Revision of Hip Resurfacing Arthroplasty to Neck Sparing “ARC” Total Hip Arthroplasty

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**A CASE
REPORT**

Introduction

Modern hip resurfacing arthroplasty (HRA) with a metal-on-metal articulation has attracted many patients worldwide over the last 15 years for the potential benefits of high activity level and bone preservation. Good mid-term results are reported, especially in male patients. However, there is now a need for revision options for a subset of patients who will require early revision for unanticipated adverse local tissue reaction (ALTR) associated with the metal-on-metal articulation. We present a case of HRA conversion to total hip arthroplasty (THA) using a neck-sparing THA component.

Case Report

A 42 year old male initially presented to an outside institution with a one year history of progressive right hip pain, right hip stiffness and irritability on exam and radiographs showing degenerative changes of the right hip. He had inadequate relief with non-operative measures and subsequently underwent uncomplicated right hip resurfacing in 2008. He initially had good relief of pain and returned to an activity level that included heavy lifting and manual work. In 2010 he began to experience right groin pain and hip achiness with high levels of activity. AP and lateral radiographs showed no loosening, osteolysis, fracture or avascular necrosis at routine follow up. Cobalt blood levels were obtained serially. Levels were initially reported at 10-11 micrograms/liter and subsequently were rising to the range of 19-23 micrograms/liter. Metal artifact reduction sequence MRI was obtained in June 2011 and was interpreted as showing wear-induced synovitis and distension

of the pseudocapsule with fluid collection but no overt tissue destruction.

Upon subsequent presentation to our facility later in 2011 he reported extremely severe and constant pain in the right hip. His gait was notable for a mild limp, right hip irritability and stiffness. AP and lateral radiographs of the right hip showed well-fixed resurfacing components and no osteolysis. Cup abduction angle was 43 degrees on AP film. Anteversion was measured at 32 degrees on cross-table lateral radiograph. (Figure 1 a-c)

In September 2011 he elected to proceed with right hip revision arthroplasty in light of increasing hip pain, rising metal ion levels and MRI evidence of fluid collection with synovitis. Revision was accomplished using a direct anterior approach. Intra-operative findings included well-fixed components, a large fluid collection, posterior impingement of the femoral neck on the acetabular component and psoas tendon tightness/attenuation over the components anteriorly. The femoral neck was osteotomized at the base of the resurfacing component with easy component extraction. The resurfacing acetabular component was removed with minimal bone loss and without complication. A 60 millimeter, multihole ingrowth shell was placed with 3 screws. The femoral side was reconstructed with a neck-sparing, modular stem. An alumina ceramic-on-ceramic bearing was used. Culture of the fluid was negative for infection.

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Figure 1a. AP radiograph right hip HRA

Figure 2a. Post-op AP radiograph

Figure 1b. Lateral radiograph right hip HRA

Figure 2b. Post-op lateral radiograph

Figure 1c.
Frog lateral
radiograph
right hip HRA

Figure 2c. One
year post-op AP
radiograph

Discussion

Many patients and surgeons have favored HRA in the last 15 years for the benefit of bone preservation. Young patients, especially, have elected HRA with the idea that they would have more proximal femur in the case of revision and that revision to THA could be accomplished with primary THA components when, after many years, their HRA had failed. With greater understanding of HRA designs, metallurgy, component positioning variables, local soft tissue reactions, and the market recall of a HRA system, surgeons are faced with a group of young patients requiring revision of HRA to THA. Bone preservation is still a vital interest of theirs even if HRA revision is required. A neck-sparing THA design can accomplish the goals of removing the MOM bearing, providing an alternative advanced or standard bearing and preserving femoral neck bone for later reconstruction.

In our case the neck osteotomy was performed immediately at the base of the HRA femoral component. Preparation of the femur was identical to that of a primary THA with this device. No additional bone resection was required and the option of future reconstruction with a standard primary THA device was retained. Proximal femoral offset and leg length were properly reconstructed and the implant shows good integration at one-year follow up. (Figure 2 a-c)

Conclusion

A neck-sparing femoral implant can be easily employed in HRA revision to THA thereby retaining the HRA benefit of bone preservation that is vital to younger patients.

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