New Techniques and Emerging Evidence #NT11

Hip and Femur

Placement of a Dual-Screw Cephalomedullary Nail for Treatment of an Intertrochanteric Hip Fracture: Technical Nuances and Practical Tips

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Purpose: Intertrochanteric fractures are commonly treated with a cephalomedullary nail (CMN). While classical CMNs utilize a single lag screw, modern dual-screw implants facilitate direct compression across the fracture, provide greater rotational stability, and have low complication rates. Intricacies associated with the implantation of dual-screw CMNs affect technical ease, reduction quality, proper implant sizing, and lag screw positioning.

Surgeons at all levels of training and experience serve to benefit from a video that demonstrates ideal placement techniques and practical tips for successful fracture fixation using a dual-screw CMN.

Methods: A high-quality narrated video was created to demonstrate all steps of cephalomedullary nailing of intertrochanteric fractures utilizing intraoperative footage, still photographs, and fluoroscopic images. The video includes a comprehensive technical demonstration from patient positioning to surgical site closure. Provided is a detailed explanation of techniques and calculations needed to ensure proper lag screw length and location to reliably compress the fracture without resultant lateral screw prominence.

Results: Patient positioning is described using dual C-arms and in both scissored and hemi-lithotomy set-ups with tips for positioning that facilitate closed reduction and nail insertion. Achieving and preparing a starting point using anatomic landmarks to minimize fluoroscopy and soft-tissue trauma is demonstrated. Choice of the nail diameter, length, and lag screw angle are discussed. Steps to optimally prepare and place the dual screws are shown in meticulous detail. Guidewire length is measured to determine provisional lag screw reaming depth.

Under fluoroscopic guidance, the lag screw reamer is advanced to an ideal tip-apex distance. Depth is read off the reamer and lag screw length is determined by subtracting the anticipated millimeters of compression from this measurement. Once the lag screw is placed to appropriate depth, the compression screw is inserted. Traction is released prior to application of compression. The distal interlock is placed. Final fluoroscopic images demonstrate fracture reduction and implant location.

Conclusion: This video demonstrates a technique for dual-screw cephalomedullary nailing of intertrochanteric fractures that highlights nuances throughout the procedure. It serves as a guide for surgeons at all levels of experience.