

Three Technical Tricks for Intramedullary Nailing in Delayed, Obese, or Subtrochanteric Femoral Fracture Cases

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Purpose: Intramedullary nailing in delayed, obese, or subtrochanteric femoral fracture cases can be technically difficult.

Methods: Three technical tricks will be demonstrated: (1) Overdistraction eases intramedullary nailing of femoral fractures after damage-control orthopaedics; early step-by-step moderate overdistraction significantly eases and speeds up fracture reduction and reduces the reduction force. (2) Iliotibial (IT) band and its role in femoral fracture reduction without fracture table; a reduction algorithm is presented: skin incision, starting point, and nail insertion in adduction of the proximal fragment, guide pin, and nail advancement into the distal fragment in neutral position with the distal fragment slightly abducted. This relaxes the IT band, reduces the force needed for reduction, and shortens the operating room time. (3) Percutaneous retrograde through fracture guidewire placement in obese subtrochanteric fractures (Fig. 1); here, placement of the exact starting point is difficult due to deformity (flexion, abduction), accessibility, poor C-arm imaging, and thick soft tissues. For this, the following technique has been developed: Lateral decubitus, small incision at fracture level to allow finger contact with the proximal main fragment, T-handle armed percutaneous reaming guidewire insertion through the quadriceps muscle, digital guidance into the medullary canal of the proximal main fragment, push of the guidewire further up with some blows of a hammer through the tip of the major trochanter and through the soft tissues until it can be felt under the skin. The skin is then incised and the guidewire is pulled further out until the distal level of the guidewire at the level of the subtrochanteric fracture is reached. Then with the help of the finger or C-arm, the guidewire is moved distal into the distal main fragment in its target position. The cannulated reamer is then slipped over the proximal end of the guidewire, the tip of the major trochanter is opened, and the medullary cavity of the proximal and distal femur are reamed according to the geometry of the fracture and the implant.

Results: These techniques can make femoral nailing more easy and safe.

Conclusion: These techniques can make intramedullary nailing in delayed, obese, or subtrochanteric femoral fracture cases less technically difficult.