

# Do All Complex Intra-articular Distal Radius Fractures Need Plates?

## BACKGROUND

This study assesses outcomes of complex, intra-articular distal radius fractures (DRFs; AO type C) treated with closed reduction, cross-pin multiplanar fixation, and a non-spanning external fixator. This carbon fiber device was hypothesized to maintain anatomic reduction and allow active wrist range of motion (AROM).

## METHODS

Thirty-one patients with complex, intra-articular DRFs were treated with closed reduction and percutaneous fixation (K-wires attached to a non-spanning external fixator). Removable orthoses were applied postoperatively (mean: 6 days, range: 2-13) and wrist rehabilitation began (mean: 8 days, range: 2-15).

Radiographs were assessed at pre-op, 10-days post-op, 12 weeks, 1 year, and final follow-up. Variables were measured from digitized radiographs (Software: Digimizer). Patients were evaluated for grip strength, pinch strength, and wrist AROM. PRWHE and DASH questionnaires were used for subjective outcomes.

## RESULTS

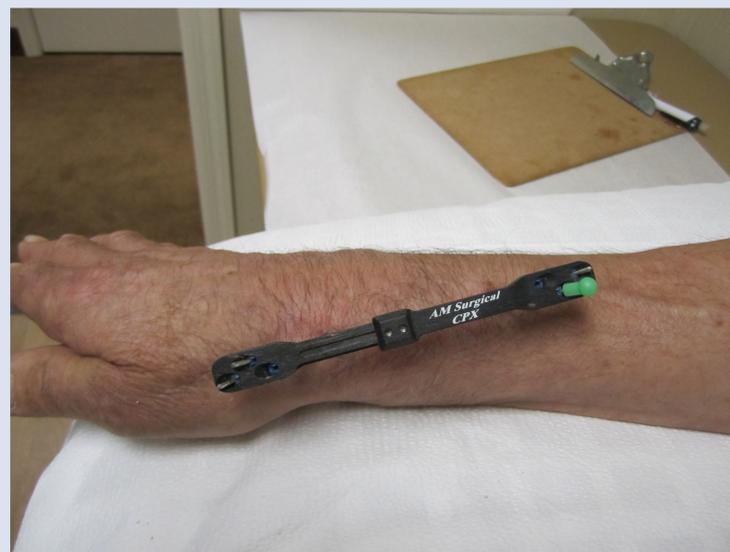
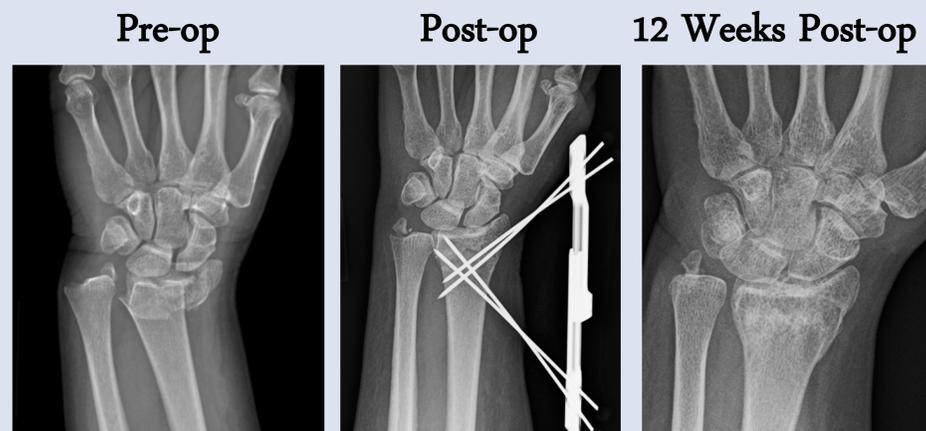


Table 1: Radiographic Measurements

Follow- Up Time	R-I (deg.)	R-ht. (mm)	P-tilt (deg.)	UV (mm)	Step (mm)	Gap (mm)
Pre-op	18.67	8.17	-9.48	2.29	0.53	1.49
10 Day Post-op	23.33	10.11	5.53	0.98	0.07	0.45
12 Week Follow-up	23.47	10.08	5.66	1.45	0.04	0.22
1 Year Follow-up	22.62	9.90	5.40	1.45	0.04	0.12
Final (mean 17 months)	22.19	9.84	5.38	1.37	0.04	0.12

## RESULTS

- At final follow-up (mean: 17 months, range: 12-53), grip strength, lateral pinch, and precision pinch recovered 82.9%, 93.3%, and 89.6%, respectively.
- Mean wrist AROM increased to minimum 82% relative to non-injured side.
- Mean DASH and PRWHE scores at final follow-up were 8.36 and 10.65, respectively.
- Two patients had increased ulnar variance; one developed complex regional pain syndrome that resolved; one had mild transient superficial radial nerve sensitivity without functional compromise.
- All patients returned to prior employment and/or activities.

## CONCLUSIONS

- Patients treated with closed reduction, cross-pin fixation, and a non-spanning external fixator demonstrated excellent radiographic, functional, and subjective outcomes.
- This study suggests the non-spanning external fixator may be indicated for complex intra-articular DRFs if closed reduction is possible.
- The CPX system allows for early wrist mobilization and resumption of work and usual activities.