



IMPLANTS

INTERNATIONAL

ARTHROPLASTY



Titanium Acetabular Shell



Acetabular Liners

RIM-FIX™
SURGICAL GUIDELINES

The Rim-Fix™ Acetabular Cup System.

There is a great deal of discussion about the effects of wear debris in the prosthetic hip joint. The majority of the wear debris found is polyethylene (UHMWPE). Polyethylene is attributed as one of the causation's of osteolysis. This in turn may lead to the ultimate failure of the prosthetic joint. The focus of UHMWPE wear as the single cause of debris produced between the articular head is erroneous. Polyethylene debris is also generated between the liner's outer surface and the inner surface of the metal shell.

With most porous-coated acetabular cup shells, the actual process of poro-coating can cause the inner surface of the shell to be rough or uneven. This uneven rough surface is caused by grain growth in the metal, due to the heat treatment bead fusion process. This rough surface can abrade the polyethylene liner's, creating polyethylene debris. We have therefore chosen to adopt plasma sprayed coating for use with our Rim - Fix cup

Another potential problem with the current metal shells is that they can have numerous bone screw fixation holes on their inner surface. The polyethylene can extrude through time into these screw holes. The more holes in the shell, the greater amount of polyethylene extrusion. Finally, the likelihood of the polyethylene coming into direct contact with the bone screw heads is increased by the number of bone screws that are used to fix the liner. If the liner does touch the screw head this will produce further debris.

The Rim-Fix™ system has the following advantages:

We reduce the possibility of debris from the inner surface of the metal shell in two ways. First by machining and polishing the inner surface of the Rim-Fix™ shell, preventing a rough metal surface from coming into contact with the polyethylene. Second we reduce micro motion with a double line snap fit in the metal shell. Further the Rim-Fix™ shell has no bone screw holes placed in the shell. This significantly reduces polyethylene extrusion.

Twin positive snap fit of polyethylene liner into the metal shell. (reduces micro-motion)

Smooth inner surface of the cups metal shell (minimises UHMWPE liner wear)

No screw holes (Eliminates liner extrusion into the screw hole voids)

Ovoid outer shell geometry. The shell has a larger radius at a 45° angle from the equator (compensate for the mismatch geometry between the bone and metal caused by underreaming and force fitting a shell)

The Rim-Fix™ liner's outer surface has intimate contact between the liner and metal shell (this reduces possible micro motion and UHMWPE point contact wear)



Indications

- Primary and secondary coxarthrosis with a well retained or slightly deformed acetabulum
- Dysplasia
- Revision

Contraindications

- Primary chronic poly arthritis
- Advanced osteoporosis
- Major defects in the acetabulum
- Chronic infections

Opening

The transgluteal access for primary implantation of a total hip prosthesis is described here

Alternative surgical approaches:

Dorsal: primary total prosthesis and revision

Lateral: transtrochanteric, dysplastic hips and revision.

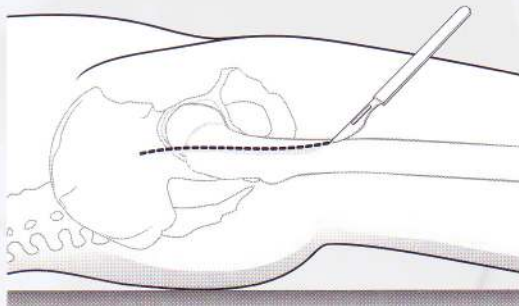


fig. i

Incision of the tract in the fiber direction.

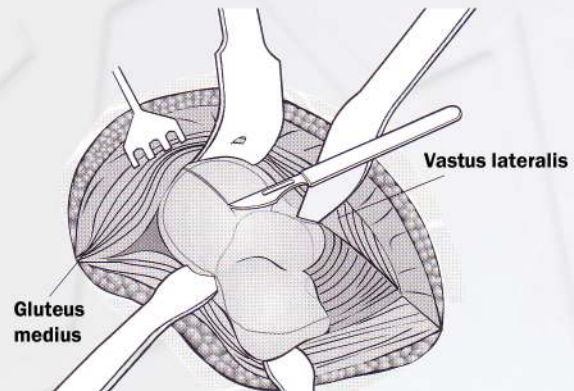


fig. ii

Exposure of the ventral joint capsule by subperiosteal loosening of the gluteus medius and minimus, as well as the vastus lateralis from the trochanter major.

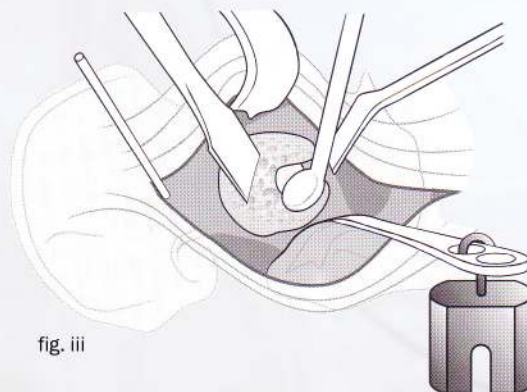


fig. iii

Adjustment of the acetabulum with Hohmann retractors. Exposure of the fossa acetabuli with chisel and curette.

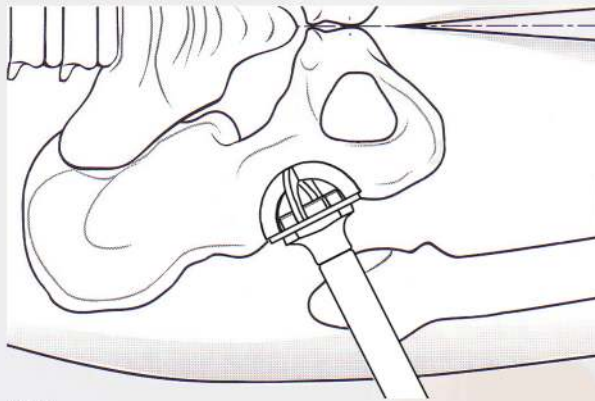


fig. iv

Reaming and sizing for this cup system is very important. High quality reamers should be used to ensure that the cavity being created is hemispherical.

If a 48mm cup is pre-operatively indicated start the reaming process with a 44mm or a 46mm acetabular reamer finishing with a 48mm reamer. Provided that high quality bladed reamers are used, e.g. Tru-cut™, there will be considerable congruency between the profile of the cup and the reamed acetabulum, below the equatorial grooves (i.e. 4.5mm). Fig. v.

If sclerotic bone is encountered it is vital that the cavity is reamed up to display a bleeding sclerotic bone bed. In a normal situation just ream sufficient to expose bleeding bone

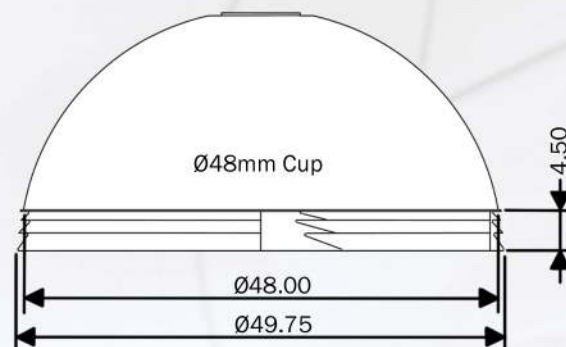


fig. v

The design of our cup relies for fixation at the equatorial flare. The profile of the cup is flared up to 1.5mm to 1.75mm at the equator as per fig. vi. Therefore, it is vital that the **entrance of the acetabulum** is reamed up using a reamer that is say 1.0mm larger than the finally reamed cavity. **This step is particularly important on cups that are Ø48mm and upwards. The larger the cup the greater the resistance encountered at the equator.**

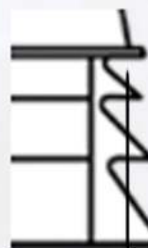


fig. vi

→ ← 1.5 - 1.75mm



Therefore, the final operation once the cavity is sized using our open-frame acetabular sizers (fig. vii) is to confirm that the equator of the reamed cavity has been eased up to facilitate the flared equator of the cup. fig. vi

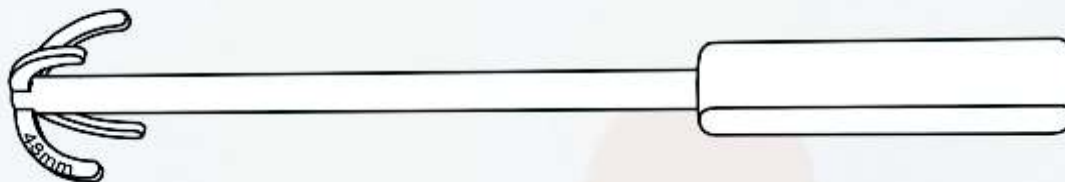


fig. vii

Once the cup is committed to the cavity it will be extremely difficult to either retrieve the cup or drive it home without significantly damaging the acetabular cavity.

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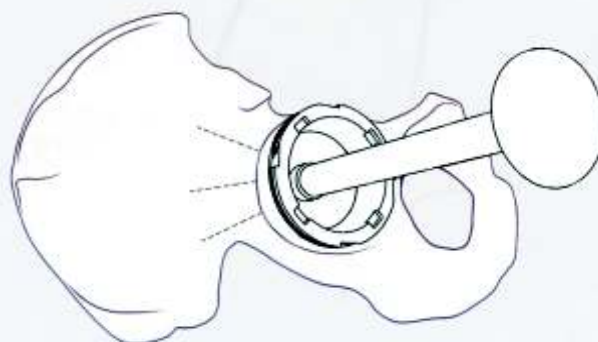


fig. ix

The obvious sign of a successful impaction is the sight and sound of the hydraulic action of blood being evulsed when the cup is driven into the bone bed.

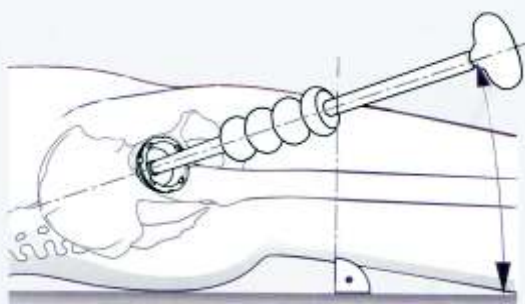


fig. x

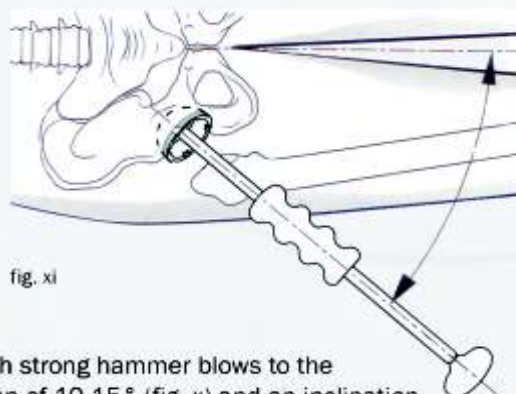


fig. xi

The shell is then anchored in the acetabulum with strong hammer blows to the stike plate. The shells should lie at an anteversion of 10-15° (fig. x) and an inclination of 40-45° (to the body axis, fig. xi). The primary stability of the shell is then tested.

Fitting of Tribol inserts or Poly Liners

Once the cup is impacted and seated satisfactorily and **before** the apical screw is deployed, it is prudent to establish that there is good implant to bone contact. This can be achieved by offering a feeler probe through the apical hole of the cup to see whether there is any void in the apical region.

Pulse lavage the cup and ensure that there is no soft tissue residue in the impacted cup.

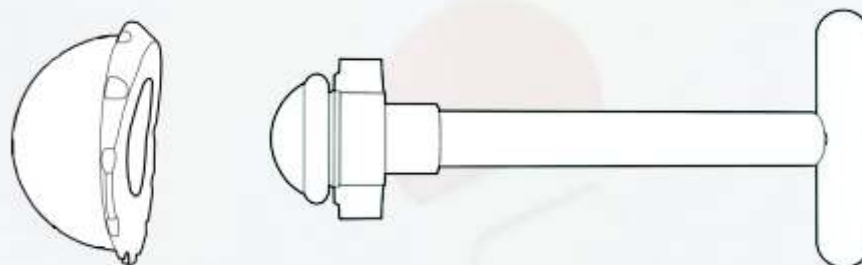


fig. xv

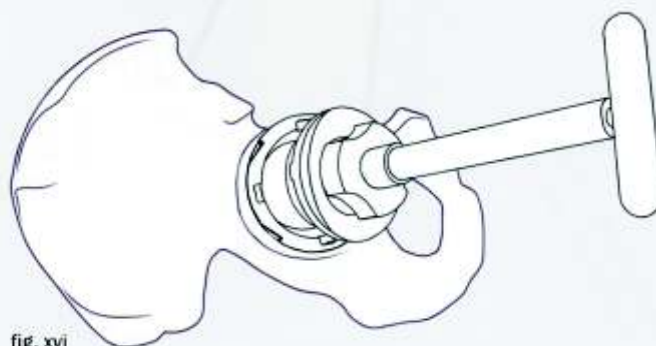


fig. xvi

Poly inserts

Place the poly insert into the cup and determine the position and attitude of the anti-sub-luxation hood as permitted by the tabs on the insert.

Using the poly impactor gently tap the poly into position.



INSTRUMENTATION : 1 TRAY SYSTEM
SURGICAL GUIDELINES : REF # ST 015/99

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