Toggling of Short Proximal Femoral Nails in Patients With Wide Femoral Medullary Canals: Incidence, Impact, and Complications

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Purpose: Our objective was to examine the incidence and impact of toggling of short cephalomedullary nails in cases with wide femoral canals.

Methods: 1256 cases with intertrochanteric fractures (OTA 31A) who received short proximal femoral nails at a Level I trauma center were retrospectively reviewed. Of them, 108 cases with wide femoral canals were included in this study to assess the incidence, impact, and complications associated with short nail toggling.

Results: After a mean follow-up of 53.7 weeks, 16 cases (14.8%) demonstrated significant nail toggling of more than 4° 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 (6 cases), lateral proximal femoral wall fracture/incompetence (4 cases), or combination of the 2 factors (6 cases). Despite this, all 16 cases achieved fracture union with minimal symptoms. Four additional cases had complications unrelated to nail toggling, in the form of femoral head osteonecrosis and revision total hip arthroplasty at 15 months in 1 case, and operative malreduction with subsequent minimally symptomatic varus malunion in another 3 cases. The other 88 cases had minimal nail toggling and healed uneventfully without varus malunion and none of them required revision surgery.

Conclusion: Short cephalomedullary nails may toggle in cases with wide femoral canals with variable degrees. 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.