IS EXTERNAL FIXATION USEFUL FOR DISTAL RADIUS FRACTURES?

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DISTAL RADIUS FIXATION

Closed reduction and percutaneous pinning
External fixation (Bridging and non-bridging)
Internal fixation
- Volar plates
- Dorsal plates
- Fragment specific fixation
- Spanning plates

SURGICAL INDICATIONS

- Radial inclination < 12-15°
- Dorsal tilt > 10°
- Radial shortening > 2-3 mm
- Articular displacement over 1 mm
- Rough guidelines only
GOALS OF TREATMENT

- Restore articular congruity (RC and DRUJ), prevent DJD
- Restore radial length, prevent impaction
- Restore articular tilt to neutral or volar, prevent painful carpal instability
- Restore radial inclination, prevent cosmetic deformity

ARTICULAR DISPLACEMENT

- Well established correlation between articular displacement and arthritic changes
- Luckily, these changes are not necessarily painful
- Even at 15 yr follow-up
  - Catalano et al, JBJS, 1997
  - Goldfarb et al, JHS, 2006

VOLAR PLATES VERSUS EXTERNAL FIXATION

- Bridging external fixation:
  - Less demanding surgery
  - Less invasive
  - Quicker surgery time
- Volar plate fixation:
  - Immediate stable fixation
  - Early mobilization
  - More rapid recovery and function
INDICATIONS FOR EXTERNAL FIXATION OF THE DISTAL RADIUS

- Highly comminuted
- Severe soft tissue injury
- Polytrauma
- Infection

APPLICATION OF EXTERNAL FIXATION FOR DISTAL RADIUS FRACTURES
92 patients randomized to either volar plate fixation or external fixation
- AO Type C2 and C3 fractures
- Complication rates were 17% (VP) and 29% (EF)
  - Not significantly different
  - No re-operations
- Significant difference in the short term for VP
  - Grip strength at 3 and 6 months
  - Range of motion at 3 months
  - MQH score at 3 months
- At 12 months no difference except in radiological appearance.
114 Patients enrolled, 91 at follow up. Type A and C fractures

No difference in Mayo wrist score, VAS, and quickDASH at 5 years

VP had significantly better supination and radial deviation

VP had significantly better ulnar variance

Subgroup C2 fractures had significantly better Mayo wrist score, flexion, supination, grip strength

Same radiographic arthritic changes in the 2 groups at 5 years

16 secondary surgeries in VP group (31% of which 11 were plate removals) vs 10 secondary surgeries in EF group (17%)

COMPLICATIONS FROM EXTERNAL FIXATION

External fixation

Stiffness

CRPS

Pin site infection

Medial collateral fracture

Superficial radial nerve injury

Nonunion

Malunion
COMPLICATIONS FROM EXTERNAL FIXATION – METACARPAL FRACTURE

- Nerve injury: Median or palmar cutaneous nerve branch
- Intra-articular hardware
- Extensor tendon ruptures from prominent screws
- Flexor tendon ruptures from the rim of the volar plate
- Loss of reduction

COMPLICATIONS FROM EXTERNAL FIXATION – NONUNION/LOSS OF REDUCTION

COMPLICATIONS FROM VOLAR PLATING

- Nerve injury: Median or palmar cutaneous nerve branch
- Intra-articular hardware
- Extensor tendon ruptures from prominent screws
- Flexor tendon ruptures from the rim of the volar plate
- Loss of reduction
**CONCLUSIONS**

- Volar plating has significantly improved short term outcomes.
- Generally by one year, external fixation has similar functional outcomes.
- Volar plating has improved radiographic outcomes.
- We are not sure if that will translate to better outcomes in the very long term.
- As with any surgery, there are complications that can arise based on the procedure chosen.
IS EXTERNAL FIXATION STILL USEFUL?

Yes:

Would I choose it for myself?

• Not a chance - I would take the short term functional improvements and earlier mobilization.