

5-Year Results of a Monolithic Tapered, Fluted Titanium Stem in Complex Primary and Revision Total Hip Arthroplasty

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INTRODUCTION:

Total hip arthroplasty (THA) in the setting of proximal femoral defects and poor bone stock often necessitates distal fixation using specialized implants, such as monolithic tapered, fluted titanium stems (TFTS), to ensure adequate stability. This study evaluates the mid-term outcomes of TFTS in both complex primary and revision THA (rTHA).

METHODS:

This was a multi-institutional retrospective review of patients who received monolithic TFTS between July 2016 and June 2020 during either complex primary THA, conversion THA, or rTHA. Outcomes included pre-, intra- and postoperative characteristics, as well as five-year all-cause, septic and aseptic revisions, and Hip Injury and Osteoarthritis Outcome Score for Joint Replacement (HOOS, JR) at different postoperative timepoints.

RESULTS:

A total of 115 patients with a mean follow-up of 6.3±1.2 years were included. Femoral stem survivorship from aseptic revisions was 97.2% (95% confidence interval (CI) 97.0%-100.3%) at 5.1 years after TFTS. Aseptic revisions occurred in 2.6% (n=3), for periprosthetic acetabular fracture (n=2, 1.7%) and hip instability (n=1, 0.8%) (range 1-60.6 months). Survivorship from septic revisions was 93.2% (95% CI 93.1-99.9%) at 5.3 years. Septic revisions included debridement, irrigation and exchange of modular components (n=3, 2.6%) and two-stage revision arthroplasties (n=4, 3.4%) at a mean of 27.7 months after surgery (range 1.1-63.9 months). All-cause survivorship from any revision was 90.6% (95% CI 90.2%-99.1%) at 5.3 years after TFTS. HOOS, JR scores improved from preoperative to 5-year follow-up (46.1±20.8 to 83.8±19.0, respectively).

DISCUSSION AND CONCLUSION:

The TFTS demonstrates excellent mid-term survivorship (97.2% at five years) and significant clinical improvement in complex primary and revision THA. These outcomes suggest that the TFTS can be considered a valuable option in this challenging

patient

population.

Table 1. Patient demographics and baseline characteristics. SD, Standard deviation; % Number, % Percentage; THA, Total Hip Arthroplasty; rTHA, Revision Total Hip Arthroplasty; ASA, American Society of Anesthesiologists; CVT, Clavicle Fracture.

Parameter	Complex Primary THA (n=77)	Revision THA (n=38)
Mean age at surgery (range) (years)	62.1 (21-87)	61.1 (21-87)
Sex, n (%)	27 (35.1%)	11 (28.9%)
Male	41 (53.1%)	16 (41.3%)
Female	36 (46.9%)	15 (39.6%)
Race, n (%)	71 (92.2%)	31 (81.1%)
White	60 (77.4%)	26 (67.2%)
Black	11 (14.2%)	5 (12.8%)
Hispanic/Latino	1 (1.3%)	1 (2.6%)
Asian	1 (1.3%)	1 (2.6%)
Other	8 (10.4%)	7 (18.2%)
Insurance, n (%)	69 (89.7%)	31 (81.6%)
Medicaid	31 (40.3%)	14 (36.8%)
Medicare	21 (27.3%)	10 (26.3%)
Private	17 (22.1%)	6 (15.8%)
Other	10 (13.0%)	5 (12.8%)
ASA grade, n (%)	1 (1.3%)	1 (2.6%)
I	1 (1.3%)	1 (2.6%)
II	14 (18.2%)	6 (15.8%)
III	62 (80.5%)	31 (81.6%)
IV	0 (0.0%)	0 (0.0%)
V	0 (0.0%)	0 (0.0%)
VI	0 (0.0%)	0 (0.0%)
VII	0 (0.0%)	0 (0.0%)
VIII	0 (0.0%)	0 (0.0%)
IX	0 (0.0%)	0 (0.0%)
X	0 (0.0%)	0 (0.0%)
XI	0 (0.0%)	0 (0.0%)
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