

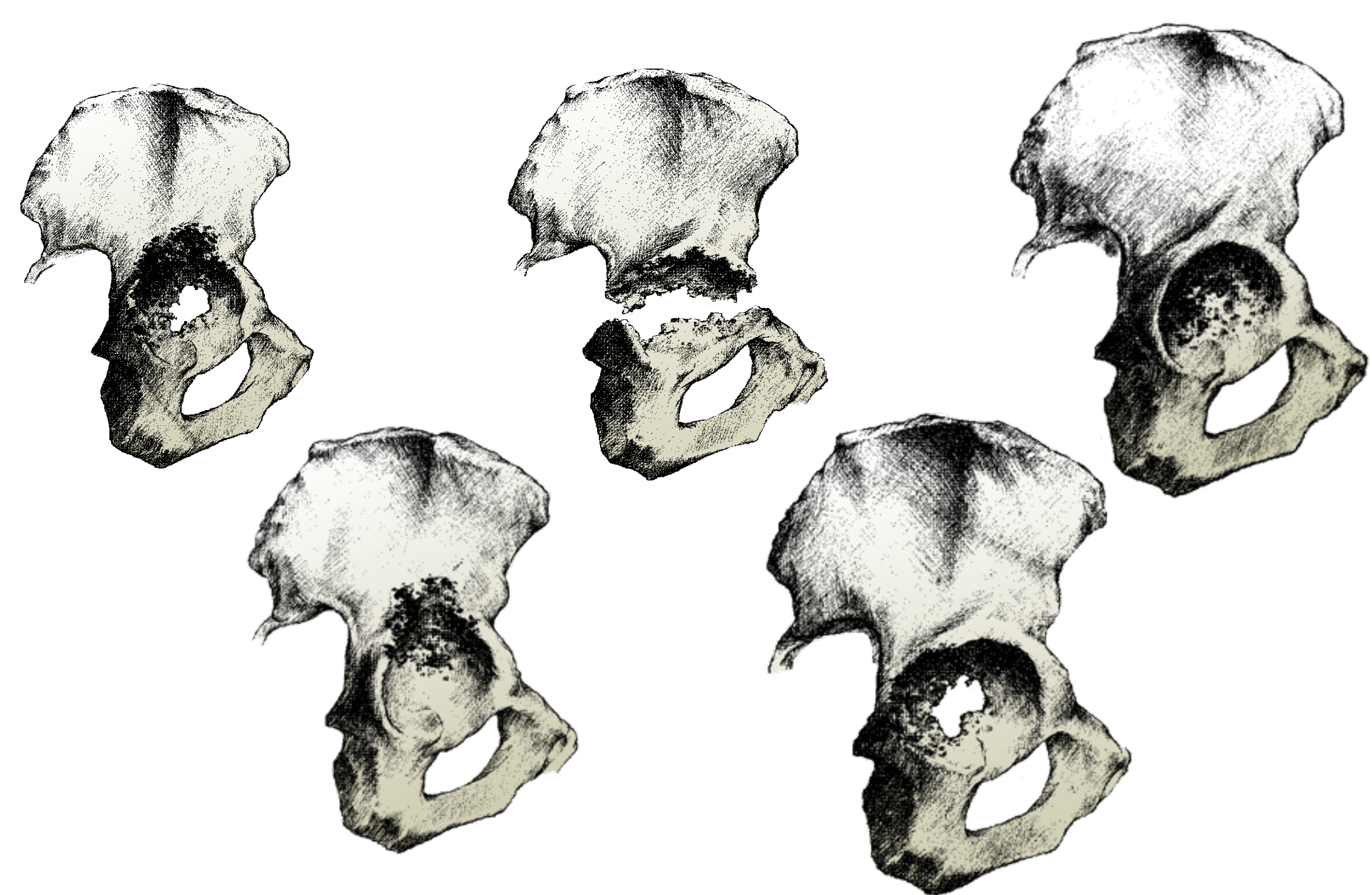
“Cup Cage for Revision THA”

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Introduction:

We report on a novel technique of using a cup cage construct for acetabular revision. This allows improved bearing position and the use of a larger diameter internal bearing.

Cup fixation in revision total hip arthroplasty (THA) is challenging. Segmental and cavitary bone deficiencies often require placement of a revision hemisphere porous cup in suboptimal positions.



Different types of acetabular defects

Although subtle malignment is acceptable in the revision scenario, the bearing construct is susceptible to adverse wear as a result of repetitive subclinical subluxation (RSS). We introduce a modified technique with insertion of a 'cup cage' that allows cementing of a large diameter bearing.

Material:

A custom Ti alloy cup was designed for this series. The outer surface finish was porous coated plasma spray. The inner surface finish was an alox grit blast finish. Cup thickness was 2.5 mm. This cup was inserted with a pre-fit technique. The cup had five holes for 6.5 mm acetabular screws. Screws were inserted as needed. A large diameter metal-metal (LDMM) cup was cemented into the modified cup. The LDMM cup had a outer porous titanium plasma spray surface. The cup diameter selected provided a 1 mm cement mantle between the two cups.



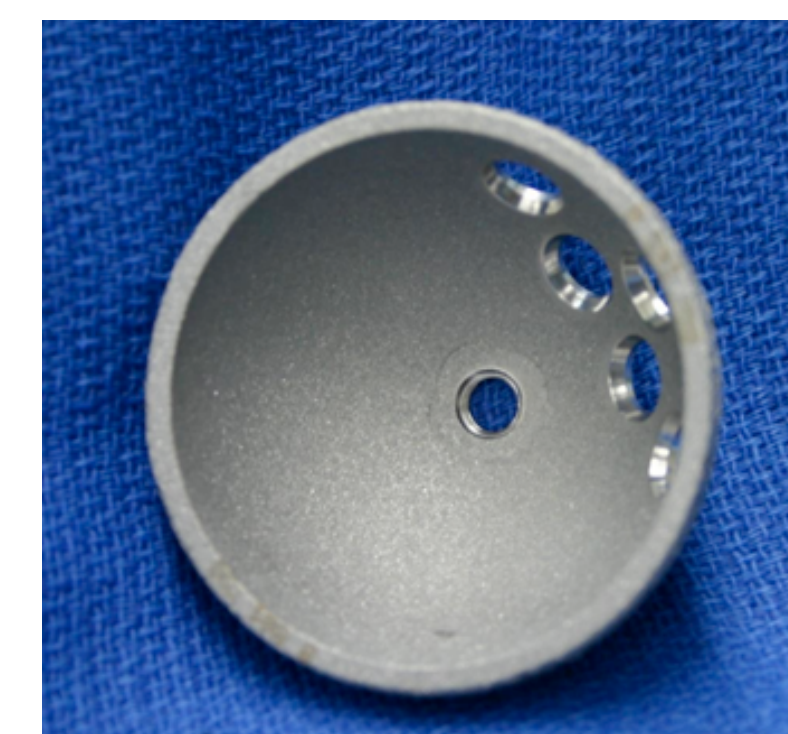
5 / 6.5 mm screw holes



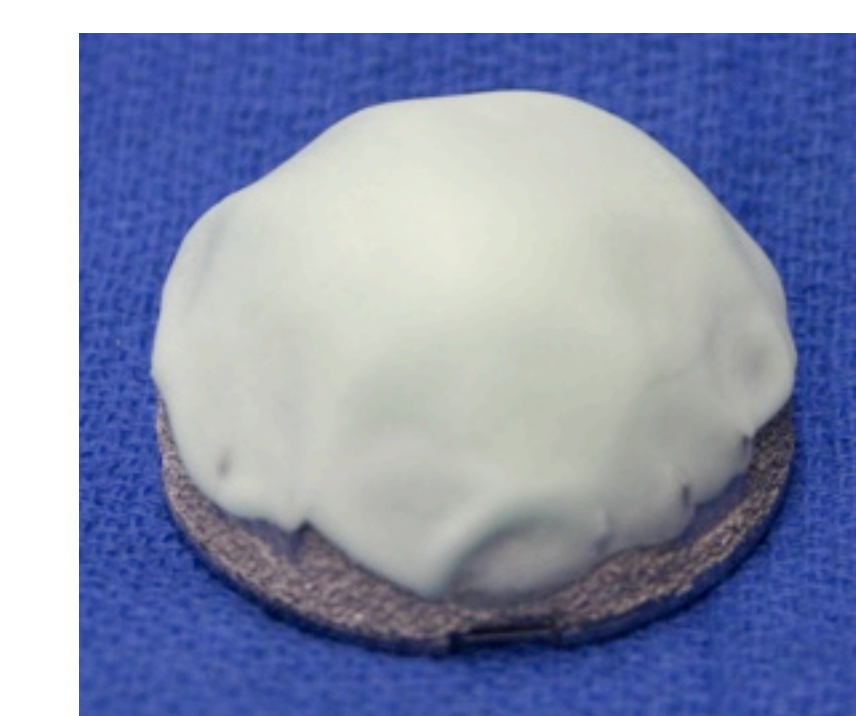
porous plasma spray



Lg. MoM Bearing Surface



Grit blast finish



1 mm cement mantel



Assembled parts

Technique:

Identifying your defect prior-to surgery allows for customization of implant if necessary. Most defects can be managed by-the-use

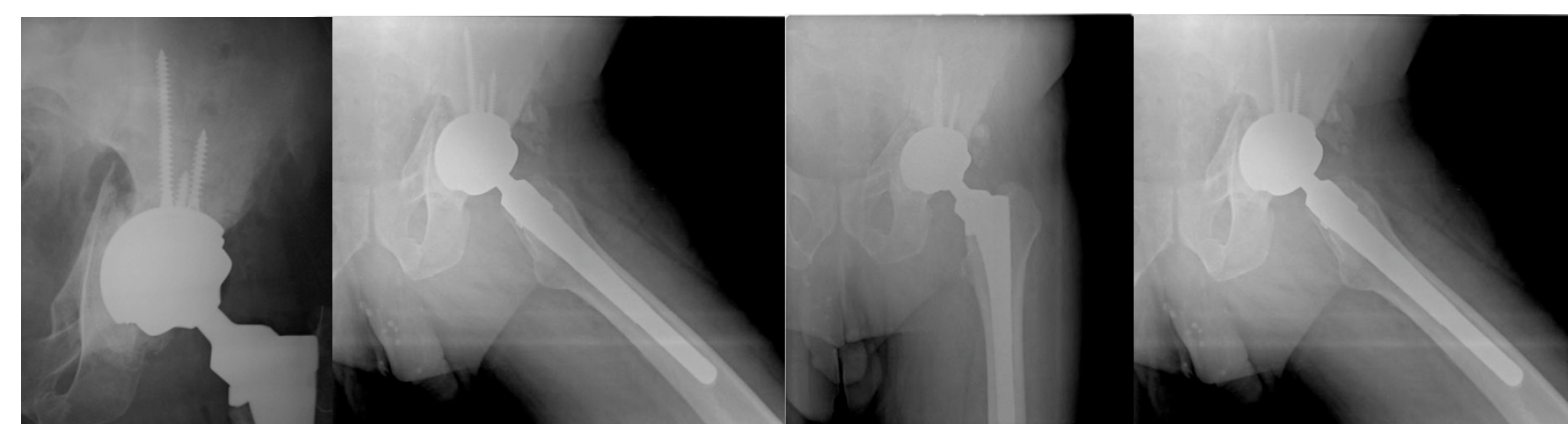


Example complex geometric Tri-flange Design

of a hemispherical shell. The use of complex geometric designs can intimidate the best of surgeons.



Pelvic discontinuity treated with bone graft, custom hemispherical cage with five 6.5mm screw holes used to stabilize cage in maximum position of fixation. A LDMM cup is then cemented into the cage at the best position of function (joint stability).



Immediate post-op

3 year post-op

Note: The FDA has not cleared the drug or device for the described purpose.

Fractured healed no complications

Results:

During the study period, 82 revision THAs were performed. In 15 cases, we utilized the 'cup cage' technique. At three-year follow up, there have been no failures, no mechanical complications and no dislocations with the 'cup-in-cup' cohort.

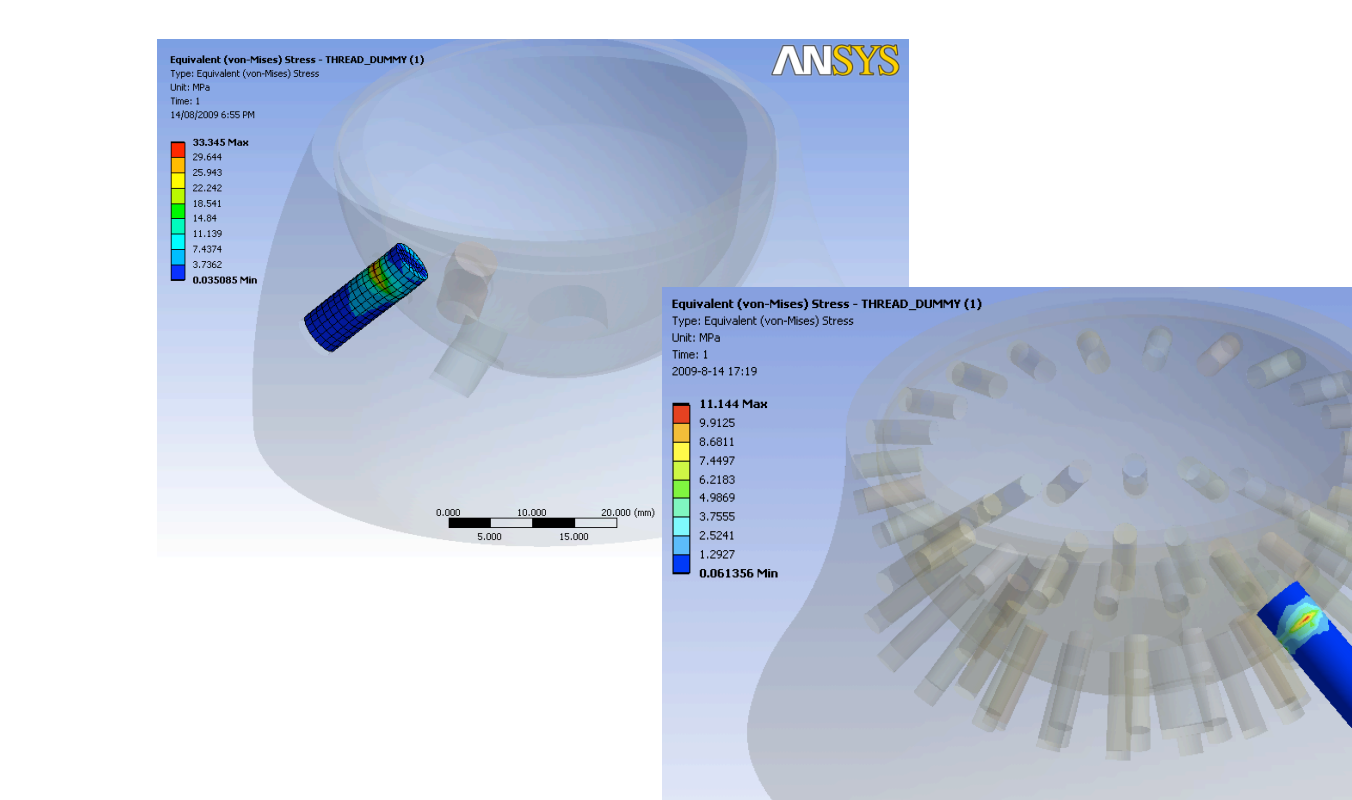
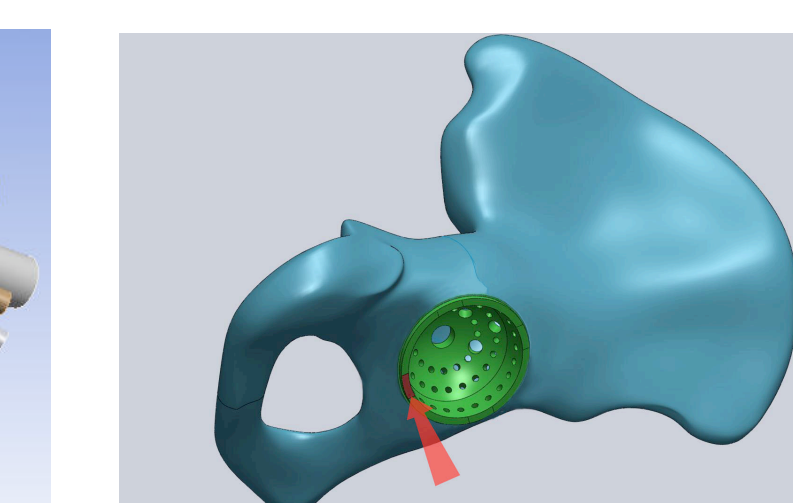
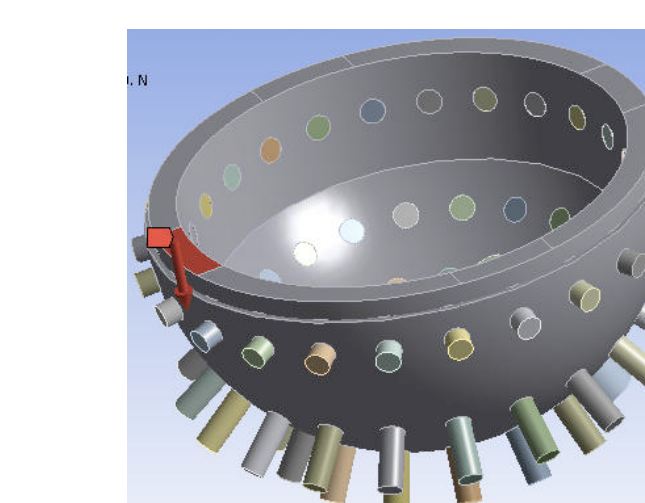
Clinical/Surgical Impressions:

The current cup-in-cup technique allows improved versatility for acetabular bearing positioning. With the thin Ti alloy cup cage, outer diameters as small as 50 mm can accommodate a large diameter internal bearing. Initial follow up is encouraging, however, long-term follow up is necessary to validate this design approach.

Future Development:

This experience along with collaboration with R. Nevins, T. McTighe and D. Brazil is leading into a new hybrid design implant approach: “Surefit™ Hemispherical Cage” patent pending

Full fixation will provide for maximum stability, reduced component displacement along with better stress distribution.



Joint Implant Surgery and Research Foundation

¹ Board Member & TSI™ Study Group Member

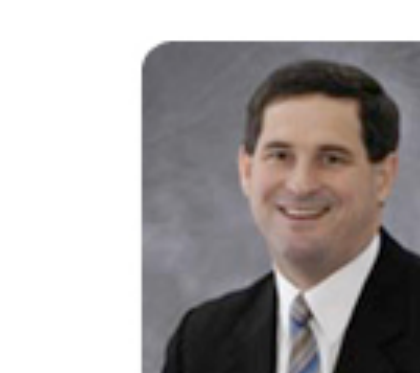
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