

## 2-Year Revision Risk with a New Femoral Neck Fracture Implant versus Cannulated Screws for Femoral Neck Fractures in older individuals

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### INTRODUCTION:

While the standard of care for displaced fractures in older individuals is arthroplasty, internal fixation is still considered the standard of care for nondisplaced fractures. A new femoral neck fracture implant was developed to improve angular and rotational stability. However, studies evaluating outcomes for this novel implant relative to more traditional fixation with cannulated screws are lacking. Therefore, we sought to compare revision risk between the FNS and cannulated screws for surgical fixation of elderly femoral neck fractures in a multi-center US healthcare system.

### METHODS:

A cohort study was conducted using data from a US healthcare system's hip fracture registry. Patients aged  $\geq 60$  years who underwent surgical fixation for femoral neck fractures were identified (2017-2022). Study groups were restricted to fixation using either the new implant or three 6.5-7.3mm cannulated screws. All-cause revision risk was evaluated through multivariable Cox regression with confounder adjustment. Multivariable Cox proportional hazard regression was used to evaluate the risk for revision with adjustment for confounders, including age, gender, body mass index, race/ethnicity, smoking status, ASA classification, time from admission to surgery, anesthesia technique, and surgeon annual volume. Operating surgeon was also included in regression models to address correlation of procedures performed by the same surgeon. Hazard ratios (HR) and 95% confidence intervals (CI) are presented, a  $p < 0.05$  was considered statistically significant.

### RESULTS:

The final study included 352 fixations with the new implant and 1,686 with cannulated screws. Procedures were performed by 346 surgeons at 32 hospitals. Crude 2-year revision incidence was 4.0% and 4.8% for the new implant and cannulated screws, respectively (Figure). In adjusted analysis, no difference in all-cause revision risk (HR=0.92, 95% CI=0.50-1.71,  $p=0.79$ ) was observed when comparing the new implant to cannulated screws. Comparable results were observed when restricting only to fixations performed by the 72 surgeons who used both devices (270 FNS vs 430 cannulated screws; HR=0.91, 95% CI=0.39-2.17,  $p=0.84$ ).

### DISCUSSION AND CONCLUSION:

In this cohort of elderly hip fracture patients who underwent femoral neck fracture fixation, we found that the more technically advanced and costly new femoral neck fracture implant had comparable revision rates to cannulated screws. This persisted even when restricting to surgeons proficient in both implants.

