

Dual Plating of Periprosthetic Distal Femur Fractures

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Purpose: Periprosthetic distal femur fractures are increasing in incidence as the number of total knee arthroplasties performed rises. Multiple fixation strategies have arisen including lateral locked plating, intramedullary nailing (IMN), dual implant with lateral locked plating/IMN, and dual medial and lateral locked plating. Historically, lateral locked plating has led to high rates of nonunion. IMN alone has been reported to have higher rates of union but increased incidences of malunion, particularly given the more posterior entry due to the femoral component box as well as a short distal segment for fixation. Dual plating has become an attractive option that allows the patient to weight-bear immediately postoperatively and we hypothesize leads to union rates comparable to IMN as well as near-anatomic coronal plane reduction.

Methods: We retrospectively reviewed all patients at a Level I tertiary care center from 2018 to 2020. Patients were included if they sustained a periprosthetic distal femur fracture treated with dual plate fixation at the institution during this time frame. Primary outcomes evaluated were fracture union, complications, revision surgery, and coronal plane alignment.

Results: 31 patients underwent dual plating between 2018 and 2020 with average age of 78.8 years. Five patients were lost to follow-up. 25 (96.2%) of 26 patients went on to achieve radiographic and clinical union at last follow-up. The most common complication was painful implants. Two patients required a repeat operation (7.7%): one underwent deep implant removal for painful hardware (single screw removal), and the second patient went on to atrophic nonunion but sustained no implant failure. The average lateral distal femoral angle was 83°, which remains within the margin of error of anatomic alignment.

Conclusion: Periprosthetic distal femur fractures remain a challenging problem in orthopaedics and have become an increasing component of geriatric trauma. Dual plating of periprosthetic distal femur fractures has several advantages including immediate postoperative weight bearing, improved coronal plane alignment, high union rates, and low incidence of complications/repeat operations. Additionally, biomechanical studies have shown that dual plating constructs impart stronger fixation than both lateral locked plating and lateral plate/IMN combinations. Dual plating obviates the need to determine what total knee implants are in place and what intramedullary nail the femoral component box can accommodate. This can be challenging, particularly with older implants no longer in use and avoids possible contamination of the prosthesis by avoiding a knee arthrotomy. Because of these advantages, dual plating should be added to the surgeon's armamentarium for treatment of these fractures.