

Final Frontal Plane Alignment of United Subtrochanteric Femur Fractures Is Not Affected by Antegrade Medullary Nail Start Point

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Background/Purpose: Subtrochanteric femoral fractures are challenging entities. Varus malreduction, malunion, and nonunion are cited complications. Medullary nailing offers many benefits for the treatment of these fractures, but an improper starting point can contribute to varus malalignment. Similar results have been reported with use of piriformis and trochanteric starting points in diaphyseal femur fractures, but little evidence exists regarding the optimal starting point in subtrochanteric fractures. We sought to determine if the selection of a piriformis fossa (PF) or greater trochanteric (GT) entry portal had an effect on the alignment of subtrochanteric femur fractures after medullary nailing.

Methods: We queried a prospectively acquired trauma database for all OTA 31A3 and 32 fractures treated at our regional Level I trauma center from January 2000 to September 2012. A subtrochanteric femur fracture was defined as the dominant fracture line within 2 cortical diameters of the lesser trochanter. The neck-shaft angle was measured by the method of Neher and Ostrum at radiographic union with contralateral comparison. Patients were excluded for skeletal immaturity, pathologic fracture, a proximal fracture that could affect the neck-shaft angle (eg, femoral neck), or a contralateral neck-shaft angle that could not be accurately measured. The entry portal and implant were selected at the discretion of the operating surgeon. 270 fractures met enrollment criteria and 129 were followed to union.

Results: There were 86 patients in the PF group, and 43 in the GT group. The groups had no differences in age, side, gender, percentage of open fractures, or OTA classification. The difference in injured to uninjured neck-shaft angle at union was 5.3° in the PF group and 4.7° in the GT group (Table 1). There was no difference in reoperation rates between groups ($\chi^2 = 0.636$, Table 2).

Conclusion: With careful operative technique, comparable results can be obtained using either PF or GT start points for subtrochanteric femur fractures.

Table 1. Results at Union of Medullary Nailing for Subtrochanteric Femur Fractures*

	PF (n = 86)	GT (n = 43)	
Injured neck-shaft angle	128.6° (4.8)	126.8° (5.4)	P = 0.063
Uninjured neck-shaft angle	133.9° (6.8)	131.6° (4.9)	P = 0.026
Neck-shaft difference	5.3° (7.4)	4.7° (6.0)	P = 0.65
Time to union (days)	192 (53-856)	219 (57-814)	

*Values expressed as mean (SD).

• The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 600.

POSTER ABSTRACTS

Table 2. Complications Related to Medullary Nailing for Subtrochanteric Femur Fractures*

	PF (n = 86)	GT (n = 43)
Revision	3 (3.5%)	2 (4.5%)
Intraoperative adjustments†	2 (2.3%)	4 (9.1%)
Heterotopic ossification excision	1 (1.2%)	0
Irrigation and debridement	0	1 (2.3%)
Removal of implants	6 (7.0%)	5 (11.4%)

*Values expressed as mean (SD). †Intraoperative adjustments included use of accessory techniques such as blocking screws or revising the starting point to improve alignment before final locking of the nail.