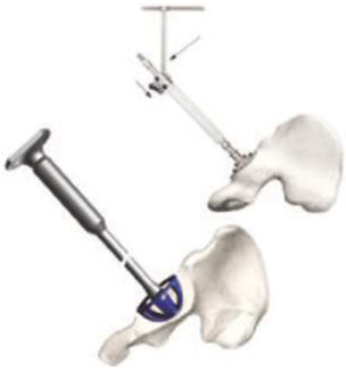
LIBERTAS®

HIP



LIBERTAS® Acetabular Cup System

Surgical Technique

Pursue Life™

CONTENTS

LIBERTAS® ACETABULAR CUP SYSTEM DESIGN FEATURES

THE PRESS FIT CONCEPT

The LIBERTAS® Modular Shell has been designed to be implanted into the acetabulum most tightly just below the shell equator (Fig. 1). This is obtained by over-sizing of the shell proximally, with the shell diameter in this area being 1.3mm larger in relation to the reamed cavity in the bone.

On impaction of the Modular shell into the acetabulum, the exterior shell surface has been designed to pre-stress the bone in the oversized area specifically to prevent unwanted preferential apical loading. For this reason the shell has been designed with a relatively flat base (Fig. 2).

The LIBERTAS® shell press fit is designed to occur just below the acetabular bone margin, and this further assists retention of the shell.

A size 52mm shell is actually 53.3mm in diameter at the equator, and 51mm at the apex. In standard bone, when implanting a 52mm shell, a 52mm reamer is used. It is possible to increase the degree of pre-loading by using a shell size larger than that pre-reamed. (e.g. a 54mm shell is implanted into a 52mm or 53mm reamed cavity).

This is important to consider in conditions such as osteoporosis, rheumatoid arthritis, and patients on steroid treatment etc.

Fig. 1

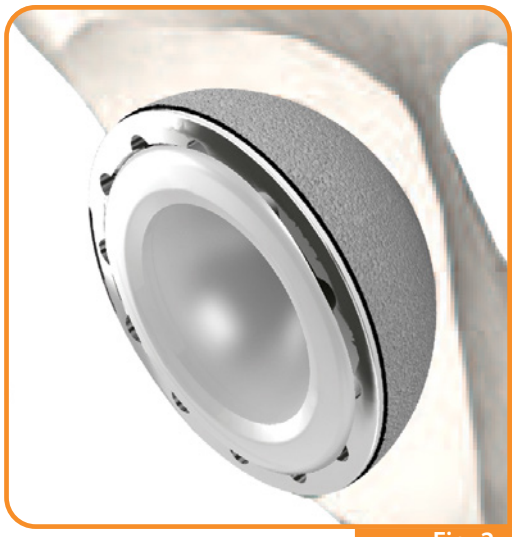


Fig. 2

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PREOPERATIVE TEMPLATING

Templating for cup size is an important step in planning for THR, and X-ray overlays are available with 15% magnification.

A full AP pelvis X-ray (Fig. 3), and AP and Lateral x-rays (Fig. 4) of the hip taken at 1 meter distance, aid with offset and leg length management. The overlay should be placed over the AP X-ray at 45 degrees of abduction, and with the center of rotation over the acetabular anatomical centre.

Templating is especially important in dysplasia and revision hip surgery. A CT scan may be used to assess unusual conditions in the acetabular roof not always apparent on plain X-rays.

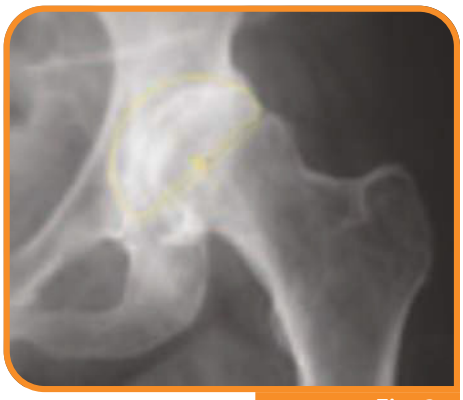

Fig. 3

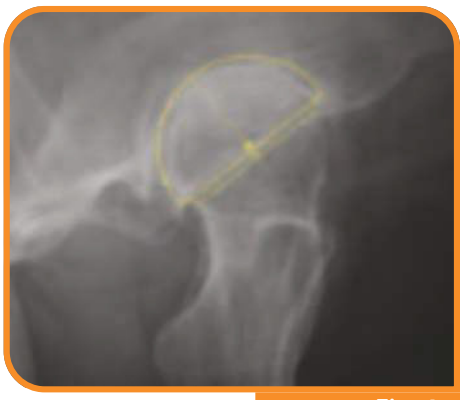

Fig. 4

NOTE

Templating preoperatively is a guide only, and final component sizing and positioning needs to be assessed at surgery.

WARNING AND PRECAUTIONS

In LIBERTAS® Acetabular Cup System, the porous titanium coated Modular Shell must not be implanted with cement.

LIBERTAS® ACETABULAR CUP SYSTEM SURGICAL TECHNIQUE

STEP 1: Acetabular Preparation

Good visualization of the acetabular margins is necessary, and this is usually obtained by removing labrum remnants (which can be quite extensive). It may be necessary to also remove a hypertrophic capsular attachment and osteophytes. Division of the transverse ligament assists with exposure. It is helpful to visualize and assess the depth of the floor of the acetabulum, with curettage of the fovea contents (Fig. 5).

Fig. 5

STEP 2: Acetabular Reaming

The acetabulum is accurately reamed to a hemisphere, but an endeavor should be made to preserve as much subchondral bone plate as possible.

An ***alignment guide*** is provided which can be attached to the ***reamer shaft*** (Fig. 6). The ***alignment guide***, when orientated parallel to the long axis of the patient, will angle the ***reamer shaft*** at 45 degrees of inclination, and at an anteversion angle of 20 degrees.

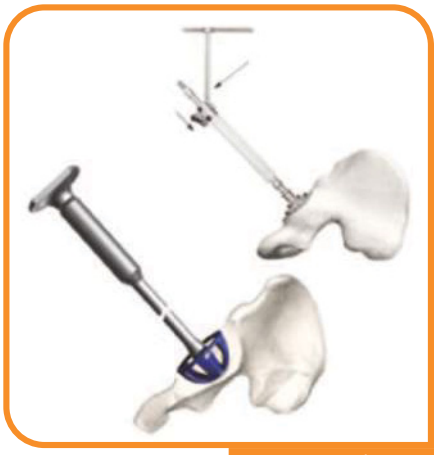

Fig. 6

Using the power tool on the "REAM" setting, it is usual to start with a ***reamer*** at least 4mm smaller than the templated size, and to use it to deepen and develop the center of the acetabulum.

The bone is then progressively reamed out usually in 2mm increments. It is important to prevent the power tool from reaming in an excentric manner, as this may cause oversizing of the hemisphere and poor interference fitting of the shell. Reaming is completed when all cartilage lining has been removed down to bone, with the acetabular walls intact. Reaming to the size of the component to be implanted will provide an interference fit of 1.3mm at the equator.

STEPS 3 4

LIBERTAS® ACETABULAR CUP SYSTEM SURGICAL TECHNIQUE

STEP 3: Shell Trialing

After reaming is completed, the same diameter ***trial shell*** as the last ***reamer*** used is tested in the acetabulum and checked for bone cover and congruency, press-fit firmness and position (Fig. 7). For the ***straight cup impactor***, ensure that the ***exterior shell adaptor*** is attached prior to the shell trial.

Defects in the acetabulum may be grafted using cancellous bone from the last reamings, or from the femoral head. Reverse reaming with a 1mm smaller ***reamer*** than the last size used will help graft impaction of acetabular defects.

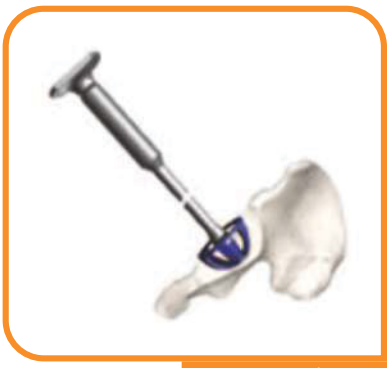

Fig. 7

STEP 4: Shell Impaction

The curved or straight ***cup impaction tool*** is screwed onto the definitive ***shell*** selected for implantation, and the ***alignment guide*** may be fitted over the shaft to assist with cup orientation. For the ***straight cup impactor***, ensure that the ***exterior shell adaptor*** is attached prior to the definitive ***shell***.

The screw holes need to be orientated in a cranio-dorsal position to avoid the nerves and vessels should screws be inserted.

Fig. 8

NOTE

Lines placed on the shell circumference indicate the screw hole positions (Fig.9).

Fig. 9

The ***shell*** is impacted into the acetabulum with a series of firm hammer blows using the curved or straight ***cup impactor***, and the depth of the ***shell*** is then checked through the apex or screw holes. Once ***shell*** orientation, depth and tightness are satisfactory the ***impaction tool*** is then removed (Fig. 8).

LIBERTAS® ACETABULAR CUP SYSTEM SURGICAL TECHNIQUE

STEP 5A: Bone Screw Fixation

The ***shell*** is pre-sealed with two or three screw hole occluders. If desired by surgeon, additional stability or fixation of ***shell*** in the acetabulum can be provided through ***bone screws***. For fixation of ***bone screws*** into these screw holes, occluders are removed by using the ***universal-joint screw driver***. (Occluders are removed either before the ***shell*** is implanted or when it is in situ). It is necessary to use the ***drill guide*** provided to give the desired drilling angle, and prior to drilling the guide needs to be fully inserted into the shell screw hole to ensure that the ***bone screw*** head will be completely countersunk. The screw hole is drilled with a 3.2mm ***drill bit*** (Fig. 10), and in sclerotic bone the hole may need to be additionally pre-tapped with a ***thread cutter***.

Fig. 10

STEP 5B: Bone Screw Fixation

Bone screw length is assessed with the ***depth gauge*** provided (Fig. 11), and the selected size ***bone screw*** firmly inserted with a ***universal-joint screw driver*** (Fig. 11). A pair of ***screw grasping forceps*** assists screw insertion into the prepared hole.

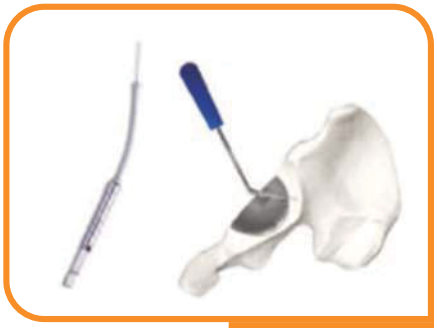

Fig. 11

It is essential to check that the screw head is completely countersunk, as otherwise it will interfere with taper locking of the ***liner*** and possible component failure.

NOTE

Only LIBERTAS® 6.5mm ***bone screws*** should be used with the LIBERTAS® system.

STEPS 6 7A

LIBERTAS® ACETABULAR CUP SYSTEM SURGICAL TECHNIQUE

STEP 6: Trial Liner Insertion

A ***trial liner*** is used to evaluate the stability, offset and leg length parameters of the implanted components. It is inserted using a ***hexagonal screwdriver*** to drive the ***apical screw*** into the implanted ***shell*** (Fig. 12). The ***shell*** may need to be repositioned if not optimal. The ***trial liner*** preferably should be left in situ until stem trialing has been completed. Once the components have been optimized, the ***trial liner*** is removed with the ***hexagonal screwdriver***.

Fig. 12

NOTE

The ***liner trial*** should only be finger tightened when placed into either the definitive ***shell*** or the ***trial shell***. Excessive force is not required and should not be applied.

Fig. 13

STEP 7A: Liner Fixation

It is necessary to remove all soft tissue and fluid from the interior of the ***shell*** and especially the ***taper*** before inserting the definitive ***liner***.

The ***polyethylene liner dome*** has a circumferential external ***taper***, which needs to be inserted parallel to the ***cup taper*** in an uncompromised manner. This may best be performed by holding the liner with a ***liner inserter handle*** and inserting it by feel to lie perfectly seated within the ***shell*** (Fig.13).

LIBERTAS® ACETABULAR CUP SYSTEM SURGICAL TECHNIQUE

STEP 7B: Liner Insertion

Fig. 13

NOTES

Any undue angulation will prevent the ***liner*** from engaging correctly in the ***shell***, and if forced, will damage the ***taper*** lock surfaces. Once the ***liner taper*** is engaged correctly, it is locked by several firm hammer blows, applied to the correct sized ***plastic impaction ball*** on the end of an ***impaction handle*** (Fig.14). The ***liner*** seating position is then checked to be flush with the ***shell***.

A ***polyethylene liner inserter*** is provided. Care must be taken when using this tool to ensure the ***external taper*** is accurately engaged with the ***shell***.

NOTES

NOTES

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For more information about Libertas® Hip, please contact your local representative.

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SEARCH: Maxx Ortho

Libertas® Hip System

℞ only

Maxx Orthopedics, Inc.
2460 General Armistead Ave, Ste 100
Norristown, PA 19403 USA

Carefully read all instructions and be familiar with the surgical techniques prior to use.

Please see the package insert for complete device description, product selection information, indications, contraindications, precautions, adverse effects, warnings, materials, sterilization and patient guidance associated with the Libertas® Total Hip System.

CAUTION: THIS DEVICE IS RESTRICTED TO SALE BY OR ON THE ORDER OF A LICENSED PHYSICIAN

WARNINGS: THE LIBERTAS® CEMENTED FEMORAL STEM IS INTENDED FOR CEMENTED USE ONLY.
THE LIBERTAS® HA UNCEMENTED FEMORAL STEM IS INTENDED FOR UNCEMENTED USE ONLY.

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