Arthroscopic-Assisted Lateral Tibial Plateau Fixation with Percutaneous Screws

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Background: Tibial plateau fractures account for 1-2% of all fractures. They have a bimodal distribution with high energy mechanisms in young adults and low energy mechanisms in the elderly and are associated soft tissue injuries. The goal of treatment is to restore joint stability, limb alignment, and articular surface congruency. Complications from surgical treatment include infection, wound complications, stiffness, implant irritation, and posttraumatic osteoarthritis leading to total knee arthroplasty. Traditional tibial plateau fixation is done via open reduction and internal fixation (ORIF) with buttress plating. Direct visualization with open submeniscal arthrotomy or indirect visualization with fluoroscopy facilitates articular surface reduction.

Methods: This video presents a case demonstrating arthroscopic-assisted tibial plateau fracture reduction and fixation with percutaneous screws in a 40-year-old female in a motor vehicle collision with a comminuted Schatzker type II fracture. The arthroscope is used as a method of direct visualization for reduction. The video discusses post-operative protocol, outcomes, and literature review. The video will also cover important tips for performing arthroscopic-assisted tibial plateau fixation.

Results: The patient is non-weightbearing for 6 weeks and in an unlocked hinged knee brace for full range of motion. At 2 weeks postoperatively, the patient can range from 0°-120° and pain is controlled with over-the-counter medications. Postoperative radiographs demonstrate maintained reduction and internal fixation with intact hardware.

Conclusions: Arthroscopic-assisted tibial plateau fixation is a successful minimally invasive approach in isolated lateral tibial plateau fractures. The use of arthroscopy allows direct visualization of the joint space for fracture reduction with minimal dissection. This technique is approachable for surgeons who may not be specialty trained and has a low risk of compartment syndrome when monitored and performed appropriately.