

## **Comparison of femoral head cutout of 4 Implants in the Treatment of Intertrochanteric Femur Fractures**

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**Introduction:** Excessive femoral neck shortening has a negative impact on hip muscle strength and gait after surgical fixation for intertrochanteric femur fractures. Further, as the implant slides to increase compression of the fracture site, lateral hardware prominence can be a problem. The primary objective was to compare three cephalomedullary nails (Synthes TFN, Synthes TFNA, AOS Galileo) and a sliding hip screw (Synthes DHS) regarding screw cut-out, femoral neck shortening, and lateral thigh pain.

**Methods:** A single institutional retrospective review was performed from 2015-2020 for all patients undergoing surgical fixation of intertrochanteric femur fractures. Patients were included if they were  $\geq 65$  years old with an intertrochanteric fracture and at least 2 office visits within 1-year post-operation. Patients were excluded for pathological or isolated subtrochanteric fractures. Demographics and radiographic parameters including tip-apex-distance (TAD) and femoral neck shortening were identified. The incidence of lateral hip pain at follow-up visits was also recorded.

**Results:** 64 patients met inclusion criteria for this study, with an average age of 76 years. The average intraoperative TAD for those undergoing fixed lag screw implants was 17.79 mm, with an average of 18.96 mm at 3 month follow-up. The average intraoperative TAD for sliding hip screw implants was 38.82 mm, with an average of 39.58 mm at 3 month follow-up. In the AOS group, the average intraoperative TAD was 15.66 mm, with an average of 17.28 mm at 3 month follow-up. The incidence of lateral thigh pain (29%) was highest in the SHS cohort, which also had the highest amount of shortening (18.50 mm) at the second office follow up visit. In comparison, the AOS telescoping system had the lowest incidence of lateral thigh pain at second visit (12%) with the lowest amount of lag screw shortening recorded (9.33 mm). Average incidence of lateral thigh pain and shortening for the TFN group was 33% and 14.10 mm, respectively. Lateral thigh pain and shortening for the TFNA group was 13% and 11.27, respectively.

**Conclusions:** Sliding hip screws demonstrated the highest amount of lag screw shortening and incidence of lateral thigh pain. In contrast, the AOS Galileo system demonstrated the lowest amount of shortening with the lowest incidence of lateral thigh pain at the second office follow-up visit. TAD  $< 25$  mm was routinely present in all cephalomedullary implant groups. The AOS Galileo group demonstrated the lowest incidence of lag screw shortening and lateral thigh pain.