

Outcome of a Titanium, Proximally Load-Bearing, Non-Cemented, HA-Coated Femoral THA Component

Stephen Murphy, M.D.
Beth Israel-Deaconess Medical Center
New England Baptist Bone and Joint Institute

INTRODUCTION:

Pre-clinical and clinical studies of hydroxylapatite (HA) coated implants have demonstrated the capacity for these components to maintain a stable interface with bone. The purpose of this study is to report the short- to intermediate-term results of a specific HA coated femoral prosthesis for THA.

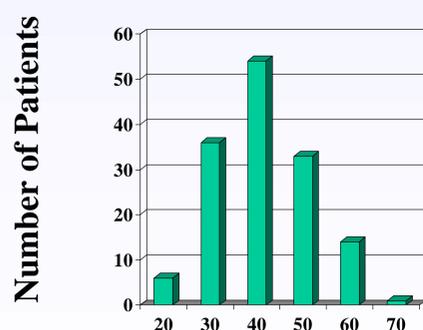
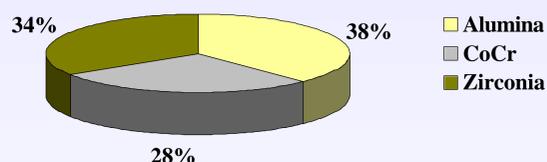
METHODS:

One hundred and forty five (145) hips in were replaced in young patients using an uncemented, fluted, HA-coated femoral component (Stability, DePuy Orthopaedics, A J&J Company, Warsaw, IN, USA)(Figure 1). All components were inserted using intra operative machining of the femur. The mean age of these patients is 44.8 years (range 20-65). All patients were operated on by a single surgeon. The diagnosis included dysplasia (40%), impingement related osteoarthropathy (21.3%), osteonecrosis (13.8%), post traumatic (7.5%), spondyloarthropathy (1.3%), cerebral palsy (2.5%), rheumatoid arthritis (2.5%), idiopathic (6.3%), other (3.9%). Radiographs were checked at six weeks and annually. Nineteen (19) patients (13%) had prior surgery to the hip. Prior operations included femoral osteotomy 9, pelvic osteotomy 6, vascularized fibula 1, ORIF 3, bipolar hemiarthroplasty 2, and surface replacement of the hip 1. Exposures included modified direct lateral exposure (138) and trochanteric slide (7).



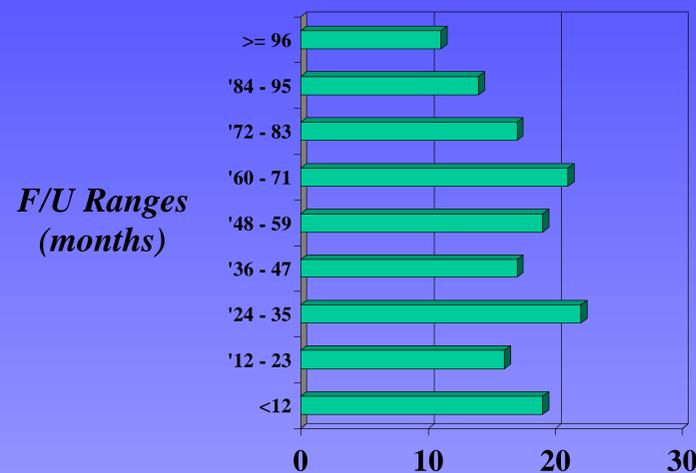
Figure 1
Stability Femoral Component with HA Coating
DePuy Orthopaedics, A J&J Company
Warsaw, IN, USA

Femoral Head by Material



Age	%
20 - 29	4.2
30 - 39	25.0
40 - 49	37.5
50 - 59	22.9
60 - 69	9.7
70 - 79	0.7

Age in Decades



NUMBER OF PATIENTS

Follow-Up (All)
Avg FU 54.8 ± 28.4
Range 3 - 116

Follow-Up (min 2y)
Avg FU 60.9 ± 1.7
Range 24 - 116

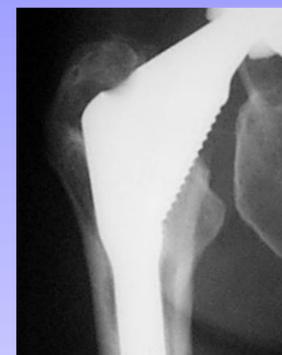


Figure 2
Routine radiographic evidence of bone condensation proximally. No end-osteolysis found around any femoral components even in those cases with marked polyethylene wear.

RESULTS AND DISCUSSION:

All stems are clinically stable and osseointegrated. In those cases with radiographic evidence of marked, progressive acetabular osteolysis (components implanted with Hylamer polyethylene), femoral osteolysis was minor and confined proximal to the shoulder of the femoral component, and within the proximal medial neck cut (Figure 2). There was no evidence of component loosening, femoral peri-prosthetic osteolysis, distal femoral osteolysis or femoral revision in any case. No stems have been revised. One stem subsided 10mm and then osseointegrated. There were no intra operative or post operative fractures. There was one dislocation and no deep infections. One patient was reoperated upon for revision of the acetabulum. One patient had exchange of a polyethylene liner due to wear and progressive retroacetabular lysis. Increased bony trabeculae were noted in the medial calcar region in the majority of patients followed for more than one year. Complications included iliac vein laceration in a patient with high grade dysplasia and a seizure due to bupivacaine toxicity.

CONCLUSION:

Total hip arthroplasty in young patients using an uncemented, fluted, slotted HA-coated intra operatively machined femoral component results in reliable osseointegration, increased bone density around the proximal femur, and a low revision rate at two to six years.