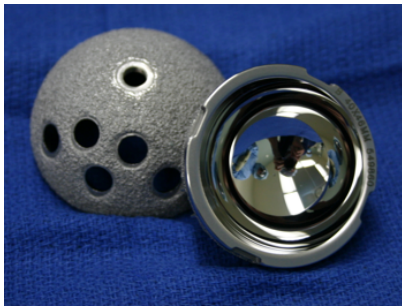


Cup Cage for Revision THA

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Acknowledgement: For their collaboration on taking this experience along with their own into a new development direction.
Russ Nevins, M.D., Timothy McTighe, Dr. H.S. (hc) and Declan Brazil, PhD.



Introduction

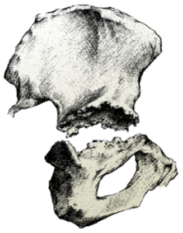
- Cup fixation in revision total hip arthroplasty (THA) is challenging. Segmental and cavitory bone deficiencies often require placement of a revision hemisphere porous cup in suboptimal positions.
- Although subtle malalignment is acceptable in the revision scenario, the bearing construct is susceptible 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.



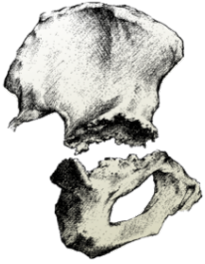


Technique

- Identifying your defect prior-to surgery allows for customization of implant if necessary. Most defects can be managed by-the-use of a hemispherical shell. The use of complex geometric designs can intimidate the best of surgeons.

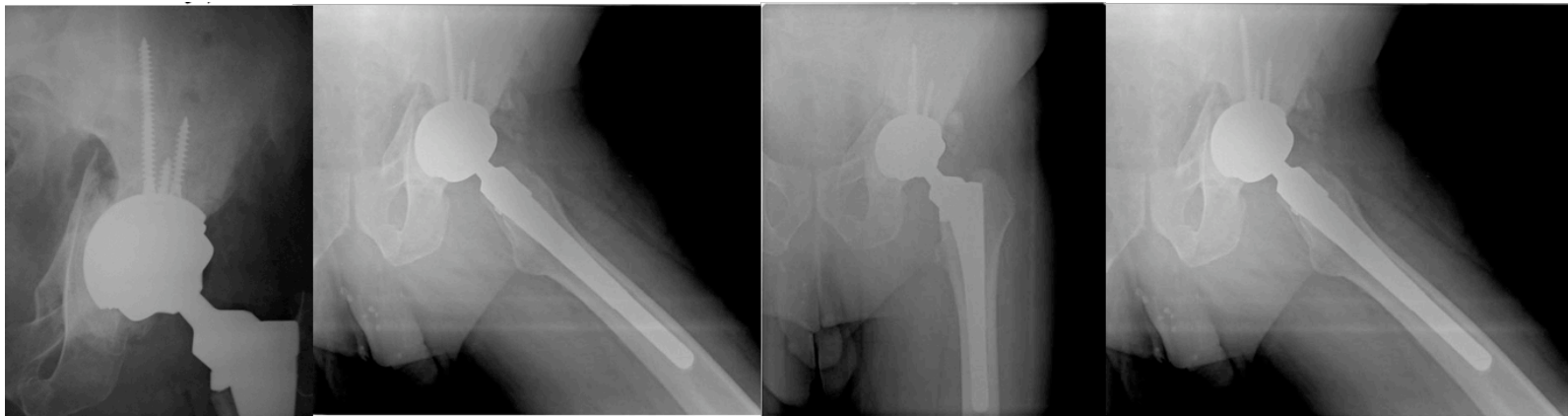


Pelvic discontinuity treated with bone graft, custom hemispherical cage with five 6.5mm screw holes used to stabilize cage in maximum position of fixation. A LDMM cup is then cemented into the cage at the best position of function (joint stability).



Results

- **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.**



Immediate post-op

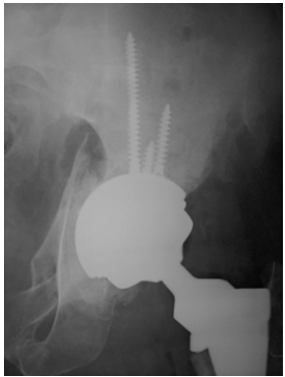
3 year post-op

Fractured healed no complications



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.*

