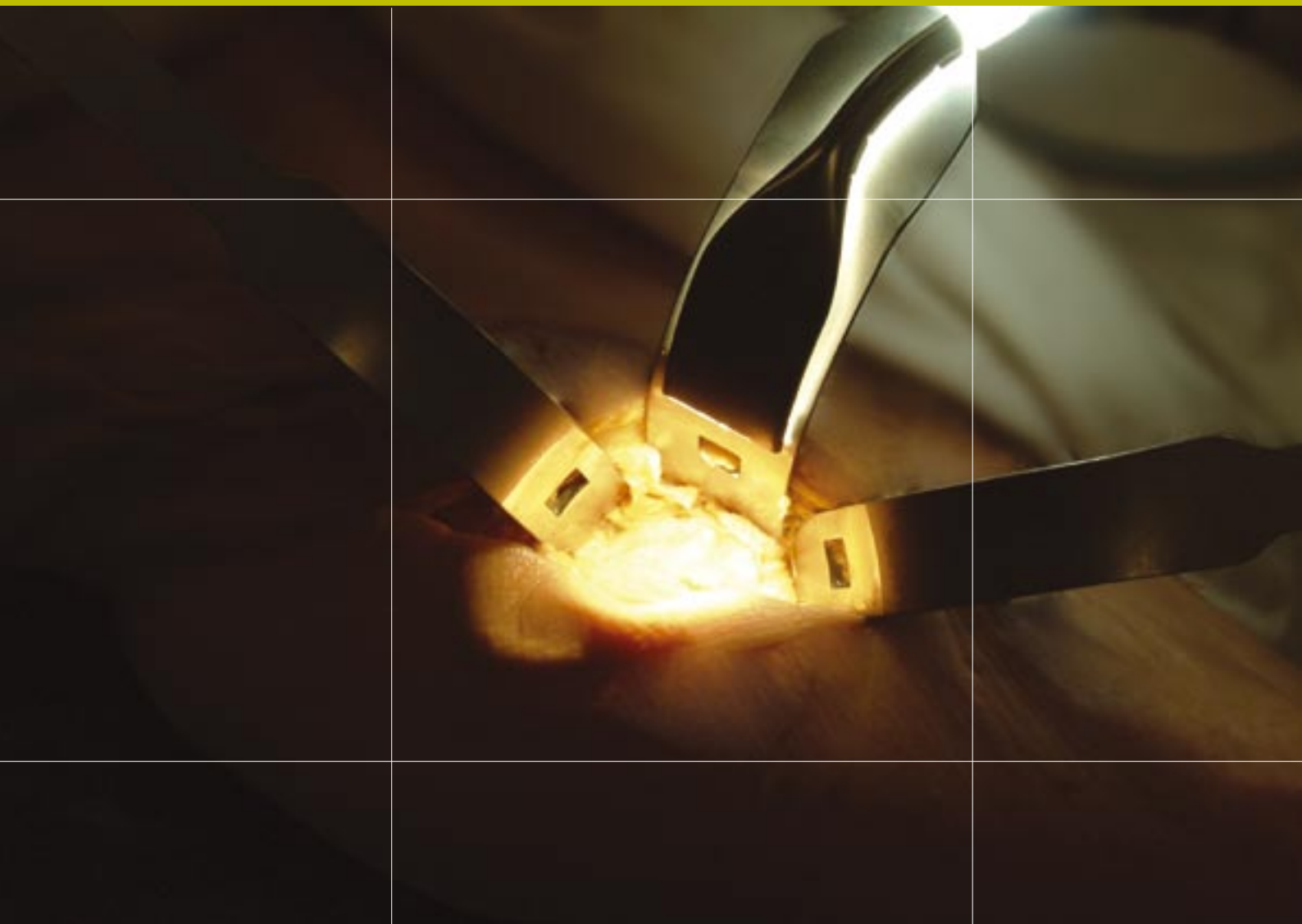
stryker®

Joint Replacements

MIS

Direct Anterior Approach Surgical Protocol

The Right Procedure
and the Right Implant
for the Right Patient



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Stryker thanks the following surgeons for their clinical expertise in the development of this surgical approach:
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3D illustration and concept: Prof. Franz Rachbauer, Innsbruck/Austria, and FAKTUM. Television GmbH, Cologne/Germany.
This document aims to provide a summary of the main surgical steps for a direct anterior approach using a minimal invasive technique. It is recommended that this technique be used in combination with a Stryker ABG II, Accolade, Exeter and Trident implant and the associated Stryker instrumentation. This operative technique is part of the Stryker MIS training program. It is strongly recommended to attend a training seminar before using this minimally invasive approach to total hip replacement.

The **Right Procedure** and the **Right Implant** for the **Right Patient**

Introduction

This surgical protocol is part of the Stryker Minimally Invasive Training Program that has been created to help you, the orthopaedic surgeon, introduce new techniques that may be beneficial to your patients.

Minimally invasive procedures can be technically demanding and require specialized instruments, intensive training and an open scientific discussion of clinical results.

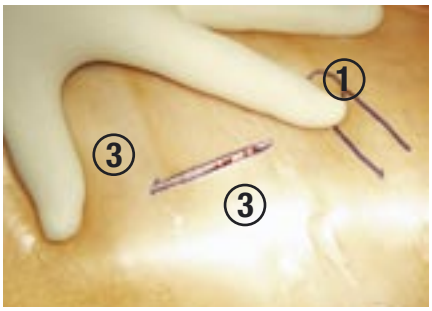
The Stryker Minimally Invasive Training Program is based on the principals of responsibility and openness to different approaches in order to improve total joint arthroplasty.

Patient Positioning

Place the patient in a supine position on the operating table to create a predictable and stable position. No sandbag is required to push the hip forward.

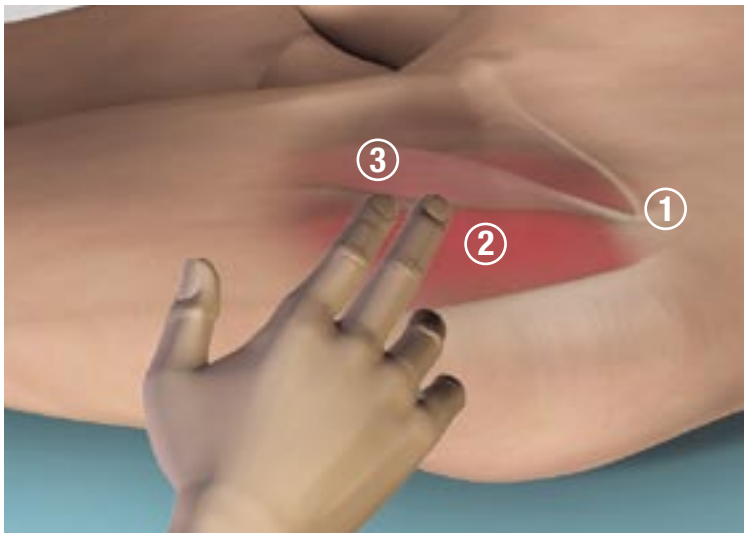
1

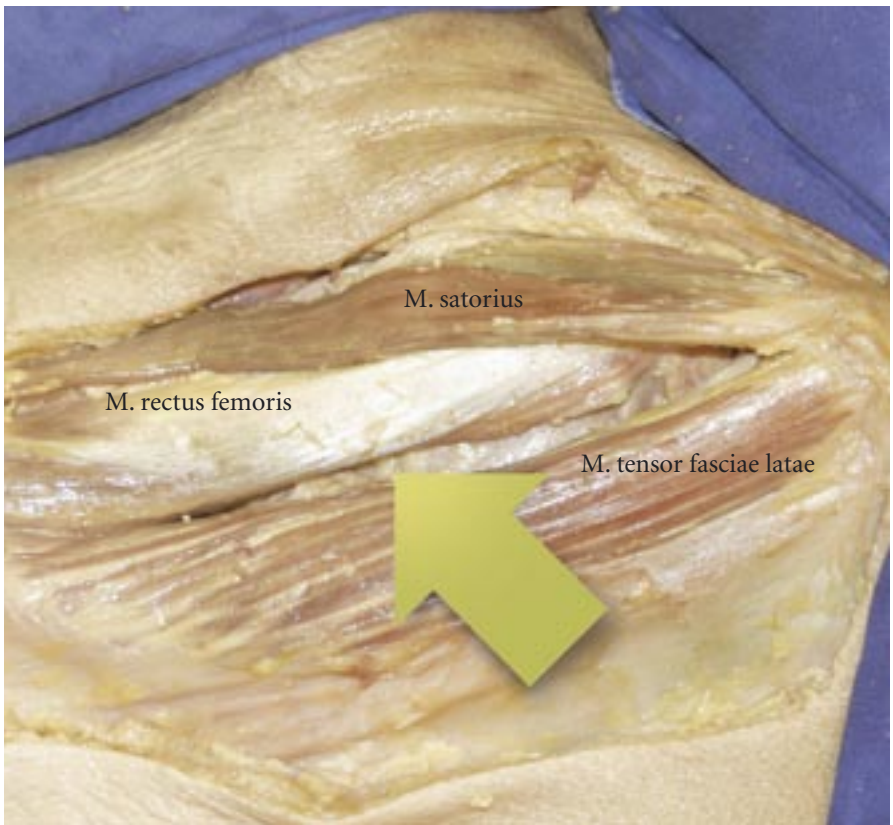
Initial Incision

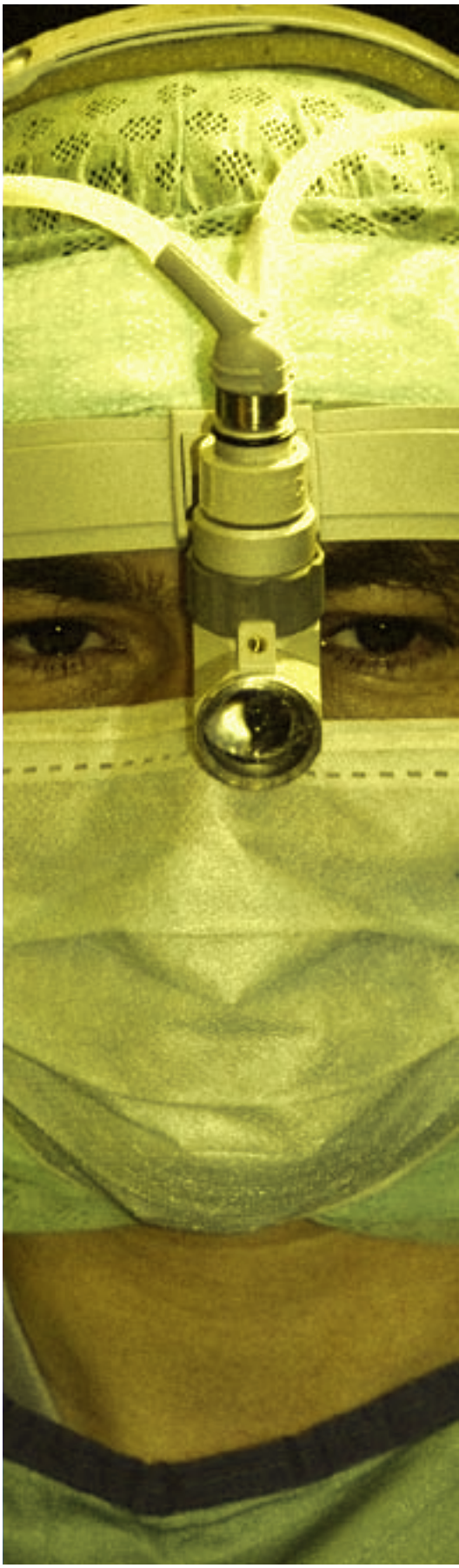


Palpate the anterior superior iliac spine (1) and identify the gap between the tensor fasciae latae (2) and the sartorius muscle (3). This can be located 5 to 8 cm below the anterior superior iliac spíne. Create a starting incision 3 to 4 cm distal to the anterior superior iliac spine and follow the anterior border of the tensor fasciae latae muscle. The average length of this incision is generally between 5 to 8 cm long and should be no longer than the circumference of the cup which is to be introduced.

2

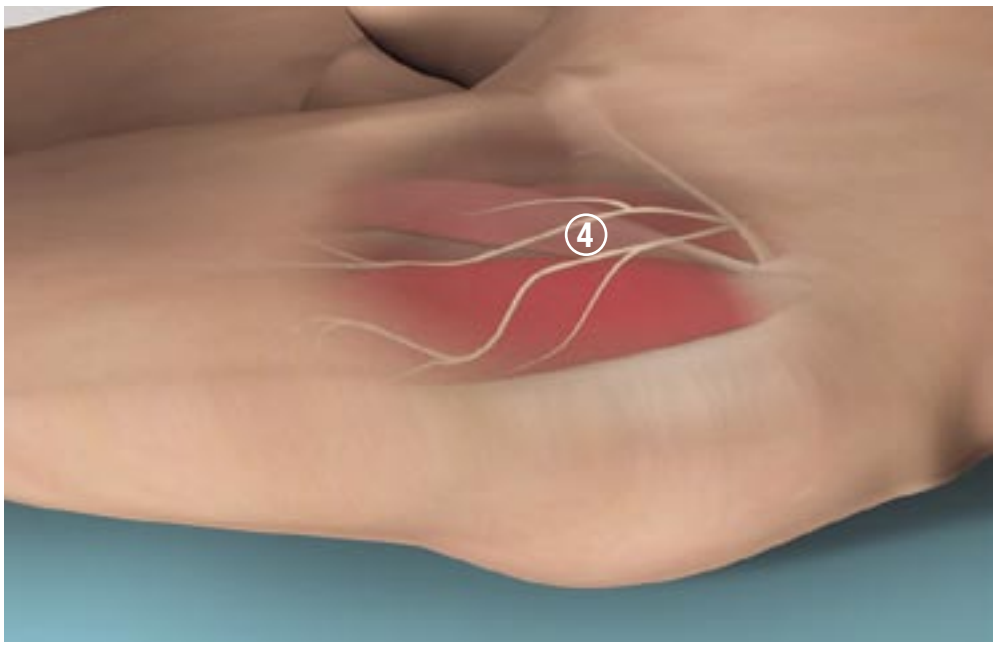






Soft Tissue Anatomy

Carefully dissect down through the subcutaneous fat, taking care to avoid the lateral femoral cutaneous nerve (4), and incise the deep fascia on the medial side of the tensor fasciae latae (2). The anterior capsule of the hip is then identified by blunt dissection. This is best done with the index finger.

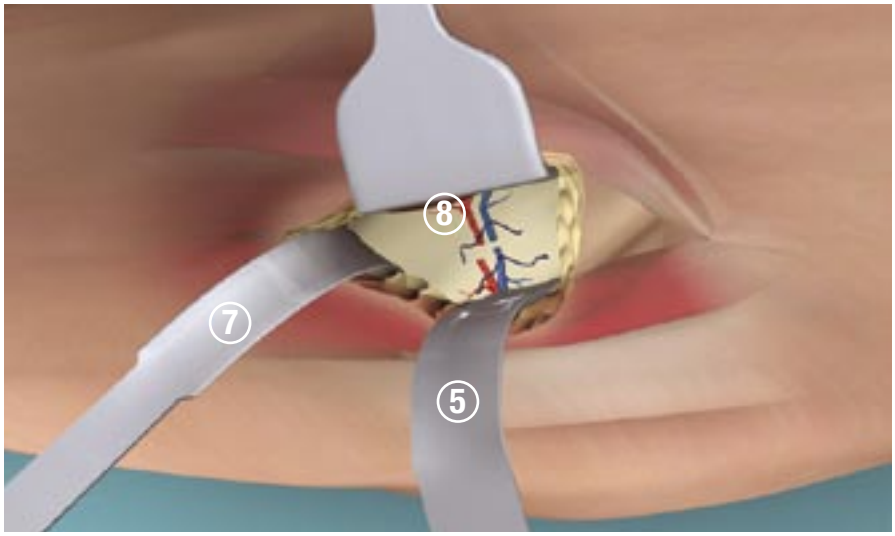


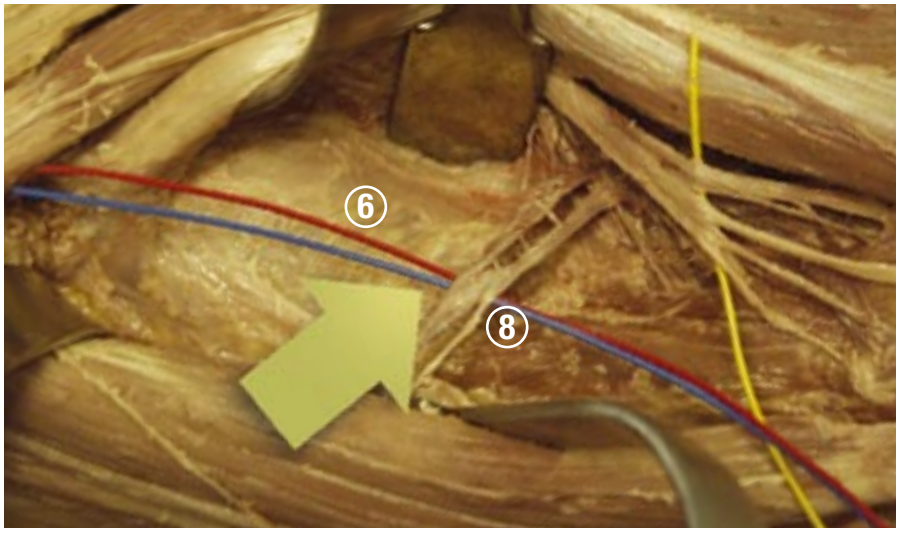
3

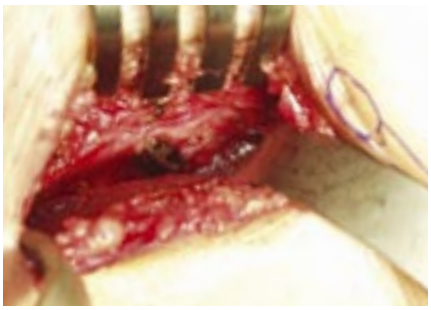
Exposure and Placement of the Retractors

Place a blunt narrow retractor (5) around the capsule (6) laterally overlying the neck of the femur. In addition, a narrow Hohmann retractor (7) should be placed around the innominate tubercle of the greater trochanter. Retract the sartorius muscle medially. Avoid retracting too hard to prevent the risk of bleeding from the ascending branches of the lateral femoral circumflex vessels (8). Carefully suture ligate or electrocoagulate these vessels.

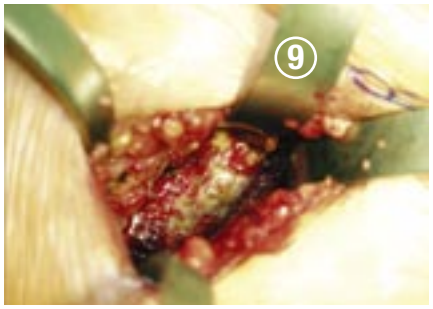
4





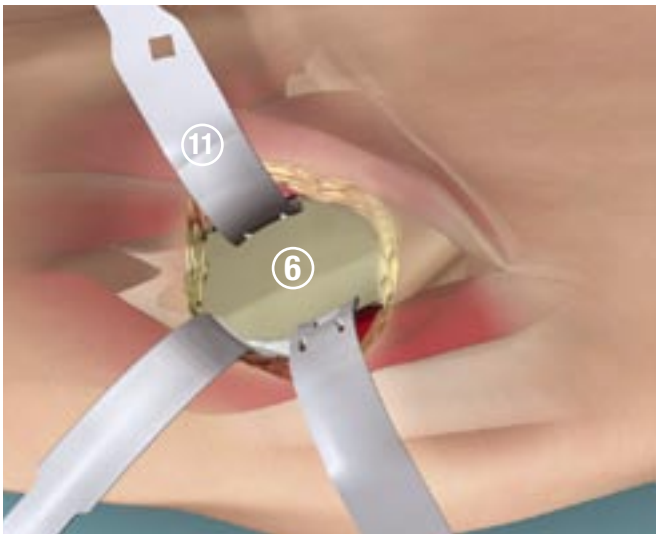


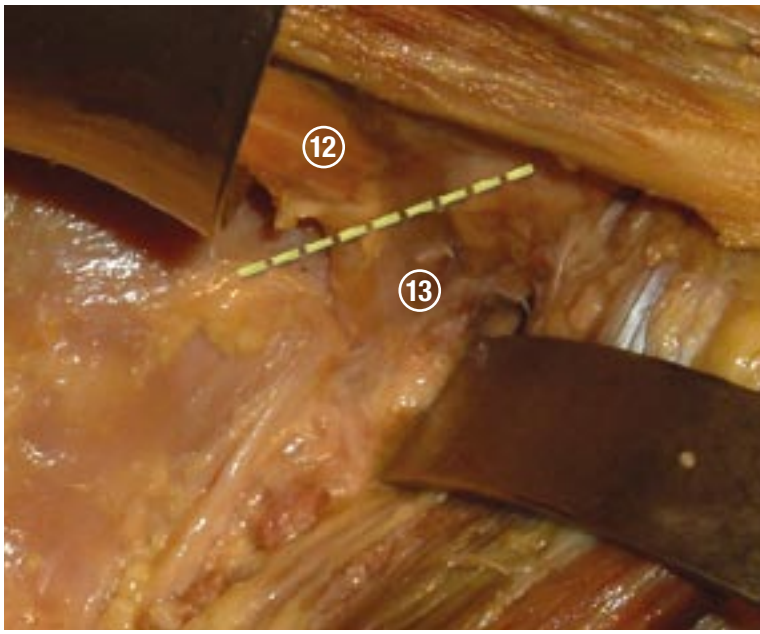
Bend the hip slightly and place a wide or narrow Hohmann retractor (9) at the anterior rim of the acetabulum under the origin of the rectus femoris and medial to the anterior inferior iliac spine. The capsule of the hip joint is now exposed.



5

Bluntly expose the medial capsule (6) of the femoral neck which is covered by the rectus femoris muscle (10) and fatty tissue. Medially retract the rectus femoris muscle with a blunt narrow retractor (11). The rectus femoris originates from two heads: the direct head (12), from the anteriorinferior iliac spine and the reflected head (13), from the superior rim of the acetabulum and anterior capsule. Transect the origin between these two heads (yellow dotted line).





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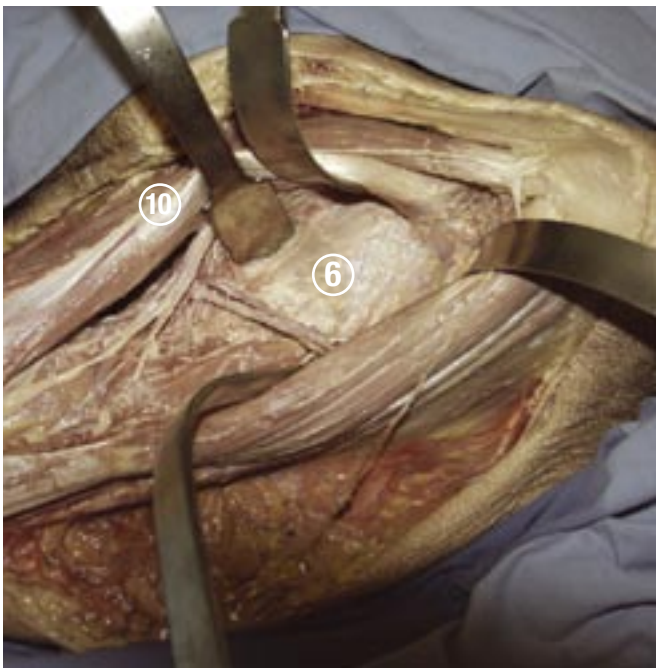
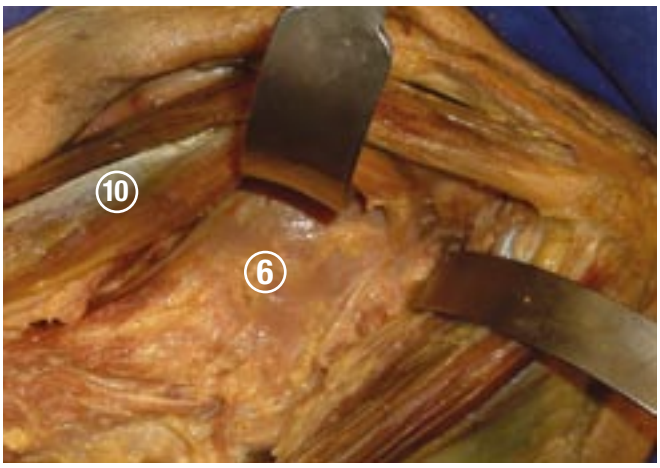
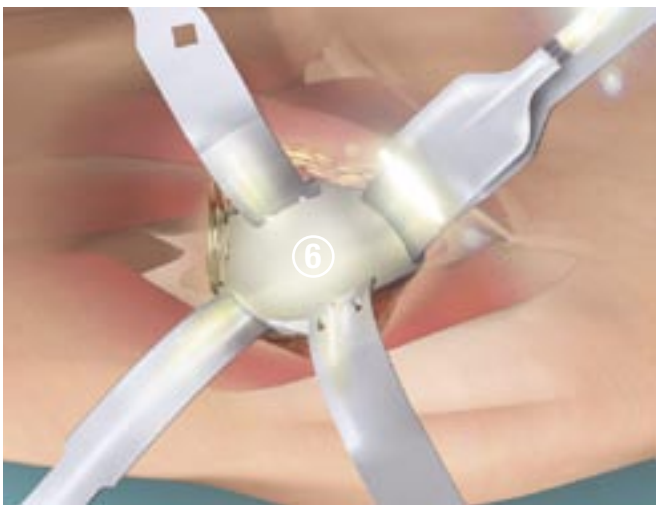
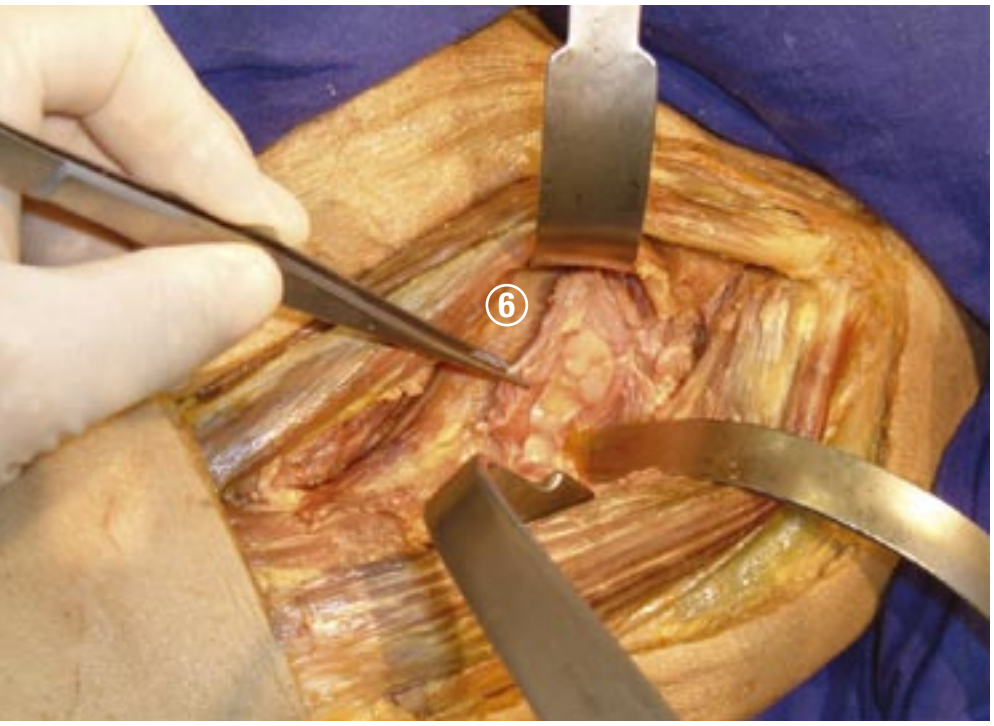






Preparation of the Capsule and Femoral Neck

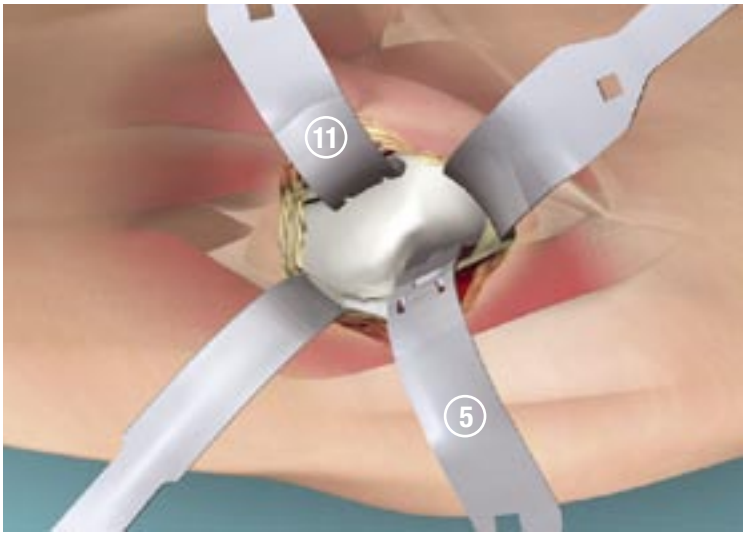


Incise the hip joint capsule (6) with a H-shaped capsular incision.

7

Next, place the blunt narrow retractors (5 and 11) within the hip capsule. Detach the capsule at the intertrochanteric line as far as possible to the medial and lateral side, clearing the junction of the anterior surface of the neck and shaft. The lesser trochanter and the junction between neck and greater trochanter are palpated to facilitate correct orientation for osteotomy of the neck.

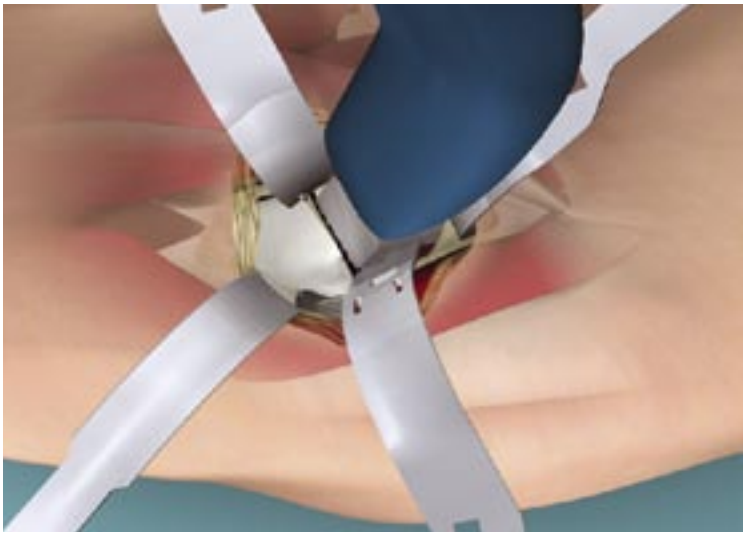
8

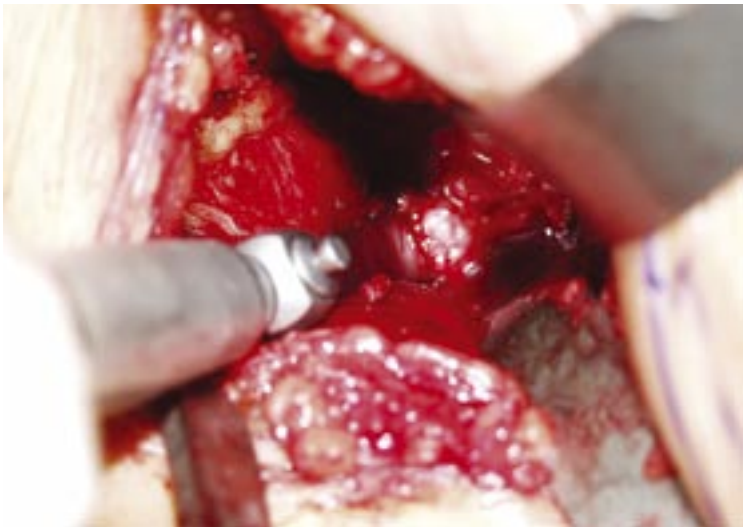


Rotate the femur into a neutral position and cut the femoral neck using the Stryker TPS System with micro saw according to the preoperative templating of the patient's x-rays. The level of the femoral cut can be easily determined as the base of the neck should be clearly visible. (Note: Femoral resection level may differ based on anatomy and choice of implant.)

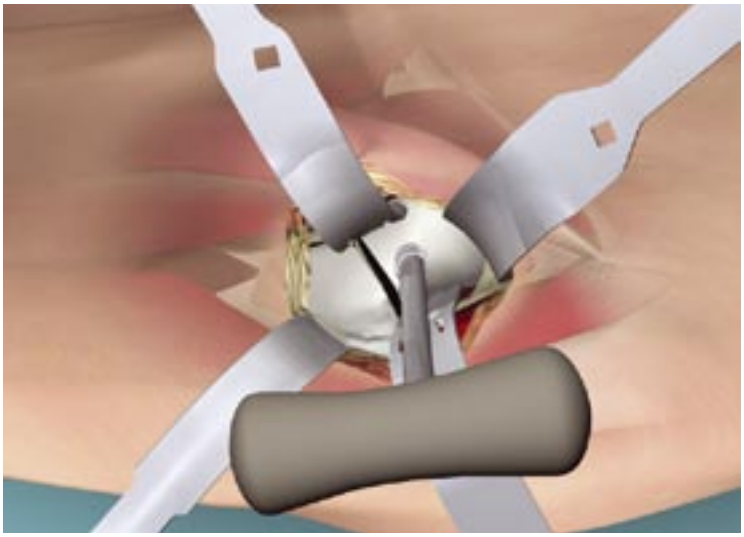
9

In Situ Osteotomy and Removal of the Femoral Head





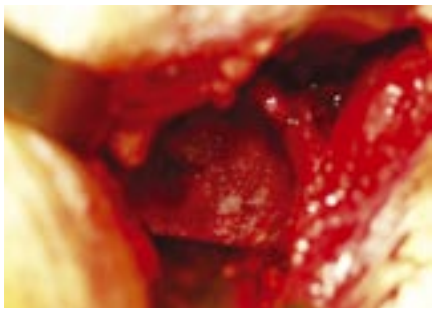
10 Use the T-handle and cork screw extractor to now remove the femoral head. (Note: In order to support the removal of the femoral head it is helpful to perform a second osteotomy of the neck proximal to the first one and to remove this fragment prior to the extraction of the head, thus leaving more space for maneuvering.) Remove all retractors with the exception of the narrow Hohmann placed on the anterior acetabular rim.

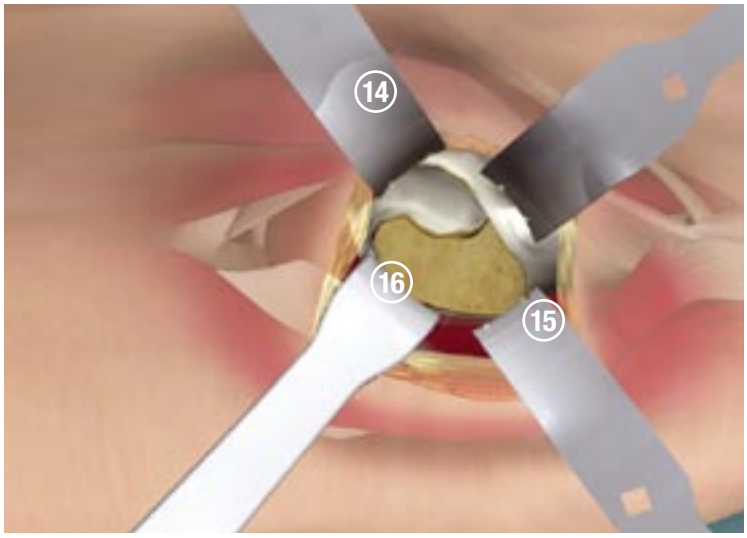


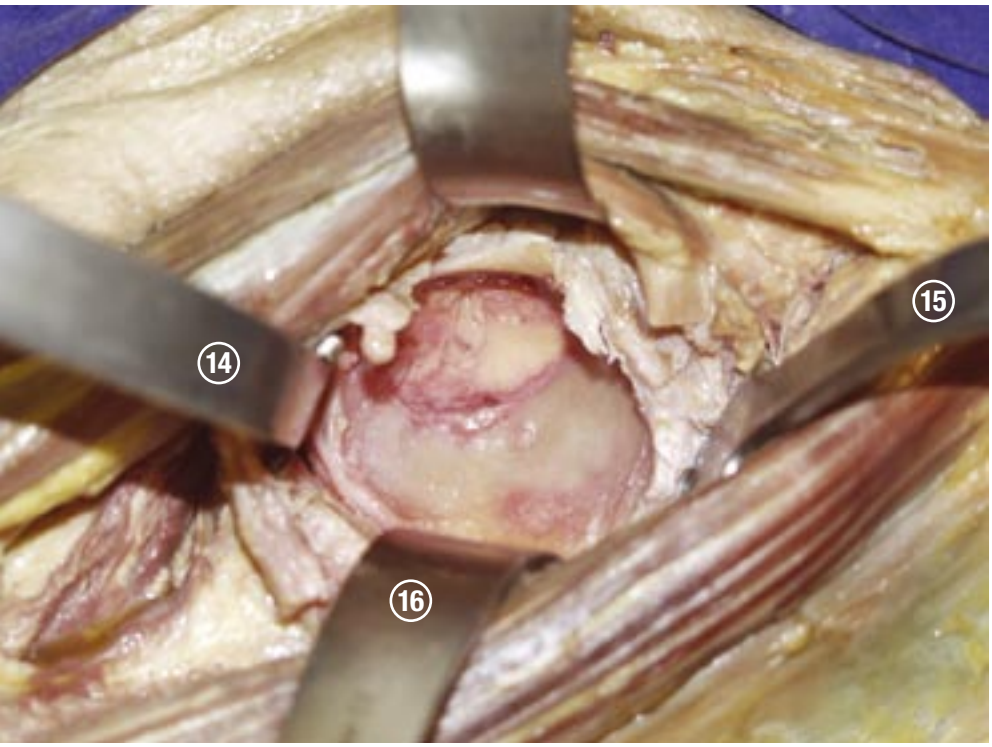
Acetabular Exposure and Preparation

Place the narrow Hohmann retractor (14) around the transverse acetabular ligament. This is sometimes ossified and part of an inferior osteophyte. A second narrow Hohmann retractor (15) is placed on the lateral ilium and the acetabular retractor (16) is inserted under the bony rim of the inferior acetabulum. Next, excise the remnants of the acetabular labrum and define the depth of the acetabular fossa. Any overhanging osteophytes can be excised and a synovectomy performed. (Note: No capsulectomy is performed in order to facilitate repair of the capsule.)

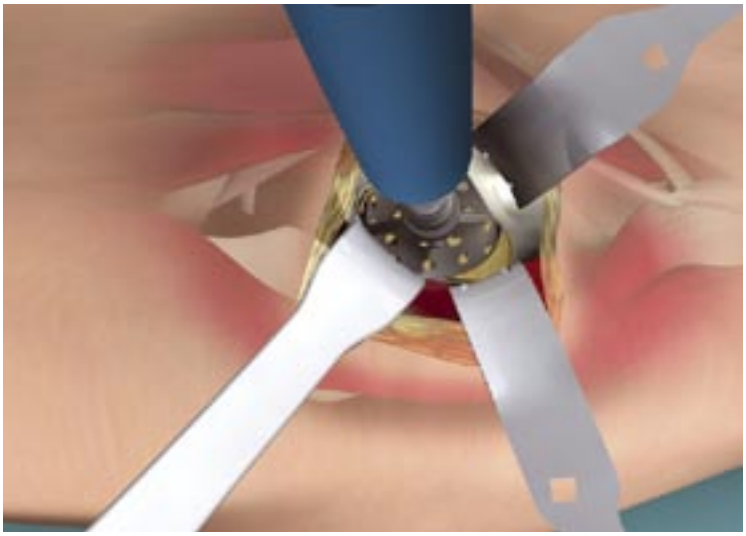
11





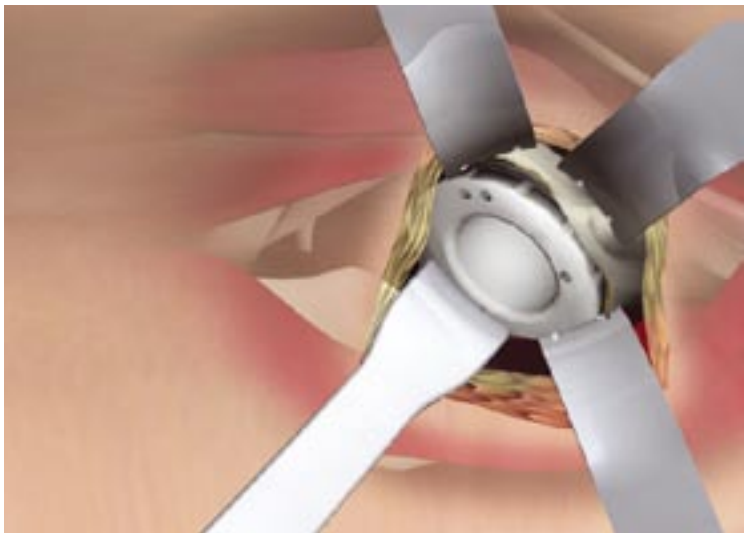


Cup Implantation



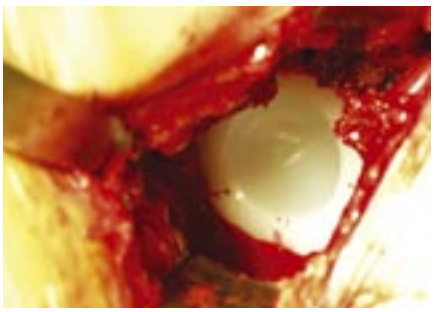
12

The acetabulum is by now clearly exposed. Further preparation can be performed with excellent view at the acetabulum. Ream the acetabulum down to the planned depth using an angulated reamer handle in order to minimize skin and soft tissue damage. (Note: If necessary low profile reamers can be used.)



The acetabulum has now been prepared to accept either a cemented or cementless cup prosthesis. The correct position (inclination and anteversion) of the cup relative to the pelvic reference plane can easily be achieved by the use of a mechanical guidance tool or the Stryker Hip Navigation System.

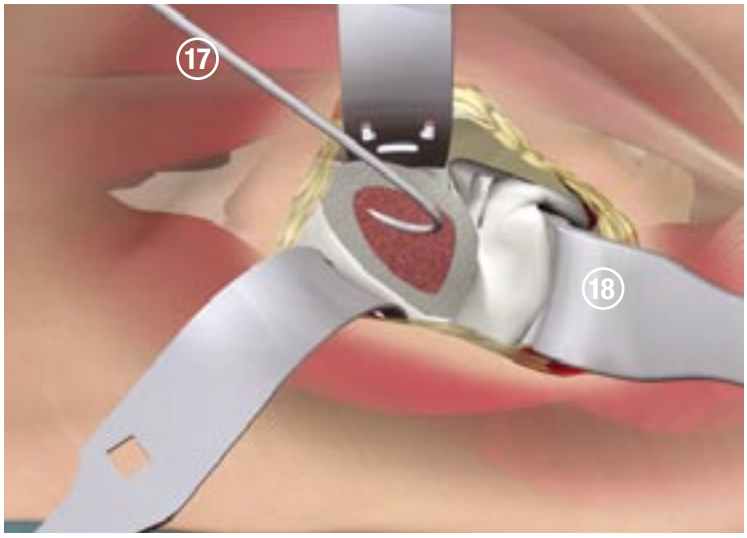
13



Exposure of the Femur

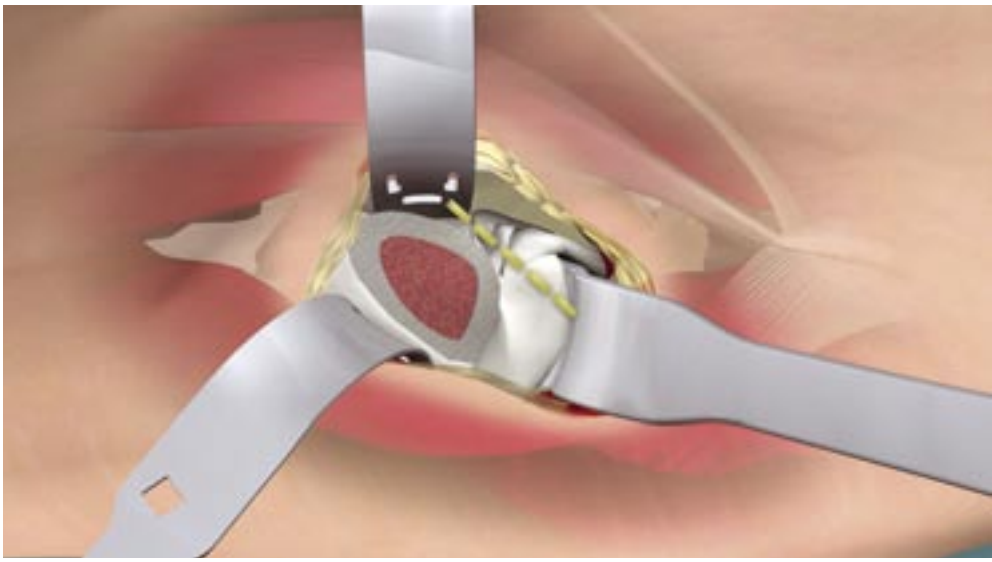
Place a fulcrum under the proximal part of the thigh bringing the entrance of the medullary canal to the level of the skin incision by pulling the calcar with a femoral hook (17). Next perform a capsulotomy at the greater trochanter. Place the femoral elevator (18) around the greater trochanter.

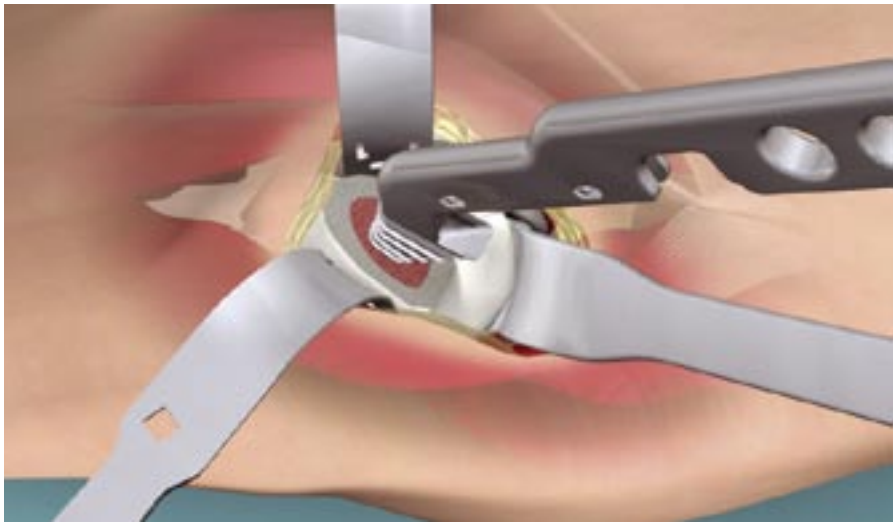
14



15

Externally rotate and position the femur into a figure four position. Please note: If necessary, release the tendons of obturatorius internus and gemelli muscles near their insertion (yellow dotted line). In this instance there is no need for re-attachment. Adequate exposure of the proximal femur is extremely important as inadequate mobilization of the femur is likely to lead to complications when preparing the femur and inserting the final implant.



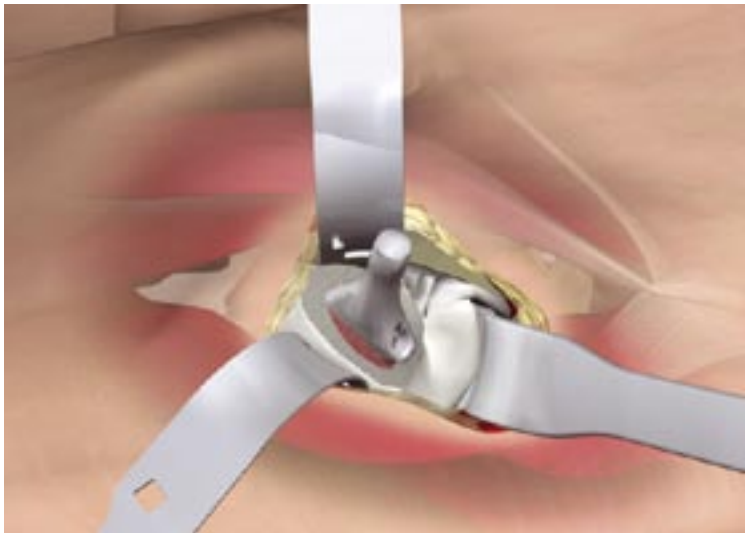


16

Broaching of the femur is then started using the offset broach handle. If reaming is required for the implant chosen use flexible reamers.

Implanting the Femoral Component

After the correct size has been determined a permanent prosthesis is inserted into the femur using either a cemented or a cementless design. Trial reduction is performed and leg length assessed. Following final reduction capsular repair may be performed using reefing sutures and reattachment at the acetabular rim.



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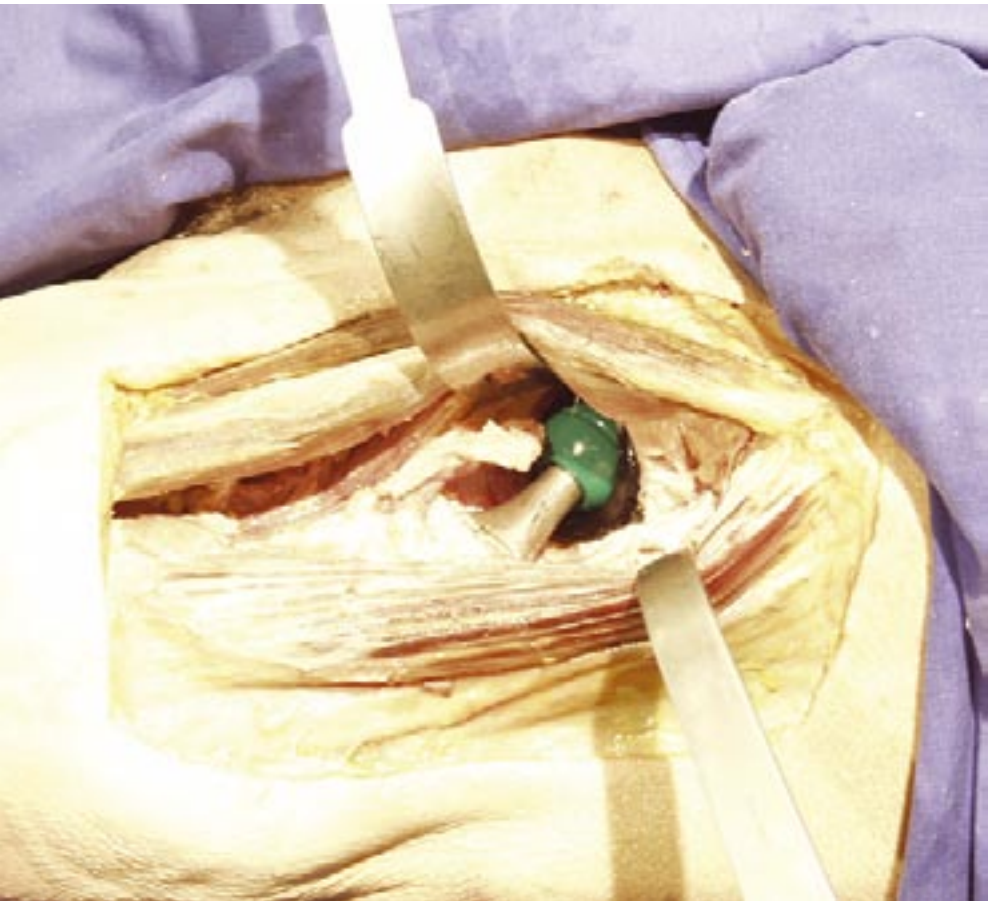

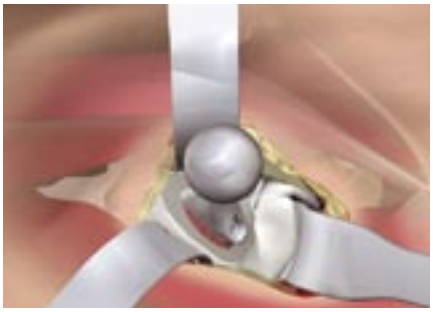

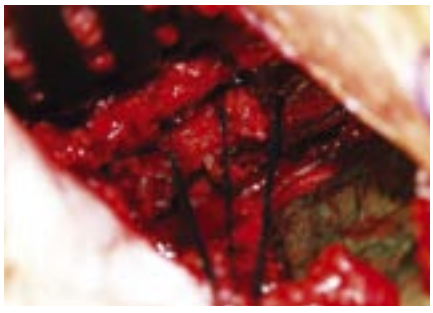

Catalogue Information

Accolade Retractor Tray

1440-1130S	Narrow Hohmann Retractor X3
1440-1135S	Wide Hohmann Retractor
1440-1140	Blunt Narrow Retractor
1440-1105S	Left Acetabular Retractor
1440-1110S	Right Acetabular Retractor
4849-8-005	Femoral Elevator
1440-1020	Retractor Impactor
1440-0010	Retractor Tray

Accolade Femoral Upgrade Tray

1440-1000	Accolade Neck Resection Guide
1440-1050	Alignment Rod for Neck Resection Guide
1440-1010	Femoral Head Extractor
5900-0050	Shoulder T-Handle
1440-1700	Offset Neck Trial Forceps
1440-1070	Femoral Head Impactor
1440-0040	Femoral Instrument Tray
1020-1400	Offset Broach Handle X2

Trident Acetabular Instruments

MPF3100CHA01	Angulated Reamer - AO
MPF3100CHA02	Angulated Reamer - Stryker
MPF3100CHA03	Angulated Reamer - Hudson
MIH-004-00-0	Trident Cup Impactor

Outer Cases

1440-0001	Single High Case
1440-0002	Double High Case

Stryker Colorado MicroDissection Needle

NIO3A	3cm - Straight
E1135	5” - Straight Sleeve, 3mm , 45 Degree
E1136	6” - Straight Sleeve, 3mm , 45 Degree
E1137	7” - Straight Sleeve, 3mm , 45 Degree

Stryker Disposable Light Pipes (Sterile)

1440-1079	Light Pipe

Stryker PainPump 2

525-158	With 2.5 in ExFen Catheter- English
525-156	With 2.5 in ExFen Catheter- Italian/Spanish
525-157	With 2.5 in ExFen Catheter- French/German

ABG II General Instruments Tray

1440-1130S	Narrow Hohmann Retractor X3
1440-1135S	Wide Hohmann Retractor
1440-1140	Blunt Narrow Retractor
4849-8-005	Femoral Elevator
1440-1020	Retractor Impactor
1440-1010	Femoral Head Extractor
5900-0050	Shoulder T-Handle
4849-8-020	Self-Retaining Retractor incl. Valves
4845-2-980	ABG II Offset Neck Trial Forceps
4849-6-355	Tray / Case

ABG II Femoral Upgrade Tray

1020-1400	Offset Broach Handle X2
4849-8-108	ABG II MIS Modular Hollow Chisel 8mm
4849-8-112	ABG II MIS Modular Hollow Chisel 12mm
4849-8-116	ABG II MIS Modular Hollow Chisel 16mm
4845-2-970	ABG II MIS Trial Neck
4845-2-951	ABG II MIS Broach N°1 Right
4845-2-952	ABG II MIS Broach N°2 Right
4845-2-953	ABG II MIS Broach N°3 Right
4845-2-954	ABG II MIS Broach N°4 Right
4845-2-955	ABG II MIS Broach N°5 Right
4845-2-956	ABG II MIS Broach N°6 Right
4845-2-957	ABG II MIS Broach N°7 Right
4845-2-958	ABG II MIS Broach N°8 Right
4845-2-961	ABG II MIS Broach N°1 Left
4845-2-962	ABG II MIS Broach N°2 Left
4845-2-963	ABG II MIS Broach N°3 Left
4845-2-964	ABG II MIS Broach N°4 Left
4845-2-965	ABG II MIS Broach N°5 Left
4845-2-966	ABG II MIS Broach N°6 Left
4845-2-967	ABG II MIS Broach N°7 Left
4845-2-968	ABG II MIS Broach N°8 Left
4849-6-350	Tray / Case

Stryker Core Micro Powertools

5400-34	CORE Sagittal Saw
5400-33-527	Micro Dual Cut MIS Blade
5100-4	CORE Cord
5100-001E	CORE Non-Irrigation Console
5100-50E	CORE Irrigation Console

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EMS Equipment

Literature Number: **80500101LI**
FAKTUM 10/04

Printed in Latvia
Design and illustration: FAKTUM. Der Mediendienst, Germany. E-mail: info@faktum.net
3D illustration and concept: Prof. Franz Rachbauer, Innsbruck/Austria, and FAKTUM. Television GmbH, Cologne/Germany.