Dual Mobility Articulation in Revision Total Hip Arthroplasty: An American Joint Replacement Registry Analysis

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INTRODUCTION:
Dual mobility (DM) articulations have been used in revision total hip arthroplasty (THA) with increased frequency in recent years to prevent postoperative hip instability. The purpose of this study is to report on outcomes of DM implants used in revision THA from the American Joint Replacement Registry (AJRR).
METHODS:
Patients ≥65 years old who underwent a revision THA from 2012-2018 were screened for inclusions. Patients were divided into 3 groups: (1) DM articulation, (2) ≤32 mm solid bearing, and (3) ≥36 mm solid bearing cohorts. The dataset was merged with Medicare claims data available through Jun 2020 to supplement outcome cases not captured in the AJRR. Patient and hospital characteristics were analyzed using multivariate statistical modeling to minimize potential confounding and identify independent associations with re-revision. All-cause re-revision for any reason and re-revision for instability were assessed using Cox proportional hazards regression analyses.
RESULTS:
Overall, 20,728 revision THAs were identified, of which 3,043 (14.7%) received a DM articulation, 6,565 (31.7%) a ≤32 mm femoral head, and 11,120 (53.6%) a ≥36 mm femoral head. At eight-year follow up, the cumulative all-cause re-revision rate for the ≤32 mm group (21.9%, 95%-CI 20.2-23.7%) was significantly higher than the DM (16.5%, 95%-CI 15.0-18.2%) and ≥36mm (15.2%, 95%-CI 14.2-16.3%) groups (p<0.0001). At eight years, the ≥36 mm group showed the lowest rate of re-revision for instability (3.3%, 95%-CI 2.9-3.7%) while the DM (5.4%, 95%-CI 4.5-6.5%) and ≤32 mm groups (8.6%, 95%-CI 7.7-9.6%) had higher rates (p<0.0001).
DISCUSSION AND CONCLUSION:
DM bearings are associated with lower rates of revision for instability compared to patients with ≤32 mm heads, but marginally higher rates of revision for patients with ≥36 mm heads. These results may be limited by unidentified confounding factors as patients at higher risk of dislocation may have preferentially received a DM articulation.

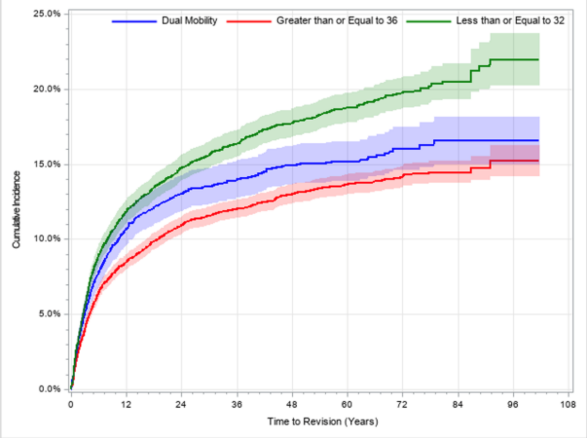

Figure 1: All-cause re-revision for DM articulations, ≤32 mm solid bearing, and ≥36 mm solid bearing femoral heads.

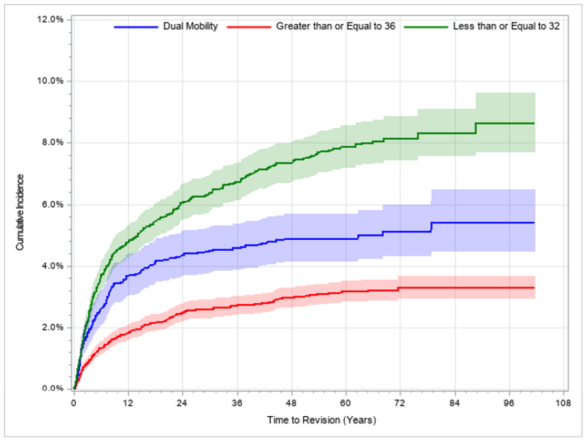

Figure 2: Re-revision for instability for DM articulations, ≤32 mm solid bearing, and ≥36 mm solid bearing femoral heads