

A Randomized Controlled Trial of Percutaneous Fixation With Kirschner Wires Versus Volar Locking-Plate Fixation in the Treatment of Adult Patients With a Dorsally Displaced Fracture of the Distal Radius

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Purpose: This study compared Kirschner wire (K-wire) fixation with locking-plate fixation for patients with dorsally displaced fractures of the distal radius. We hypothesized that locking-plates would provide better improvements in the Patient-Rated Wrist Evaluation (PRWE) in the 12 months after surgery.

Methods: In this multicenter Distal Radius Acute Fracture Fixation Trial (DRAFFT), we randomly assigned 461 adult patients having surgery for an acute, dorsally displaced fracture of the distal radius to either K-wire fixation or locking-plate fixation. The primary outcome measure was the PRWE at 12 months after the fracture. We also collected information on complications, and combined costs and quality-adjusted life years (QALYs) to assess cost-effectiveness.

Results: The baseline characteristics of the two groups were well balanced and over 90% of patients completed follow-up. Both groups of patients recovered wrist function by 12 months. There was no difference in the PRWE score at 3 months, 6 months, or 12 months (difference -1.3 ; 95% confidence interval [CI] -4.5 to 1.8 ; $P = 0.398$). There was no difference in the number of complications in each group and negligible differences in QALY gains; K-wire fixation represents a cost-saving intervention, particularly in younger patients.

Conclusion: Contrary to the existing literature, and against the increasing use of plate fixation, this trial shows that there is no difference between K-wires and volar locking-plates for patients with dorsally displaced fractures of the distal radius. K-wire fixation is less expensive and quicker to perform.