Comparing Outcomes Between Hinged Knee Bracing and No Bracing After Open Reduction and Internal Fixation of Tibial Plateau Fractures

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Purpose: This trial was conducted to compare outcomes of hinged knee bracing to no bracing for patients after tibial plateau fracture open reduction and internal fixation (ORIF). Drawbacks of bracing include additional cost to the patient, brace-related wound complications, and possible loss of motion. Our hypothesis is that there will be no difference between both groups in terms of long-term radiographic, functional, and subjective outcomes.

Methods: After IRB approval, a prospective trial was initiated that randomized patients to either 6 weeks of hinged knee bracing or no bracing after tibial plateau fracture ORIF. Radiographic union, failure of fixation, wound complications, and postoperative range of motion were followed. Short Form-36 (SF-36) questionnaires were administered at the longest possible follow-up either during office visits or by phone if they were unable to come back for re-evaluation. Patients with open physes, unstable ligamentous injuries, and <6 months of prospective data or clinical follow-up were excluded.

Results: The brace group (N = 24) had an average age of 51 ± 12 years with 13 females and the non-bracing group (N = 25) had an average age of 51 ± 15 years with 9 females. The braced group had 2 open fractures and included 13 AO/OTA 41-B3 (54%), 7 C1, 2 C2, and 2 C3 fractures; the non-braced group had 4 open fractures and included 2 AO/OTA 41-B1, 14 B3 (56%), 2 C1, 3 C2, and 4 C3 fractures. There were two wound complications in the brace group: a wound eschar treated nonoperatively, and one patient with an open fracture that had a wound infection treated 7 months after surgery. There were 4 wound complications in the non-braced group: two patients with local wound breakdown treated nonoperatively and two patients, both with open fractures, with one acute wound infection/dehiscence requiring surgery and the other with an infected nonunion treated 6 months after surgery. Average radiographic union for the brace group was 12 ± 5 weeks with one nonunion, and for the non-braced group was 12 ± 4 weeks ($P = 0.90$) with two nonunions. Average final postoperative extension for bracing was 1° ± 2° and for non-bracing was 1° ± 3° ($P = 0.85$). Average final postoperative flexion for bracing was 118° ± 15° and for non-bracing was 123° ± 11° ($P = 0.13$). Average final clinical follow-up for range of motion was 9 ± 3 months for bracing and 9.4 ± 3 months for no bracing. At final radiographic follow-up for braced patients there were no alignment changes. For the non-braced group there was one late joint collapse with valgus malalignment (>10°). The SF-36 scores for the braced group at an average follow-up of 18 ± 11 months revealed Physical and Mental Component Summary scores of 40 ± 9 and 50 ± 12 compared to the non-bracing group, which had an average follow-up 21 ± 12 months with Physical and Mental Component Summary scores of 39 ± 10 ($P = 0.64$) and 48 ± 10 ($P = 0.57$).

Conclusion: Based on our study, there is no statistically significant difference between bracing and no bracing in terms of long-term radiographic, functional, and subjective

See pages 99 - 147 for financial disclosure information.

outcomes. A larger multicenter study may prove valuable, but based on our data, there is no benefit to bracing. Bracing has been discontinued for routine postoperative management of tibial plateau fracture ORIF at our institution.

- 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 600.