

Novel Technique for Placement of Short-Segment Coronal Plane Stability Screws in Retrograde Nailing of Proximal Femoral Shaft Fractures Using Proximal Interlock Aiming Arm

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Purpose: Retrograde femoral nailing is commonly used for fixation of femoral shaft fractures due to high healing rates and ease of placement. However, there is a concern that limited distance between the fracture and proximal interlock fixation may predispose these fractures to varus deformity and malunion for fractures in the proximal third shaft. Stability can be used to counteract this coronal plane deformity but can be difficult to place proximally due to limitations from body habitus and difficulty with fluoroscopic imaging. This technique is presented as a simple means for coronal plane stability screw placement using the proximal interlock aiming arm.

Methods: This 4-patient series of patients underwent retrograde femoral nailing for proximal third femoral shaft fractures. After placement of the nail, there was concern of varus deformity at the fracture site due to a short proximal fracture segment. To place coronal plane stability screws in these cases, a proximal interlock aiming arm was manipulated to aim screws just medial and lateral to the proximal implant (Figure 1A, 1B). This allows for assurance of safe stability screw placement as close to the implant as possible. Additional interlocking screws or sagittal plane blocking screws can be placed proximally as needed.

Results: Coronal plane stability screws were placed successfully in each of the 4 cases without complication. The 2 cases with follow-up imaging have maintained alignment and neck shaft angles of 131 and 134° without any varus deformity of the proximal femur and interval healing of the fracture (Figure 1C, 1D). The other 2 cases are pending 6-week follow-up imaging.

Conclusion: Use of the proximal interlock aiming arm allows for safe and simple short-segment coronal plane stability screw placement during retrograde nail placement for proximal third femoral shaft fractures. This technique has the potential to minimize fluoroscopic exposure and operative time while providing increased proximal small-segment stability, particularly in patients with large body habitus.

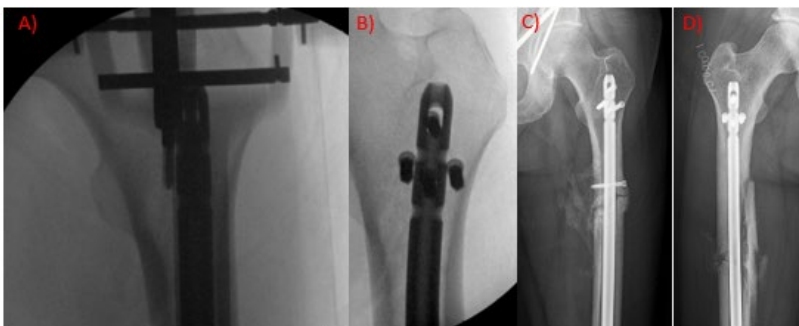


Figure 1. Radiographic images of the coronal plane stability screw technique demonstrating A) intra-operative use of the proximal interlock aiming arm adjusted for stability screw placement; B) Intra-operative radiographs of screws in place; C and D) AP post-operative radiographs in two patients at 6-weeks follow-up with callus formation and maintained alignment.

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device they wish to use in clinical practice.