

Low-Demand Cemented Femoral Stem Designs and Revision Risk Following Hemiarthroplasty Treatment of Geriatric Hip Fracture

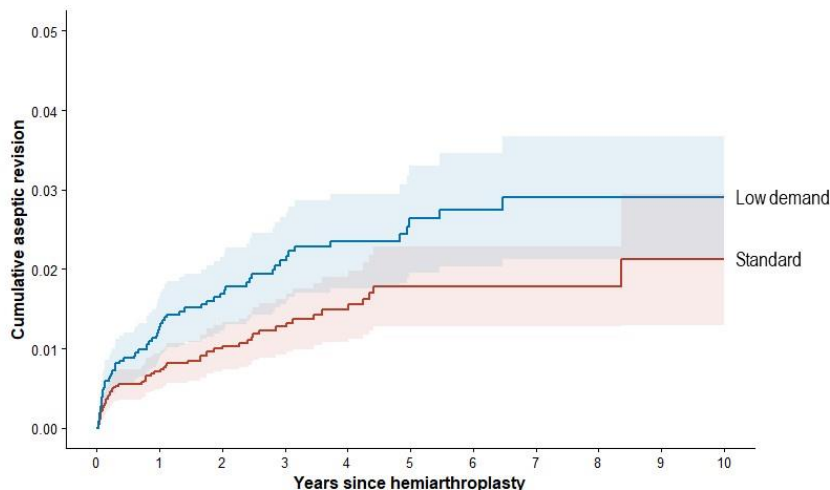
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Purpose: Cemented fixation is preferred in the hemiarthroplasty treatment of geriatric femoral neck fractures. Certain cemented stems have similarly designed “low-demand” counterparts, but it is unclear whether they yield comparable outcomes. The purpose of this study was to compare revision risk for Summit (DePuy), Summit Basic (DePuy), Versys Advocate (Zimmer), and Versys Low-Demand Fracture (LD/Fx) (Zimmer).

Methods: Using our integrated health-care system’s Hip Fracture Registry, we analyzed 9828 patients aged ≥ 60 years treated with 1 of these 4 devices (2009-2022). Low-demand stems (Summit Basic [N = 2589] and Versys LD/Fx [N = 1124]) were compared to standard stems (Summit [N = 4222] and Versys Advocate [N = 1893]). Multivariable Cox proportional hazards regression was used to evaluate the risk of aseptic revision (primary outcome measure) with adjustment for confounders including age, sex, race/ethnicity, body mass index, American Society of Anesthesiologists class, operative year, and surgeon.

Results: In the adjusted analysis, low-demand stems were associated with a higher aseptic revision risk compared to standard designs (hazard ratio [HR] 1.53, 95% confidence interval [CI] 1.06-2.22, P = 0.024) (Figure). This difference was driven primarily by an increased risk of periprosthetic fracture among low-demand stems (HR 3.40, 95% CI 1.54-7.51, P = 0.003).

Conclusion: In this study of 9828 hip fracture patients treated with cemented hemiarthroplasty, low-demand stems were associated with a higher risk of aseptic revision. Further research is required to evaluate potential reasons for these findings.



	0	1	2	3	4	5	6	7	8	9	10
Standard	6115	4005	2911	2070	1474	1007	713	508	344	221	139
Low demand	3713	2630	2101	1694	1327	1010	742	538	379	275	198