

## **Outcome of Re-Revision Surgery for Adverse Local Tissue Reaction in Metal-on-Polyethylene and Metal-on-Metal Total Hip Arthroplasty**

Bryant E. Bonner, MD, Paul Arauz, PhD, Christian Klemm, PhD, **Young-Min Kwon, MD, PhD**

**Introduction:** Adverse local tissue reactions (ALTR), initially described in metal-on-metal (MoM) total hip arthroplasty (THA), have also become an important risk factor for failure in metal-on-polyethylene (MoP) THA due to modular taper corrosion. Numerous studies have described a significant rate of complications and poor outcomes following revision surgery for ALTR, often requiring additional revision surgery. This study aims to report early complication rates, outcomes and potential risk factors associated with re-revision.

**Methods:** A total of 252 THA patients who underwent revision for ALTR were reviewed. There were 40 patients (16%) who underwent a second revision: 26 MoP taper corrosion and 14 MoM. Patient characteristics, complication rates, metal ion levels, and revision implant information were analyzed. Binary logistic regression was used to test for any associations between need for re-revision surgery and multiple different parameters.

**Results:** The overall complication rate following initial revision for ALTR was 21%. 16% of these revision patients required a re-revision. The most common indication for re-revision was dislocation (45%). Femoral heads exchanged during the initial revision surgery varied between groups ( $p < 0.001$ ) with metal heads being more common in the re-revision groups (53%). The complication rate was 35% following a re-revision: dislocation (36%), infection (36%), fracture (14%), implant loosening (14%). The rate of patients requiring a third revision was 23% with the most common indications being dislocation (33%). The average time between re-revision surgery and a third revision was 14 months (range: 0-53).

**Conclusions:** The rate for re-revision surgery following initial revision for an ALTR is high at 16%, with those requiring re-revision having a higher proportion of metal heads and extensive intra-operative tissue necrosis. Within the re-revision group, there was a high rate of complications (35%) and third revision rate (23%). These findings provide clinically useful information in preoperative counseling of patients undergoing re-revision surgery for ALTR.