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Safety of Supplemental Hardware Removal at the Time of Dorsal Spanning Bridge Plate Removal for Distal Radius Fractures



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Background

The routine removal of volar locking plates (VLP) is controversial.

Conversely, dorsal spanning bridge plates (DSBP) are typically removed between 10-12 weeks post-operatively following fracture consolidation to allow rehabilitation and wrist motion.

DSBP are often used combination with VLP and fragment specific plate fixation but the removal of all adjunct hardware at time of DSBP removal is debated.

This study assessed the outcomes associated with removal of adjunct fixation at the time of DSBP removal following distal radius fracture osteosynthesis.

Methods

Retrospective analysis of all patients (25 patients) who underwent removal of all additional fixation at the time of DSBP removal following initial surgical treatment of a distal radius fracture between January 2022 and February 2023.

Inclusion criteria:

- Adults aged > 18 years
- Previous surgical fixation with both DSBP and additional fixations strategies.
- Removal of all implants at approximately 12 weeks postoperatively

1° outcome: Complication during or following hardware removal (infection, re-fracture, delayed union, nonunion)

2° outcomes: Intraoperative findings in patients with complications.

Case Example



Figure 1. 37 yo w/ type II open distal radius fracture, treated with VLP, DSBP, and allogenic bone grafting



Figure 2. 6-week post-operative radiographs following removal of all hardware (4.5 months following index procedure) concerning for nonunion



Figure 3. Secondary procedure for nonunion takedown, revision fixation with iliac crest bone autograft, radial column plate, and VLP

Results

25 patients were identified, mean age 33 years (range 18-65 years).

Average follow-up was 12 weeks postoperatively following hardware removal.

Removal of hardware was performed at average **15 weeks** (range 12-53 weeks).

Complications occurred in 5 of 25 patients (20%).

- 3 delayed union/nonunion
- 1 skin tear during manipulation under anesthesia
- 1 superficial surgical site infection that resolved with oral antibiotics

2 patients with nonunion/delayed union were diagnosed intraoperatively with findings concerning for incomplete healing despite preoperative computed tomography (CT) imaging that suggested adequate osseous bridging.

22 of 25 patients (88%) had fracture union at time of hardware removal.

Conclusions

- Early removal of adjunct fixation in addition to DSBP for distal radius fractures can be safe.
- CT imaging prior HWR may be inaccurate in determining fracture healing
- Intraoperative assessment is critical to determine fracture healing and safety of hardware removal.

References



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