

What stem should I use to treat femoral neck fractures? Review of stem design and cement use to treat femoral neck fractures with primary total hip arthroplasty

David Fawley¹, Sean Croker², Rodrigo Diaz³

¹DePuy Synthes, Warsaw, IN; ²DePuy Synthes, West Chester, PA; ³DePuy Synthes, Palm Beach Gardens, FL
Email of Presenting Author: RDiaz16@its.jnj.com

Disclosures: David Fawley (3A; Employed by DePuy Synthes, 4; Johnson & Johnson), Sean Croker (3A; Employed by DePuy Synthes, 4; Johnson & Johnson), Rodrigo Diaz (3A; Employed by DePuy Synthes, 4; Johnson & Johnson)

INTRODUCTION: Primary total hip arthroplasty (THA) can be used to successfully treat traumatic femoral neck fractures (FNF). While uncemented stem designs are now used in most primary THA cases, there is still some question about use of uncemented stems for treatment of fracture in THA. The objective of this evaluation was to review the revision rates for FNFs treated with THA using both cemented stems and uncemented collared stems.

METHODS: We conducted a retrospective registry review from the Australian Orthopaedic Association National Joint Replacement Registry (AOA NJRR). Kaplan-Meier (KM) device survivorship was performed with revision of any component as the endpoint.

RESULTS: A total of 3,909 FNF cases treated with THA were evaluated: 1,643 using cemented stems, and 2,266 using collared uncemented. Survivorship was similar between groups, but collared uncemented stems showed a trend of increased survivorship out to 10 years post-surgery. KM estimates were (95% CI; N with further follow-up) were 96.9% (95.9%,97.6%; 1148), 95.6% (94.3%,96.6%; 529), and 92.8% (88.7%,95.5%; 57) for cemented stems at 2, 5, and 10 years respectively, and 96.8% (95.9%,97.4%; 1653), 96.0% (95.0%,96.8%; 926) and 95.5% (94.3%,96.4%; 189) for collared uncemented stems at 2, 5 and 10 years respectively.

DISCUSSION: In this cohort of nearly 4000 stems used to treat FNF with THA, collared uncemented stems showed a trend toward better survivorship compared with cemented stems at 10 years post-surgery.

SIGNIFICANCE/CLINICAL RELEVANCE: Our study shows collared uncemented stems to perform at least as well as cemented stems out to 10 years post-surgery in primary THA to treat FNF.

Figure 1 – Cumulative Percent Revision (CPR)

AOA NJRR	1 Year	2 Year	3 Year	4 Year	5 Year	6 Year	7 Year	8 Year	9 Year	10 Year
Cemented Stems										
CPR	2.6	3.1	3.5	3.9	4.4	5.0	5.0	5.8	5.8	7.2
(95% CI), n	(1.9, 3.5), 1370	(2.4, 4.1), 1148	(2.7, 4.6), 932	(3.0, 5.1), 747	(3.4, 5.7), 529	(3.8, 6.6), 346	(3.8, 6.6), 222	(4.1, 8.1), 125	(4.1, 8.1), 79	(4.5, 11.3), 57
Collared Uncemented Stems										
CPR	2.7	3.2	3.7	3.9	4.0	4.4	4.4	4.5	4.5	4.5
(95% CI), n	(2.1, 3.5), 1913	(2.6, 4.1), 1653	(2.9, 4.6), 1385	(3.1, 4.9), 1145	(3.2, 5.0), 926	(3.5, 5.4), 734	(3.5, 5.4), 562	(3.6, 5.7), 418	(3.6, 5.7), 290	(3.6, 5.7), 189