Incidence and Impact of Short Cephalomedullary Nail Toggling in Patients with Capacious Proximal Femoral Canals

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INTRODUCTION: Toggling of short proximal nail is an understudied phenomenon characterized by changing of the longitudinal axis of the nail in relation to the longitudinal axis of the femoral medullary canal, with subsequent potential loss of reduction. The purpose of this retrospective study is to examine the incidence and impact of toggling of short cephalomedullary nails in cases with wide femoral canals.

METHODS: One thousand Two hundred fifty-six (1256) cases who received short proximal femoral nails for intertrochanteric fractures were reviewed. Of them, 101 cases who had wide femoral canals (≥15 mm) and a minimum radiographic follow up of 6 weeks were included in this study. Outcome measures included nail toggling, varus malunion, and revision surgery.

RESULTS: After a mean radiographic follow-up of 53.5 weeks, sixteen cases (15.8 %) have shown significant nail toggling of more than 4 degrees and had subsequent varus collapse of the fracture. In all 16 cases, there was obvious deficient proximal nail fixation, in the form of either a lag device not engaging the lateral wall (2 cases), lateral proximal femoral wall fracture/incompetency (7 cases), or a combination of the two factors (7 cases). Despite this, all the sixteen cases achieved fracture union. Five additional cases had complications related to poor initial reduction. The other 80 cases had minimal nail toggling and healed uneventfully without varus malunion and none of them required revision surgery.

DISCUSSION AND CONCLUSION: Short cephalomedullary nails may toggle in patients with wide femoral canals. The effect of femoral canal width on nail movement, and subsequent varus malunion may be abolished when the lag device engages the lateral proximal femoral cortex, and the lateral cortical bone is intact. In patients with wide femoral medullary canals or cases with proximal lateral femoral cortical fracture, utilization of long cephalomedullary nails may be a more viable option.