

TFN Screw Versus Blade Complication Risk for Intertrochanteric Fracture Fixation: Are Failures Caused by Implant or Reduction?

Arielle R. Levine, MS; Trevan K. Klug, BS; Michael P. Leslie, DO

Purpose: Questions remain regarding a difference in complication rate for trochanteric fixation nail (TFN) screw versus TFN blade constructs when considering implant type, fracture stability pattern, and reduction parameters. All efforts need to be made by surgeons to avoid complications given their significant morbidity.

Methods: Retrospective review of 2128 consecutive intertrochanteric hip fractures admitted to a single center from 2014 to 2023 was conducted. Variables collected included patient and operative characteristics, fracture fixation device used, fracture type based on OTA/AO classification, tip-apex distance (TAD), and radiographic and clinical outcomes.

Results: No statistical significance was found between complication prevalence for TFN blades versus screws for the overall cohort, as well as when stratified by short, intermediate, or long TFN implants and for stable versus unstable fracture patterns. Intraoperative TAD had a significant, but likely not clinically meaningful (<1 mm), difference between overall and blade versus screw implant groups. Change in TAD between intra- and postoperative films was insignificant across groups. Malreduction was the primary factor associated with complication, found in 57.7% of patients with complications; this was evenly distributed over the study groups.

Conclusion: TFN blade versus screw choice was not associated with differences in complications when compared across implant type and fracture pattern, whereas malreduction can account for most complications seen across groups.

Total TFN Blades & Screws: N = 1095 (100%) Stable: 172 / Unstable: 923	Total Complications: <i>N = 52 (Cut-Out, Cut-Through, Backout, Malunion, or Nonunion)</i> <i>57.7% (30) had evidence of malreduction intra-operatively</i> <i>Stable: 3 / Unstable: 49</i>	TAD (Average (SD)): <i>17.88 (6.12)</i> <i>Change between Post-Op and Intra-Op TAD (Average (SD)):</i> <i>-6.83 (11.92)</i>
Short Nail/Screws: N = 220 <i>Stable: 49 / Unstable: 171</i> vs. Short Nail/Blades: N = 295 <i>Stable: 51 / Unstable: 244</i>	17 vs. 7 RR: 1.81 (0.764 – 4.29) p = 0.24	TAD / Average (SD): 17.4 (3.9) vs. 17.8 (5.1) p = 0.73 TAD Change / Average (SD): -6.5 (11.0) vs. -8.0 (12.5) p = 0.16
Intermediate Nail/Screws: N = 134 <i>Stable: 21 / Unstable: 113</i> vs. Intermediate Nail/Blade: N = 136 <i>Stable: 33 / Unstable: 103</i>	4 vs. 3 RR: 0.739 (0.169 – 3.24) p = 0.72	TAD / Average (SD): 17.7 (5.2) vs. 18.2 (5.3) p = 0.47 TAD Change / Average (SD): -8.2 (11.2) vs. -6.5 (11.0) p = 0.22
Long Nail/Screws: N = 115 <i>Stable: 7 / Unstable: 108</i> vs. Long Nail/Blades: N = 195 <i>Stable: 11 / Unstable: 184</i>	10 vs. 11 RR: 0.649 (0.284 – 1.48) p = 0.42	TAD / Average (SD): 16.8 (4.8) vs. 19.5 (8.8) p = 0.004 TAD Change / Average (SD): -3.9 (11.0) vs. -6.5 (13.3) p = 0.09
Overall Screws: N = 469 <i>Stable: 77 / Unstable: 392</i> vs. Overall Blades: N = 626 <i>Stable: 95 / Unstable: 531</i>	31 vs. 21 RR: 1.11 (0.644 – 1.9) p = 0.82	TAD / Average (SD): 17.3 (5.1) vs. 18.3 (6.7) p = 0.009 TAD Change / Average (SD): -6.4 (11.2) vs. -7.2 (12.5) p = 0.25
All analyses yield equivalent results in terms of significance when stratified by Stable/Unstable Fractures, but exact values have been omitted for clarity of the figure		