Avoiding Intramedullary Reduced Position in Lateral View Prevents Lag Screw Cut-Out After Internal Fixation of Trochanteric Fractures: A Multicenter, Nested, Case-Control Study

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Purpose: Cut-out of the lag screw is a major postoperative complication after internal fixation of trochanteric fractures. This study aimed to clarify the effect of the intramedullary reduced position on the risk of cut-out using lateral radiographs.

Methods: In 6 facilities, patients with trochanteric fractures who were ≥65 years of age and who had been treated with internal fixation between July 2011 and December 2017 were included. All patients had a lag screw cut-out, and controls were selected by risk set sampling of age- and sex-matched patients at a ratio of 4:1 to cases from each hospital cohort. The exposure of interest was the reduced position (intramedullary or other) of an immediate postoperative lateral radiograph. The effect of the intramedullary position on the incidence of cut-out was estimated by conditional logistic regression analysis with tip-apex distance (TAD) and the interaction between TAD and the reduced position as covariates. As a sensitivity analysis, we estimated whether telescoping within 2 weeks postoperatively was a predictor of cut-out.

Results: Of the 2327 trochanteric fractures, the incidence of cut-out was 0.020 per person-year. There were 36 cases, with a mean age of 84.8 years and 32 (88.9%) women. In the control group, 135 controls were included. Conditional logistic regression analysis showed that the risk of cut-out was significantly increased with the reduced intramedullary position compared to with the anatomical or extramedullary position (adjusted odds ratio [AOR], 4.2; $P = 0.006$). There was also a significant increase in the incidence of cut-out when the TAD was ≥20 mm (AOR, 4.1; $P = 0.013$), but there was no interaction with the reduced position ($P = 0.54$). Telescoping ≥6 mm within 2 weeks was a significant risk factor for cut-out (AOR, 11; $P<0.001$).

Conclusions: Orthopaedic surgeons should avoid intramedullary positions for the internal fixation of trochanteric fractures because the incidence of cut-out is 4 times higher, independent of TAD.