

Supplemental Fixation in Closed Distal Femur Fractures Treated with Lateral Locked Plating Improves Union Rates

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Purpose: Supracondylar distal femur fractures pose a challenge to treating surgeons, with failure rates as high as 50%. Various techniques have been described to create a more biomechanically stable construct, including additional medial plating and retrograde intramedullary nailing. We recently described a new technique with medial column screw fixation, supplementing the medial column with a 7.3-mm cannulated screw inserted percutaneously at the medial epicondyle in an oblique fashion (Figure 1). The purpose of this study was to determine if supplemental fixation would improve union rates in closed distal femur fractures treated with lateral locked plating, and if there was any difference between medial column screw fixation versus dual plate or nail-plate constructs.

Methods: A retrospective review was performed on all patients with closed distal femur fractures treated with a lateral locked plate and supplemental medial screw/dual plate/nail-plate designs, at our 2 tertiary care centers from August 2006 to September 2021. Patient demographics and radiographic outcomes were recorded. Nonunion was defined as a fracture without evidence of healing at 6 months or requiring reoperation to promote union. Patient's without at least 1-year postoperative follow-up were excluded.

Results: 142 closed distal femur fractures with minimum 1-year postoperative follow-up were identified. Patients were 64.7 ± 19.2 years with a mean Charlson Comorbidity Index of 4.7 ± 2.1 , with no significant difference in age-matched comorbidity index between the groups. There were 113 patients treated with lateral locked plate alone, 60 native and 53 periprosthetic. There were 11 treated with supplemental medial column screw, and 18 treated with either dual plating or nail-plate constructs. In the lateral locked plate group, 30.1% required reoperation to achieve union, compared to 0.0% in the medial column screw group, and 0.0% in the dual plate and nail-plate group. Excluding patients with less than 1 year of follow-up may elevate this nonunion rate, as patients with uneventful healing may not have followed up.

Conclusion: Our study found that supplementing lateral locked plated fixation for closed distal femur fractures significantly improves union rates. We also found that supplemental medial column screw fixation alone significantly improves union rates, with the added benefits of decreased implant cost, surgical dissection, and surgical time.

