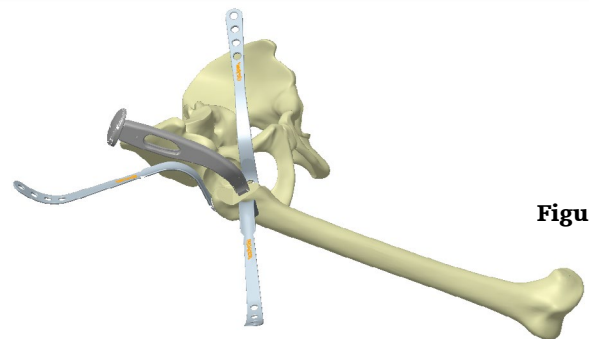


Figure 66

Instruments

Angled Curette

1001022



Extra Offset Broach Handle – Lever*

7000-5529



Modular Box Osteotome

1440-2004



Reverse Cutting Rasp

1440-2003



Quick-Connect Handle

1440-1040



*Dual offset broach handle available

Step 15

Broaching the femur

The Dual-Offset Handle is designed to facilitate the introduction and alignment of the broaches.

Figures 67-68 Push the smallest broach into the canal. Use care to align the broach with the intended version. Only after the broach is fully introduced, begin light impaction with a mallet. Visually check for varus/valgus alignment cues such as the orientation of the handle.

Note:

Continue progressive broaching in a manner consistent with the respective implant protocol. Avoid excessive or misdirected impaction or broaching motions.

Figure 69 Keep the final broach in place to complete a trial reduction. Trialing with different heads and neck trials is performed until leg length, range of motion and hip stability are satisfactory.

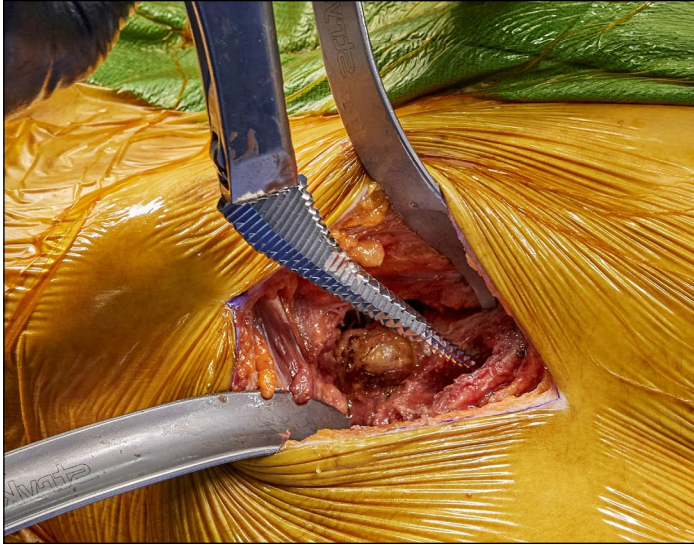


Figure 67



Figure 68

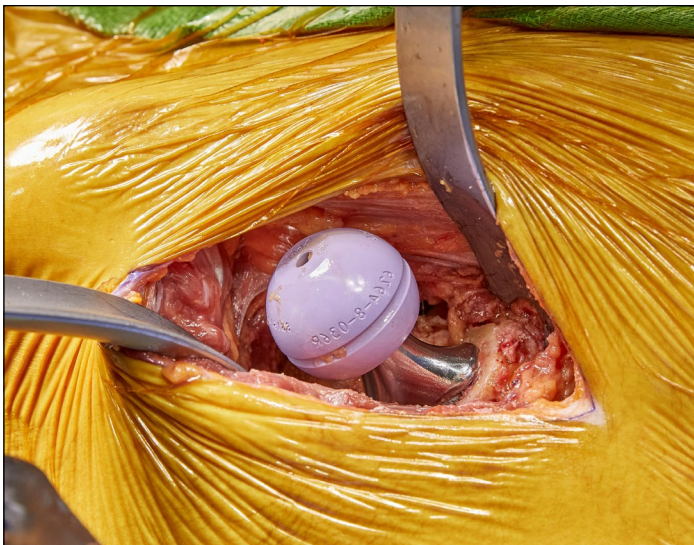


Figure 69

Step 16

Implantation and closure

A: Cementless Stems

Figures 70-71 Introduce the implant by hand into the broached cavity. Using a bullet-tip stem impactor, advance the stem in a manner consistent with its respective protocol. The bullet-tip impactors are designed to swivel on the drive hole of the stem.

Figure 72 Verify the head is secure on the trunnion after head impaction by applying traction to the head and confirming stability on the trunnion. If necessary, the head can be removed utilizing the head disassembly instrument.* Relocate the femoral head into the acetabular cup and re-check the hip biomechanics. The surgical site is then closed according to surgeon preference.

*If a ceramic head is placed on the trunnion and then removed, it must be replaced with a V40 cobalt chrome head or a V40 Titanium Adapter Sleeve (17-0000E) and a C-Taper ceramic head.

B: Cemented Stems

Refer to the Exeter V40 Surgical Technique.

The femoral canal should be occluded distally with an Exeter cement restrictor, and the restrictor size is measured using the Exeter plug trials.

After femoral cementing, insert the Exeter stem using the Exeter stem introducer in a manner consistent with the surgical technique.

Figure 72 Verify the head is secure on the trunnion after head impaction by applying traction to the head and confirming stability on the trunnion. Relocate the femoral head into the acetabular cup and re-check the hip biomechanics. The surgical site is then closed according to surgeon preference.



Figure 70

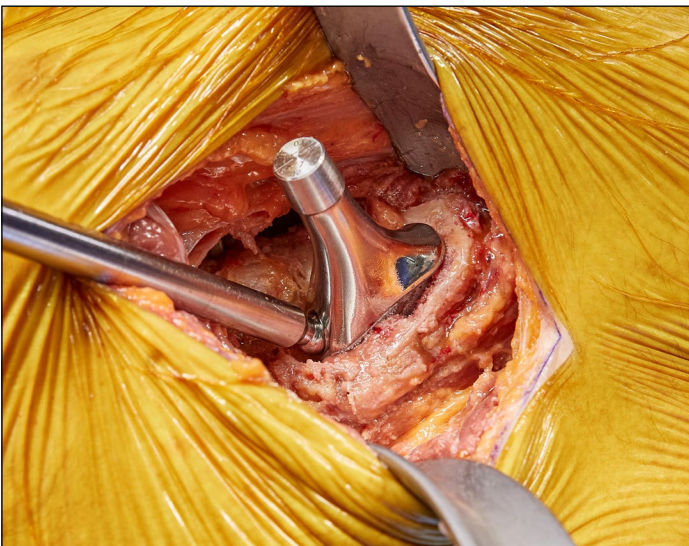


Figure 71



Figure 72

Catalog information

Product code	Description
1440-2030	Curved Hohmann
1440-2031	Standard Hohmann
1440-2032	Wide Hohmann
1440-2033	Deep Hohmann
1440-2040	Standard Cobra
1440-2041	Wide Cobra
1440-2020	Long Prong Mueller
1440-2021	Short Prong Mueller
74-671-101	Bone Hook

Product code	Description
1440-1010	Femoral Head Extractor
1440-2004	Modular Box Osteotome
1001022	Angled Curette
1440-2000	Left Dual Offset Handle
1440-2001	Right Dual Offset Handle

Product code	Description
1440-2093	Acetabular Internal Tray
4845-7-600	Case
1440-2017	U-Joint Bolt Driver
1440-2019	Straight Cup Bolt Impactor
1440-2010	Curved Cup Bolt Impactor
1440-1380	Supine Alignment Guide
1440-2011	Cup Impactor Bolt

In addition, the following retractor instruments are available and may be used based on surgeon preference:

Product code	Description
1440-0001	Single High Case
1440-0002	Double High Case
1440-0010	Sm Incision Retractor Tray
1440-1020	Retractor Impactor
1440-1105S	Left Acetabular Retractor
1440-1110S	Right Acetabular Retractor
1440-1120	Femoral Elevator
1440-1130S	Narrow Hohmann Retractor
1440-1135S	Wide Hohmann Retractor
1440-1140	Blunt Narrow Cobra Retractor
1440-1080	Light Pipe



This document is intended solely for healthcare professionals.

A surgeon must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient. Stryker does not dispense medical advice and recommends that surgeons be trained in the use of any particular product before using it in surgery.

The information presented is intended to demonstrate the breadth of Stryker's global product offerings. A surgeon must always refer to the package insert, product label and/or instructions for use before using any of Stryker's products. This surgical technique may depict products that are not currently CE marked according to the Medical Device Regulation 2017/745 or the Medical Device Directive 93/42/EEC. Please refer to the product label for CE mark information (if applicable). Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your sales representative if you have questions about the availability of products in your area.

Stryker Corporation or its divisions or other corporate affiliated entities own, use or have applied for the following trademarks or service marks: Accolade, Anato, Exeter, Insignia, Stryker, Stryker Orthopaedics, Trident, Tritanium, V40. All other trademarks are trademarks of their respective owners or holders.

ACIIDA-SP-1_Rev-7_33502

Copyright © 2024 Stryker

Howmedica Osteonics Corp.

325 Corporate Drive

Mahwah, NJ 07430, USA

A subsidiary of Stryker Corporation

t: 201 831 5000

stryker.com