

## Nonbridging External Fixation versus Volar Locked Plating for Distal Radial Fracture Fixation

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**Purpose:** Nonbridging external fixation (NBEF) and volar locked plating (VLP) are recognized techniques in the management of distal radial fractures, but with no comparative data currently available. The aim of this study was to compare the early complications, and the longer-term functional outcomes, of NBEF versus VLP for fractures of the distal radius.

**Methods:** We identified from a prospective database all patients with a fracture of the distal radius managed using either NBEF or VLP. Partial articular fractures and intra-articular fractures requiring open reduction were excluded. Demographic data, fracture classification, management, complications, and subsequent surgeries were recorded. The primary short-term outcome measure was complications, determined using a combination of prospective and retrospective note review. The primary long-term functional outcome measure was the Patient Rated Wrist Evaluation (PRWE).

**Results:** There were 202 patients with a mean age of 58 years (range, 17-88) and 160 (79%) were female. A fall from standing height accounted for 82% (n = 165) of all injuries, with one or more comorbidities in 53% (n = 106) of patients and a mean body mass index (BMI) of 25 kg/m<sup>2</sup> (range, 15-39). There were 139 (69%) OTA type-A fractures and 63 (31%) type-C. There were 156 patients who underwent NBEF and 46 VLP. The overall rate of complications was comparable between the two groups (32.1% NBEF vs 17.4% VLP;  $P = 0.053$ ), with the higher rate for NBEF associated with an increased rate of superficial infection (19.2% vs 0%;  $P < 0.001$ ). Neurological complications were more frequent following VLP (8.7% vs 1.3%;  $P = 0.029$ ), with the majority (n = 5) acute carpal tunnel syndrome. At a mean of 4 years (range, 3.6-4.6; n = 88) postinjury there was no significant difference in the PRWE ( $P = 0.252$ ), QuickDASH (an abbreviated version of the Disabilities of the Arm, Shoulder and Hand [DASH]) ( $P = 0.444$ ), or overall satisfaction ( $P = 0.105$ ) between the two groups.

**Conclusion:** NBEF and VLP have a comparable complication rate following distal radius fracture fixation, with superficial pin site infection associated with NBEF and neurological complications more frequent following VLP. In the longer term there is no patient-reported functional advantage for either technique. Given the increased costs associated with VLP and with no longer-term advantage found, NBEF may be a more cost-effective option for managing these fractures.