Low Profile, High Impact: External Fixation Using Locking Plates in Challenging Tibial Fractures

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Abstract

Learning Point: Locking plates used as external fixators can serve as an effective and patient-friendly alternative to traditional external fixation in tibial fractures with soft tissue compromise. This technique provides stable fixation, allows early rehabilitation, and minimizes complications, making it especially valuable in complex or high-risk fracture scenarios.

Background: Treating metadiaphyseal tibial fractures with compromised soft tissues remains a surgical challenge. While traditional external fixators are widely used, locking compression plates applied externally as fixators offer a promising alternative due to their low-profile design and angular stability.

Objective: To evaluate clinical outcomes, union rates, complications, and functional recovery in patients treated with locking plate external fixators (LPEF) for metadiaphyseal tibia fractures.

Methods: This prospective study of 15 adult patients with open or soft-tissue-compromised metadiaphyseal tibia fractures was conducted over a 12-month period. All patients were managed using LCP as an external fixator. Radiological union, time to weight-bearing, infection rates, reoperation need, and functional outcomes (KSS and AOFAS) were assessed.

Results: The mean time to union was 12.1 weeks, with a union rate of 90%. One superficial infection (6.6%) and one reoperation (6.6%) were noted. Final follow-up revealed excellent functional outcomes: mean KSS score of 85±5 and AOFAS of 81±4.

Conclusion: LPEF offers a viable fixation method in managing complex tibial fractures with soft tissue compromise, allowing early mobilization, fewer complications, and excellent functional outcomes. Larger studies are needed to validate its widespread adoption.

Keywords

External fixator, Locking plates, Tibia fracture.