Seven Year Survivorship of Total Hip Arthroplasty with a Proximally Coated Tapered-Wedge Femoral Stem

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BACKGROUND

Released in 2008, the TRI-LOCK® Bone Preservation Stem (DePuy Synthes, Warsaw, IN, USA) was designed to help provide consistent implant seating based on a simple reproducible surgical technique and to achieve initial fixation and allow long term, durable fixation.

OBJECTIVES

To provide further data on the use of this femoral stem in primary total hip arthroplasty (THA), a retrospective outcome review was conducted.

DESIGN & METHODS

Excluding metal-on-metal bearings, 2,079 stems were implanted between April 2008 and August 2017 and enrolled into a company-sponsored outcomes registry. Primary diagnosis tallies (%) for THA were 1,893 (91.1%) for osteoarthritis, 71 (3.4%) for avascular necrosis, and 115 (5.5%) for other or missing. Mean age was 65.0 years (standard deviation 11.1), 1181 patients (56.8%) were female, and mean BMI was 29.2 (standard deviation 6.0). Kaplan-Meier estimates for revision were calculated with time to revision or time to latest follow up. Harris Hip scores were summarized, as well as reasons for revision and complications.

RESULTS

There were 24 revisions (any component for any reason); 13 of the 24 involved the stem. Stem revisions (**Table 1**) were for periprosthetic fracture (6), aseptic loosening (4), infection (2) and subsidence of the femoral component after a fall (1). With survivorship defined as no revision of any component for any reason, Kaplan-Meier survivorship estimates (95% CI; N with further follow-up) were 98.5% (97.7%,99.0%; 686) at 2 years, 98.2% (97.1%,98.9%; 177) at 5 years and 97.4% (95.0%,98.7%; 43) at 7 years post-op (**Figure 1, Table 2**). Mean total Harris Hip Scores (SD; N) were 52.1 (15.8; 1,854), 90.6 (11.4; 981), 91.5 (9.7; 375), 90.7 (12.1; 165) and 91.3 (17.4; 31) at pre-op, 1 year, 2 year, 5 year and 10 year windows post-op respectively (**Table 3**). Intraoperative hip-related events included femoral fracture (6), femoral perforation (2), pelvic bone fracture (1), migration and loosening of the shell (1), and burn from pinless array (1).

Table 1 – Stem Revisions

Revision Reason	N
Periprosthetic Fracture	6
Aseptic Loosening	4
Infection	2
Subsidence of femoral component after a fall	1
Total	**13**

Figure 1 – Kaplan-Meier Survivorship and 95% CI

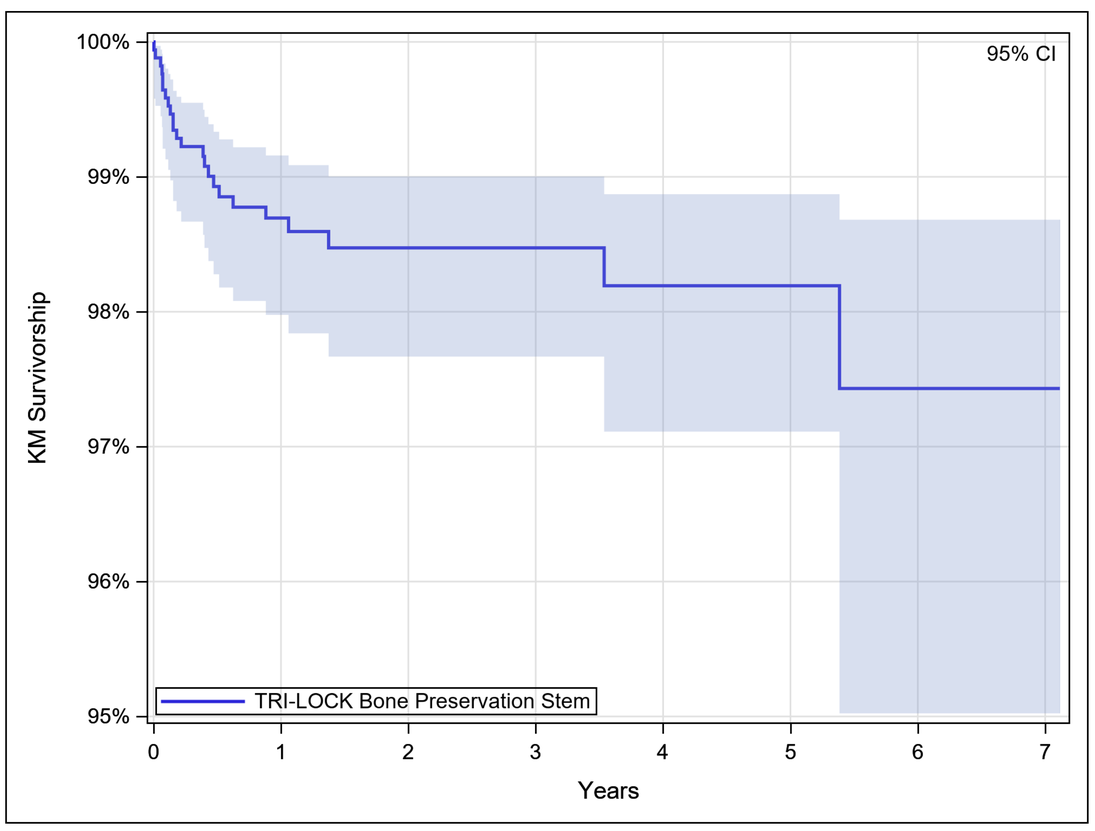

Table 2 - Kaplan-Meier Survivorship Estimates

	2 Year KM Survivorship (95% CI) N with Later Follow-up	5 Year KM Survivorship (95% CI) N with Later Follow-up	7 Year KM Survivorship (95% CI) N with Later Follow-up
All Hips (N=2,079)	**98.5%** (97.7%,99.0%) N = 686	**98.2%** (97.1%,98.9%) N = 177	**97.4%** (95.0%,98.7%) N = 43

Table 3 – Mean Harris Hip Scores

	Mean Pre-op HHS (SD; N)	Mean 1 Year HHS (SD; N)	Mean 2 Year HHS (SD; N)	Mean 5 Year HHS (SD; N)	Mean 10 Year HHS (SD; N)
All Knees (N=2,079)	**52.1** (15.8; 1,854)	**90.6** (11.4; 981)	**91.5** (9.7; 375)	**90.7** (12.1; 165)	**91.3** (17.4; 31)

CONCLUSIONS

In this cohort of 2079 wedge shaped medial lateral taper stems, only 13 stems were revised, which included 6 periprosthetic fractures and 1 stem subsidence that all occurred within the first year of implantation and could be considered a technical complication related to stem insertion. The data for this stem compares favorably to devices currently reported in the literature and can be considered a standard for comparison for proximally coated tapered-wedge stems. Additional follow up is needed to assess long-term performance.