**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.

**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 a 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 (LDM) cup was cemented into the modified cup. The LDM cup had an 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.

**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.