

Immediate Weight Bearing of Plated Both-Bone Forearm Fractures in the Polytrauma Patient Is Safe

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Purpose: Rehabilitation of trauma patients is facilitated by surgical stabilization permitting immediate weight bearing (WB) of the fractured extremity. Both-bone forearm fracture (BBFx) plate osteosynthesis is an accepted technique with high union and low complication rates, yet postoperative WB protocols have not been amply investigated. The increased load placed upon BBFx plate fixation in the polytrauma patient raises concern regarding increased complication risk for patients permitted immediate WB. We hypothesized that immediate WB of operatively treated BBFx results in acceptable rates of complication for isolated and polytrauma patients.

Methods: Patients presenting to a Level-I trauma center from 2007-2016 with an operatively treated BBFx (AO/OTA 2R2/2U2) were identified retrospectively. Included patients were: skeletally mature, prescribed immediate WB protocol, and followed for 6 months or until fracture union. Collected data included: demographics, fracture characteristics, associated injuries, and WB protocols for all extremities. A WB score was created to stratify lower extremity injuries: WB as tolerated, 0; partial WB, 1; and non-WB, 2 (WB score = sum of each lower extremity). Complications recorded included: nonunion, hardware failure, and infection.

Standard statistical comparisons were used to evaluate the risk of complication in polytrauma patients with modified lower extremity WB protocols (polytrauma group) and patients with no lower extremity WB restrictions (isolated group). 213 patients were included with 75 (35%) females and 138 (65%) males, mean age was 40 years (17-82 years), and mean follow-up was 46 weeks (12-504 weeks). There were 142 (67%) patients in the isolated and 71 (33%) patients in the polytrauma groups. In the polytrauma group, 21 patients (10%) had bilateral lower extremity WB restrictions. Open fracture occurred in 67 patients (31%) and 12 (6%) complications noted: 3 nonunions, 4 hardware failures, and 5 infections. Demographic data did not vary between the isolated and polytrauma groups ($P > 0.05$ for all).

Results: There was no difference in complications in the isolated (5.7%) versus polytrauma groups (5.0%) ($P = 1.00$). The risk of individual complication also did not vary: nonunion (isolated: 1.4% vs polytrauma: 0.7%; $P = 0.55$), hardware failure (isolated: 4.3% vs polytrauma: 0.7%; $P = 0.10$), and infection (isolated: 0% vs polytrauma: 3.5%; $P = 0.17$). The risk of complication based on the WB score was similar ($P = 0.77$), in patients with complications (mean: 0.91, standard deviation [SD]: 1.38) and without (mean: 0.79, SD: 1.32).

Conclusion: Immediate WB rehabilitation following BBFx plate osteosynthesis appears to be safe, and is associated with low nonunion and complication rates. Our results demonstrate polytrauma patients who require ambulatory aid for lower extremity injury can immediately bear weight without increased complication risk compared to isolated BBFx.

See the meeting app for complete listing of authors' disclosure information.