

Volar Locking Plate Versus External Fixator/Cast Fixation for the Treatment of Distal Radius Fractures: A Randomized, Controlled Prospective Trial

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Purpose: Osteosynthesis with a volar locking plate (VLP) is the only treatment option that allows immediate postoperative mobilization of the wrist. However, a VLP is an expensive and technically demanding form of treatment. This study compares the short-term functional outcomes of treatment without postoperative immobilization versus treatment by other modalities.

Methods: Group 1 consisted of distal radius fractures treated with a VLP, with no postoperative immobilization and unrestricted usage of the wrist in activities of daily living (ADL) allowed. Group 2 fractures were treated with either an external fixator ± Kirschner wires (K-wires) or forearm cast ± K-wires, with subsequent immobilization for 6 weeks. Both groups had radiological and clinical controls at 2 weeks, 6 weeks, and 12 weeks. The end points were time to return to work or return to ADLs, range of motion (ROM) of the wrist, and grip strength. Outcomes were evaluate with Disabilities of the Arm, Shoulder and Hand (DASH) and Patient-Rated Wrist Evaluation (PRWE) scores, collected 3 months after the injury.

Results: A total of 60 patients have been recruited, with 28 patients assigned to Group 1 (VLP) and 32 patients to Group 2 (non-VLP). Mean age of group 1 was 52 years, and of group 2 61 years. The predominant fracture type was AO/ASIF type C. All eligible participants completed the required follow-up. Nine patients either failed to attend the OPD, or were discharged early with no follow-up, and 1 patient was found to have bilateral wrist fractures on the follow-up, and was excluded. The average DASH score was the same for both groups (mean = 45). The average PRWE score was 21 for group 1, and 46 for group 2. The mean grip strength for group 1 was 64.33% and for group 2 patients 41.92% of the unaffected arm. Mean flexion was equal for both group; mean extension was for group 1 and for group 2. *Complications:* In group 1, one patient had symptoms of ulnar nerve weakness and one had flexor tendon rupture. One patient had complex regional pain syndrome (CRPS). Two patients requested to have the VLP removed. In group 2, two patients underwent lengthening surgery for malunion with shortening of the radius. Two patients developed symptoms suggestive of CRPS.

Conclusion: It appears that the results of treatment of the distal radius fractures with a volar locking plate followed by immediate postoperative immobilization are not significantly different from the nonoperative treatment of such injuries, as demonstrated by similar mean DASH and flexion in both groups. However, the mean PRWE is lower, and the mean grip strength and extension appear to be higher in the VLP-treated patients.

- 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.