



Paper # 22

Diagnosis and Management of Adverse Local Tissue Reactions Secondary to Corrosion at the Head-Neck Junction in Patients with Metal on Polyethylene Bearings

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Introduction: Adverse local tissue reactions (ALTR) related to corrosion at the head-neck junction in metal-on-polyethylene (MOP) bearings have been described with increasing frequency. Diagnosis and appropriate management, however, is not well understood. The purpose of this report is to describe our experience with the diagnosis and management of this complication.

Methods: We identified 27 patients who were revised for an ALTR secondary to corrosion at the modular femoral head-neck taper with a MOP bearing. Patients presented at a mean of 4.3 years (range, 0.4 to 25 years) after their index procedure. Patients were treated with debridement and a modular bearing exchange, with use of a ceramic femoral head with a titanium sleeve in 23 of the 27 cases. Student's t-test was used to compare pre and postoperative metal ion levels with significance set at a p-value of < 0.05.

Results: Preoperative serum cobalt levels were elevated to a greater degree than were chromium levels in all cases, with a mean cobalt of 11.2 ppb (range, 1.1 to 49.8) and chromium of 2.2 ppb (range, 0.2 to 9.8). Repeat metal ions (measured in 16 of 18 patients with > 2 year follow up) showed a significant decrease in serum cobalt to a mean of 0.33 ppb (range 0.18 to 0.6) ($p = 0.004$), and chromium to a mean of 0.51 ppb (range 0.1 to 1.4) ($p = 0.001$). Recurrent ALTR was noted in one case where a metal as opposed to a ceramic head was used.

Conclusion: The diagnosis of ALTR secondary to corrosion at the head-neck taper in patients with a MOP bearing is associated with serum cobalt levels of > 1 ppb with cobalt levels consistently elevated above chromium. Retention of a well-fixed stem and modular exchange to a ceramic head leads to resolution of symptoms and decreases in metal ion levels.