Flexor Pollicis Longus Dysfunction after Volar Plate Fixation of Distal Radius Fractures

Short Title: Thumb Flexion Loss after Volar Plating

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Abstract

**Purpose:** To evaluate the natural history and etiology of decreased thumb interphalangeal (IP) joint flexion after volar plate fixation of distal radius fractures.

**Methods:** Forty-six adult patients who underwent volar plating of 49 distal radius fractures by a single surgeon were studied. Twenty-four patients (24 wrists) exhibited loss of IP joint flexion (Group 1), and 22 patients (25 wrists) exhibited intact IP joint flexion (Group 2) postoperatively. All patients were seen at regular intervals until IP joint flexion returned and fracture consolidation was confirmed. Patient demographics, fracture patterns, surgical variables, and final radiographs were compared between groups. Twenty patients in Group 1 were seen at a mean of 6.5 months (range, 5 to 12 months) for specific outcome measurements. Eight cadaveric specimens were used to replicate the flexor carpi radialis approach to the distal radius for evaluation of flexor pollicis long tendon excursion.

**Results:** There were no significant differences in fracture patterns, patient ages or sexes, injured extremity dominance, incision lengths, plate designs, tourniquet times, or wrist radiographs between groups, whereas the delay to surgery was significantly greater in Group 2 patients (mean 19 vs. 12 days). In Group 1, active thumb IP joint flexion returned at an average of 52 days (range, 19 to 143 days). At final evaluation in this group, IP joint flexion remained 11 degrees less than the contralateral thumb; however, most patients were highly satisfied. In the cadaveric specimens, excursion of the FPL tendon decreased with sequential soft tissue dissection and retraction.

**Discussion:** Loss of thumb IP joint flexion following volar plating of distal radius fractures is common and motion may return to near normal within 2 months. Stripping of the FPL muscle from investing fascia and bone, and retraction of soft tissues are likely etiological factors.

**Level of Evidence:** Case-control study, Level III.