

Dual Mobility Articulation in Total Hip Arthroplasty: Mixed Femoral and Acetabular Components are a Feasible Option

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INTRODUCTION:

The utilization of a different manufacturer for the prosthetic femoral head and the polyethylene insert in dual mobility (DM) for total hip arthroplasty (THA) may be necessary, especially in the revision setting. However, there is no data in the literature about this application. This study evaluated the outcomes of mixed manufacturer components, with the hypothesis that there would be no difference in measured outcomes compared to matched components.

METHODS:

DM articulations implanted during THA revision were retrospectively reviewed from 2011-2017. The study group was then stratified to two cohorts: matching components or mixed components. Rates of all-cause reoperation and revision, intraprostatic dislocation (IPD), dislocation, and aseptic loosening were compared using chi-squared and Fisher's exact test; survival analysis was also performed.

RESULTS:

Of 130 hips included in the study with DM articulations with average follow up of 7 years, 103 had mixed and 27 had matching manufacturer components. Matched and mixed manufacturer implants had no significant difference between all cause reoperation (33% vs. 25.2%), dislocation (14.8% vs. 7.7%), IPD (11% vs. 0.09%), and aseptic loosening (3.7% vs. 3.9%), respectively. Survival analysis showed similar outcomes at 2, 5, and 10 years.

DISCUSSION AND CONCLUSION: Mixed component DM articulations show similar results compared to matching components. The off-label use of mixed manufacture DM articulation in THA is a feasible and safe option in the correct patient. Furthermore, when encountering a well-fixed femoral stem or acetabular shell, the use of a mixed component DM articulations may reduce the morbidity for the patient and prevent revision of all components.

Figure 1: 1 - Femoral Component, 2 - Prosthetic Femoral Head, 3 - Polyethylene Articulation, 4 - Dual Mobility Liner, 5 - Acetabular Component. Matched DM Articulation - Components 1-5 from the same manufacturer. Mixed DM Articulation - Components 1 and 2 from one manufacturer, components 3-5 from a different manufacturer.



Figure 2: Survival Analysis between matching component and mixed component cohorts. Implant survival at 2 years was 84.6% for matching components, and 92.8% for mixed components, at 5 years survival was 80.9% and 85.4%, and at 10 years survival was 80.8% and 85.4% for matching and mixed components respectively. Shaded portions represent 95% confidence intervals. Five failures during the study period for the matched component cohort, and 13 failures in the mixed component cohort were identified. No difference in the survivability up to 10 years between the two cohorts was identified using Wilcoxon testing ($p=0.40$). 1 - Matched Components, 2 - Mixed Components.

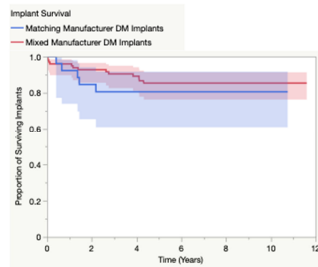


Table 1: Dual Mobility Component Sizes

Femoral Head Size	Matching Component Cohort	Mixed Component Cohort
	28mm (n=27)	28mm (n=105)
42/50	n=0	n=1
42/52	n=0	n=1
42/54	n=2	n=18
42/56	n=0	n=15
42/58	n=0	n=1
44/56	n=1	n=1
44/58	n=1	n=0
46/54	n=1	n=0
46/56	n=0	n=5
46/58	n=4	n=21
46/60	n=3	n=8
46/60	n=1	n=0
48/52	n=3	n=6
48/54	n=1	n=6
50/56	n=0	n=1
52/52	n=0	n=4
52/56	n=1	n=2
52/58	n=4	n=4
54/70	n=0	n=1
54/72	n=1	n=1
58/74	n=0	n=1
58/76	n=1	n=0
Unlabeled	n=3	n=8

OD = outer diameter; ID = inner diameter; DM= dual mobility