

Functional Outcome of Open Distal Femoral Fractures Managed with Lateral Locking Plates

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Purpose: Distal femoral fractures are difficult injuries to treat with complex intra-articular fracture patterns. In open distal femur fractures, the associated soft-tissue injury and traumatic bone loss further create an unfavorable environment for bone healing. This prospective study evaluated the functional outcome of open distal femoral fractures managed with anatomic lateral locking plates and assessed the incidence of nonunion, implant failure, and need for secondary procedures.

Methods: 34 patients (28 M: 6 F) with open distal femur fractures with a mean age of 40.8 years (range, 20-65 years) were included in the study. Patients with Gustilo-Anderson Grade IIIC fractures and patients managed with nonlocking modalities were excluded. 70.6% (n = 24) of the fractures were Type IIIA and 55.9% (n = 19) were AO/OTA Type C3 fractures. In 76.5% (n = 26) patients, definitive fixation using anatomic lateral locking plate was done while in 23.5% (n = 8) patients with gross contamination, multiple injuries, or with delay in surgery, knee-spanning external fixation was done. In this group, definitive fixation with lateral locking plates along with bone grafting was done after the stabilization of general condition of the patient and healing of soft tissues within an average period of 5.5 weeks (range, 4-8 weeks). Nonunion was defined as failure of union of 3 or more cortices at 6 months or no radiological progress in union for the preceding 3 months in presence of bone defect involving 2 or more cortices. Patients were followed for a mean period of 9.4 months (range, 6-19 months). Functional outcome was evaluated using Sanders Score.

Results: In the primary plating group, 69.2% (n = 18) fractures united at an average time of 27 weeks (range, 21-40 weeks). The remaining 8 patients underwent bone grafting at an average time of 22.3 weeks (range, 17-32 weeks). In the external fixator group, all 8 patients underwent lateral locked plating with bone grafting and united at an average time of 39.6 weeks (range, 31-50 weeks). At final follow-up, the mean Sanders Score was 30.1 (range, 19-40) with 73.5% of patients (n = 25) having good to excellent functional outcomes. One patient was excluded from evaluation of this score as he had severe neurological deficit due to head injury. The mean flexion was 91° (range, 30°-130°) with 87.9% (n = 29) of the patients having some restriction of flexion movement. 42.2% (n = 14) patients were able to get back to their jobs without any difficulty. There were 2 cases of infection and 2 cases of implant failure, 1 of which required revision fixation.

Conclusion: Open distal femoral fractures are complex difficult-to-treat injuries that need individualized management for each patient. Lateral locked plating either as primary fixation or after temporary external fixator offers excellent stability to allow fracture union. A proactive approach to identify and manage potential healing difficulties is advisable to promote bone healing.