Are Retrograde Nails Better for Distal Femur Fractures in Obese Patients?

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Purpose: Fracture care in obese patients is challenging given the increased technical difficulty and the potential for higher complication rates. Distal femur fractures occur relatively infrequently; however, their prevalence is expected to increase with the aging population. There are currently limited data comparing retrograde intramedullary nailing to plate fixation in the obese population. We hypothesize that retrograde nailing is equivalent to plate fixation in the obese population and might offer some advantages.

Methods: We retrospectively reviewed our institution's fracture database to identify patients with distal femur fractures (AO/OTA Type 33) who underwent either plate or retrograde nail fixation. We included patients who were skeletally mature with a body mass index of 30 or greater per Centers for Disease Control and Prevention (CDC) guidelines for obesity. Other comorbid conditions and demographic data were also collected, as were details of surgery. The primary outcome measure was successful union; secondary outcome measures included operative time, estimated blood loss, infection, and time to weight bearing.

Results: We identified 85 patients with a total of 91 fractures; there were 61 fractures in the plate group and 30 fractures in the nail group. There were 14 nonunions (23%) in the plate group and 1 nonunion (3%) in the nail group ($P = 0.017$). However, the rate of open fracture was higher in the plate group (18 of 61 compared with 3 of 30) and was significantly predictive of nonunion ($P = 0.005$). On univariate analysis for closed fractures only, the nonunion rate was 14% for plates versus 3% for nails, but did not reach statistical significance ($P = 0.236$). Overall, there was a difference in time to union with a mean of 202 days for plates versus 107 days for nailing ($P = 0.03$). Once again, when nonunions were excluded from this analysis, there was no significant difference between the plate group (122 days) and nailing (105 days) ($P = 0.089$). Mean operative time for nailing was significantly less compared to plating (3.3 hours vs 4.4 hours; $P = 0.002$). Blood loss was significantly less in the nailing group (214 mL vs 296 mL; $P = 0.013$). The infection rate was equivalent with 3 infections in the plate group versus 2 in the nail group ($P = 0.999$). Time to weight bearing was similar between groups: 137 days for plating versus 105 days in the nail group ($P = 0.127$).

Conclusion: Retrograde nailing for distal femur fractures in obese patients provides equivalent outcomes compared with standard plate fixation and is associated with shorter operative times and less blood loss with a trend toward lower nonunion rates.