

Retrograde Femoral Nail Advanced: High Rate of Interlock Back-Out

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INTRODUCTION:

The Retrograde Femoral Nailing Advanced (RFNA) System is a commonly used implant for the fixation of low distal femur and periprosthetic fractures. There is concern that the rate of distal interlock screw back-out may be higher for the RFNA compared to other nails (ON). The purpose of this study was to 1) evaluate the incidence of interlock screw back-out and associated screw removal for RFNA versus ON, and to 2) analyze the association between RFNA interlock screw back-out with early versus delayed weight-bearing.

METHODS:

A retrospective comparative study of patients who underwent retrograde nailing for a distal femur fracture at an academic level one trauma center was performed. Patient characteristics, injury, and treatment details were collected. The incidence of distal interlock screw back-out and need for screw removal were compared for RFNA versus a propensity score matched cohort who received other nails. Propensity-score matching was performed using logistic regression. RFNA interlock screw back-out rates were compared for early versus delayed weight-bearing.

RESULTS:

One-hundred-ten patients underwent retrograde nailing with the RFNA for a distal femur fracture from 2015-2022 (Average Age: 66, BMI: 32, 52.7% smokers, 54.5% female, 61.8% with 3-months follow up). A propensity score matched cohort of 110 patients who received other nail types was determined. There was a significantly higher rate of interlock back-out in the RFNA group compared to the ON (27 patients, 24.5% versus 12 patients, 10.9%, $p=0.01$), which occurred 6.3 weeks postoperatively. Screw removal rates for back-out were not significantly different for the RFNA group versus ON (8 patients, 7.3% versus 3 patients, 2.7%, $p=0.12$). Early weight-bearing was not associated with an increased risk of screw back-out compared to delayed weight-bearing for the RFNA group (15/110 patients, 13.6% versus 12/110 patients, 10.9%, $p=0.5$).

DISCUSSION AND CONCLUSION:

In this retrospective comparative study of distal femur fractures treated with retrograde nailing, the RFNA implant was associated with an increased risk of distal interlock screw back-out compared to other nails. Surgeons treating these fractures should be aware of this potential complication associated with the RFNA.



Figure 1: Sequence of anteroposterior (AP) and lateral X-rays of RFNA illustrating the following: Images a and b: Injury AP and lateral X-rays, Images c and d: Immediate postoperative AP and lateral X-rays, Images e and f: AP and lateral X-rays showing distal interlock screw back-out 4 weeks postoperatively.