

Do You Have to Remove a Corroded Femoral Stem?

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Introduction: Corrosion at head-neck taper has been identified as a cause of clinical symptoms, elevated metal ion levels, and adverse local tissue reaction. There are no guidelines concerning removal of stable femoral components when corrosion is present. The objective of this study is to report the survivorship when a new metal ball is placed on a corroded stem.

Methods: Eighty-six retrieved femoral heads that were in-situ for a minimum of 10 years were retrieved at revision for polyethylene wear or osteolysis. Taper corrosion was graded by three reviewers using a 5-point scale. All balls were mated with a CoCr extensively porous coated stem from a single manufacturer. Taper sizes included fifty-eight 14/16 tapers (67%) and twenty-eight 12/14 tapers (33%). There were forty-nine 28mm (57%), and thirty-seven 32mm (43%) heads.

Results: Head corrosion was scored as high-grade (3-5) on 32 balls and as low-grade (1-2) on 54 balls. The time in-situ prior to revision (14.7 ± 3.1 , 10.1 to 23.1 years) in this group did not correlate with the corrosion score ($p=0.44$). Taper size and head-diameter also showed no relationship with corrosion ($p=0.752$ and $p=0.071$).

The mean follow-up after revision was 3.3 ± 3.4 (0 to 12.7) years. There were 7 rerevisions (8.1%) but none were for corrosion-related diagnoses. The mean time to rerevision was 1.4 ± 0.9 (0.31-2.61) years. There was no difference in the survivorship between cases with a high-grade corrosion and those with lower scores (90.9% vs 84.1% at 3-years, $p=0.36$).

Discussion: Corrosion of a ball is correlated to corrosion on the stem taper. We determined that the amount of corrosion did not influence the rate of rerevision or survivorship at a mean follow-up 3.3 years. Although the follow-up is short, at this time we do not recommend removal of a well-fixed femoral stem with corrosion at the taper.