Stable Outcomes Across All Age Groups with Monoblock Dual Mobility Cups in Primary and Revision Total Hip Arthroplasty: An NJR-Based Analysis

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INTRODUCTION: Dual mobility (DM) cups have been widely adopted to mitigate the risk of dislocation in total hip arthroplasty (THA), especially in high-risk populations. However, age-related differences in implant performance remain a subject of interest. This study evaluates whether patient age influences revision outcomes in primary and revision THA using monoblock DM cups, based on data from the National Joint Registry (NJR).

METHODS: A total of 2,678 patients undergoing primary THA (pTHA) for osteoarthritis (OA) and 1,412 patients undergoing revision THA (rTHA) for dislocation and/or aseptic loosening were included. All received Novae monoblock DM cups. Patients were stratified into three age groups: <60, 60–70, and >70 years. Outcomes assessed included all-cause revision, cup-specific revision, and revision due to dislocation. Statistical analyses included Kaplan-Meier survival estimates, Cox proportional hazards models, and competing risk analyses accounting for mortality.

RESULTS:

Primary THA (pTHA):

Across all age groups, monoblock DM cups demonstrated excellent mid-term outcomes. The all-cause revision rate showed no significant difference by age (log-rank $p = 0.7369$), nor did cup-specific revision rates ($p = 0.3714$). Dislocation-related cup revisions were extremely rare (only 4 events), limiting formal statistical analysis but suggesting a strong stabilizing effect of the DM construct across age ranges.Multivariable Cox and competing risks models confirmed that age, ASA classification, gender, and implant type were not significant predictors of revision in the pTHA cohort. These results reinforce the broad safety and reliability of monoblock DM cups, even in older populations who may face higher perioperative risks.

Revision THA (rTHA):

Among 1,412 rTHA cases, patients aged 60–70 had slightly higher re-revision rates, while those >70 had lower observed event rates, partly explained by higher mortality. Kaplan-Meier analysis showed significant differences by age (log-rank $p = 0.0128$ for any re-revision; $p = 0.0350$ for cup-specific re-revision). In Cox models, the 60–70 age group had a modestly higher hazard of re-revision (HR ≈ 2.0), but age <60 was not a significant risk factor. Importantly, revision due to dislocation remained rare, with only 13 total events. Competing risks analysis confirmed that age over 70 was protective, largely due to increased competing mortality. Other covariates including gender and ASA class remained non-significant.

DISCUSSION AND CONCLUSION:

This large NJR-based analysis supports the robust and consistent performance of monoblock dual mobility cups across all age groups in both primary and revision settings. Dislocation-related revisions were exceedingly rare, reinforcing the stabilizing benefits of the dual mobility design. The findings are particularly reassuring for older adults, who showed low revision rates despite increased comorbidities. These results support the routine use of monoblock DM cups as a safe and reliable option across the lifespan in hip arthroplasty.