Use of a Retrograde Guidewire to Direct Antegrade Instrumentation in the Femoral Canal

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Purpose: When working antegrade within the femoral canal to pass an intramedullary nail or reamer, challenges may arise due to mismatch between the radius of curvature of instrumentation and that of the femoral shaft. This may result in anterior malposition of these instruments in the distal femur. Additionally, distal positioning may be made more difficult due to the presence of previous implants or bony lesions. We report our technique and clinical experience using a retrograde guidewire to direct antegrade instrumentation to a central position in the distal femur in a variety of clinical scenarios.

Methods: The patient is positioned supine or lateral with the operative leg draped free to allow for knee access. After initiation of antegrade instrumentation, a retrograde wire is placed through the knee in an approach comparable to that used for retrograde femoral nailing. The guidewire may be sent proximally out of the femur or alternatively is advanced into the distal tip of a nail or reamer that has already been introduced. The nail or reamer is then driven over the retrograde wire to rest in the desired central position in the distal femur.

Results: We review 5 cases: (1) 82-year-old female with left subtrochanteric fracture and significant femoral bow requiring osteotomy for nail passage, (2) 78-year-old male with implant failure after intramedullary nailing for subtrochanteric fracture with pathologic bow and thickened cortices from Paget's disease, (3) 56-year-old male with left femoral shaft and ipsilateral intertrochanteric fracture in the setting of previous anterior cruciate ligament implants in the distal femur, (4) 54-year-old female with pathologic right femoral shaft fracture, unknown primary disease (The antegrade guidewire was seen intraoperatively to exit the diaphyseal lesion.), and (5) 35-year-old female undergoing autograft harvest using a reamer-irrigator-aspirator (Antegrade guidewire trajectory was concerning for anterior cortical perforation.).

Conclusion: The technique utilizes a familiar approach without the need for specialized equipment and may be helpful to avoid cortical perforation or malpositioning of antegrade femoral instrumentation in a variety of clinical scenarios.