

A Combination of Techniques to Tackle Significant Bone Loss Successfully in Distal Femur Fractures

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INTRODUCTION:

Significant distal femur bone loss from trauma poses a great challenge for most surgeons with many sleepless nights during the treatment process. Many methods to restore anatomical length and function have been described with a variety of results. We propose a combination of fixation strategies to reconstruct the femur and restore function while minimizing complications.

REPORT:

A 35-year-old male sustained an open left distal femur fracture with bone loss from a road traffic accident. Initial efforts include intravenous antibiotic therapy, wound debridement with intercondylar screw fixation and temporizing cross knee external fixator. In view of 13cm bone loss, we combined acute shortening with a locking plate and distal femur Masquelet technique, followed by lengthening over plate via a monorail. This achieves the desired length, reduces the amount on monorail, and reduces amount of bone graft needed for the induced membrane. At 9 months post trauma, patient had a united femur, ambulant and able to work. In total, 5 surgeries were performed and time on rail was 90 days.

CONCLUSION:

Traditional lengthening methods require patients to maintain their fixator device three times more than the lengthening duration to allow consolidation. Masquelet technique, although successful to some surgeons in very large defects, require large amounts of bone graft or bone substitutes, which may be either difficult to obtain or expensive; or worse still unsuccessful. Our method combines the advantages of multiple described techniques to achieve the desired result, while minimizing complications.

REFERENCES:

1. Pipitone et al. Management of Traumatic Bone Loss in the Lower Extremity. Orthop Clin North Am. 2014 Oct;45(4):469-82.



Figure 1: Initial radiograph depicting extensive comminution and bone loss.

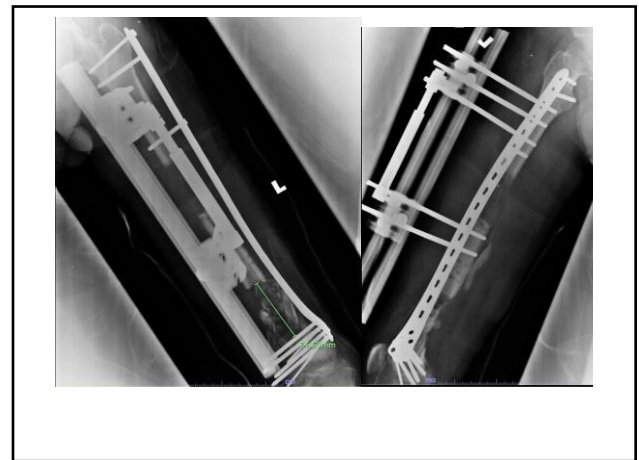


Figure 2: Radiograph showing mid-treatment stage on monorail and locking plate.