

Is Immediate Weight Bearing Safe for Periprosthetic Distal Femur Fractures Treated With Locked Plating?

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Background/Purpose: Periprosthetic distal femur fractures (PPDFx) associated with total knee replacement are increasing in incidence. In a previous study we showed that these patients had higher mortality and morbidity, if they were not mobilized quickly. Similar to hip fracture patients, early mobilization, facilitated by weight bearing as tolerated on post-operative day 1, resulted in improved outcome and 1-year survivorship. We hypothesized that treating PPDFx with minimally invasive locked plating, incorporating the described principles of effective bridge plating, and permitting immediate full weight bearing as tolerated would result in few hardware failures and a low rate of complications.

Methods: This was a prospective cohort study of all PPDFx with stable prostheses treated by two fellowship trained orthopaedic traumatologists at a Level I trauma center. Patients were treated by a prospective protocol including admission and evaluation to a hospitalist service from the emergency department, surgery within 24 hours, standardized DVT (deep vein thrombosis) prophylaxis initiated prior to surgery, minimally invasive locked plating, postoperative weight bearing as tolerated, and standardized follow-up for 1 year. Pertinent data collection included demographics, time to surgery, blood loss, length of surgery, perioperative complications, length of stay, disposition status, time to full weight bearing, time to healing, and delayed complications including, nonunion, hardware failure, infection, and symptomatic malunion.

Results: 44 fractures were treated in 42 patients. 72% were female. Mean age was 74. 41 fractures (93%) healed within 20 weeks (mean 16 weeks). There were 2 hardware failures, 1 deep infection, 1 nonunion, and 2 patients with symptomatic malunion. There were 8 symptomatic DVTs (19%) and 1 pulmonary embolism, despite consistent anticoagulation. One patient died within 12 months of injury (2.3%). 31 patients (74%) by one year had returned to their preinjury ambulation status. The hardware failure patients had identifiable technical errors, notably short plates compared to the fracture length.

Conclusion: Locked plating for PPDFx as part of a standardized approach to geriatric fracture management, which includes early surgery and immediate weight bearing, is safe and effective. We found a low morbidity and mortality rate with this approach. Hardware failure can likely be avoided by ensuring appropriate plate length and adequate screw fixation to comply with fixation principles in osteopenic bone. We found no complications related to preoperative DVT prophylaxis. Despite following national guidelines, the most common complication was symptomatic DVT. These results represent a significant overall improvement compared to historical treatments and are likely due to overall better care due to standardized geriatric fracture management as well as technical advances in fracture fixation. We recommend fixating periprosthetic distal femur fractures with locked plates and encouraging immediate weight bearing.

- The FDA has not cleared this drug and/or medical device for the use described in this presentation (i.e., the drug or medical device is being discussed for an "off label" use). For full information, refer to page 496.