

Cementless Femoral Stem Brand Performance for Hemiarthroplasty Treatment of Geriatric Hip Fractures

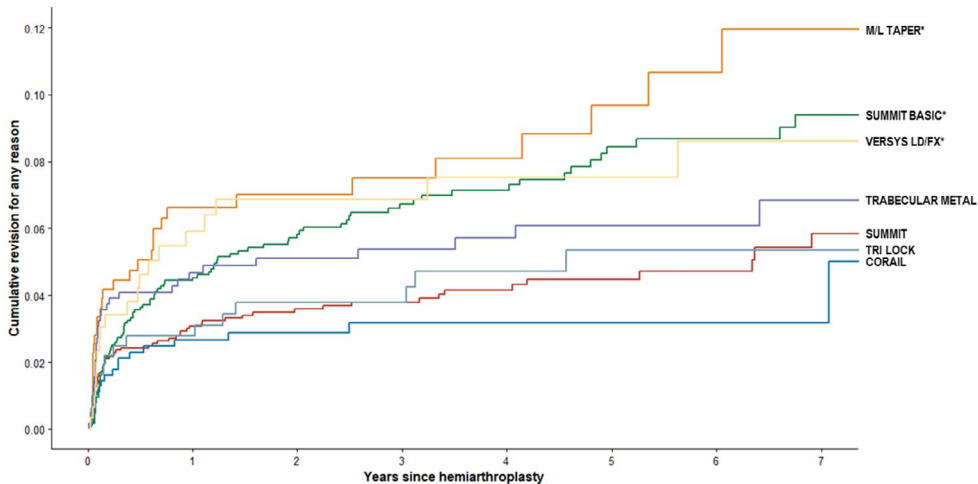
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Purpose: Existing literature supports the use of cemented hemiarthroplasty for treatment of geriatric displaced femoral neck fractures due to a lower aseptic revision risk. Nevertheless, many surgeons utilize a cementless femoral stem for frail geriatric patients because it is associated with shorter operative times, lower cardiovascular risks, and decreased perioperative mortality. We sought to evaluate differences in all-cause revision risk among cementless femoral stem implants used within a US-based health-care system for displaced femoral neck fractures treated with hemiarthroplasty.

Methods: A retrospective cohort study was conducted using data from a US health-care system's hip fracture registry. 5676 patients aged ≥ 60 years who underwent cementless hemiarthroplasty treatment of a displaced femoral neck fracture were identified (2009-2021); procedures were performed by 396 surgeons at 35 hospitals. Stems that were used in at least 300 hemiarthroplasty procedures were included as treatment groups; 7 stems were compared including 4 by DePuy Synthes (Corail, Summit, Summit Basic, and Tri-lock) and 3 by Zimmer-Biomet (M/L Taper, Trabecular Metal, and Versys LD/FX). Multivariable Cox proportional hazard regression models were used to evaluate the risk for all-cause revision with adjustment for confounders and surgeon effects. Summit was used as the reference group in all models.

Results: The final sample included 653 Corail, 402 M/L Taper, 1699 Summit, 1590 Summit Basic, 384 Tri-lock, 637 Trabecular Metal, and 311 Versys LD/FX. In adjusted analysis, M/L Taper (hazard ratio [HR] = 1.98, 95% confidence interval [CI] = 1.28-3.06), Summit Basic (HR = 1.87, 95% CI = 1.36-2.58), and Versys LD/FX (HR = 2.08, 95% CI = 1.28-3.36) had higher all-cause revision risks during follow-up when compared to Summit. No differences were observed for Corail (HR = 0.76, 95% CI = 0.45-1.29), Trabecular Metal (HR = 1.32, 95% CI = 0.86-2.02), or Tri-lock (HR = 1.03, 95% CI = 0.59-1.80) compared to Summit.

Conclusion: In a cohort of 5676 cementless hemiarthroplasties, we found differences in all-cause revision risks among different femoral stem brands. Caution should be used when considering M/L Taper, Summit Basic, and Versys LD/FX in the treatment of displaced geriatric femoral neck fractures with cementless hemiarthroplasty.



Number at risk

SUMMIT	1699	1272	1048	806	623	441	315	216
CORAIL	653	483	382	282	206	137	99	56
M/L TAPER	402	278	216	167	133	101	70	51
SUMMIT BASIC	1590	1112	914	739	575	436	318	228
TRABECULAR METAL	637	474	386	328	254	215	144	115
TRI LOCK	384	294	251	212	165	133	99	79
VERSYS LD/FX	311	205	177	155	123	99	78	56
	0	1	2	3	4	5	6	7