

Volar Plate Fixation Versus Plaster in Extra-Articular Distal Radius Fractures: A Prospective Multicenter Randomized Controlled Trial*Marjolein A.M. Mulders, MD¹; Monique M.J. Walenkamp, MD, PhD¹;**J. Carel Goslings, MD, PhD¹; Niels W.L. Schep, MD, PhD²*¹*Academic Medical Center, Amsterdam, NETHERLANDS*²*Maasstad Hospital, Rotterdam, NETHERLANDS*

Purpose: Currently, it is still undecided if adult patients with displaced extra-articular distal radius fractures should be treated operatively or nonoperatively. The purpose of this randomized controlled trial was to compare the functional outcome of open reduction and volar plate fixation versus plaster immobilization in displaced extra-articular distal radius fractures.

Methods: We performed a multicenter randomized controlled trial in which patients from 18 to 75 years with an acceptable reduced extra-articular distal radius fracture were randomly assigned to open reduction and volar plate fixation or plaster immobilization. The primary outcome was the functional outcome measured with the Disability of the Arm, Shoulder and Hand (DASH) questionnaire after 12 months.

Results: A total of 90 patients were randomized, 47 patients to open reduction and volar plate fixation and 43 patients to plaster immobilization. Median DASH scores were significantly better in the operative group at 6 weeks (22.5 [95% confidence interval (CI) 14.2-35.8] vs 48.3 [95% CI 35.6-57.7], $P < 0.001$), 3 months (6.7 [95% CI 2.5-18.3] vs 27.5 [95% CI 10.0-38.3], $P < 0.001$), 6 months (5.8 [95% CI 0.0-17.5] vs 14.2 [95% CI 7.9-29.6], $P = 0.004$), and 12 months (2.5 [95% CI 0.0-12.7] vs 9.2 [95% CI 1.7-17.7], $P = 0.018$). 18 patients in the nonoperative group had fracture displacement or a symptomatic malunion and needed subsequent surgery.

Conclusion: Patients with an acceptable reduced extra-articular distal radius fracture treated with open reduction and volar plate fixation have better functional outcomes after 12 months compared to nonoperatively treated patients. Additionally, 42% of the nonoperatively treated patients required subsequent surgery.