

# Etiology of Extensor Pollicis Longus Ruptures after Distal Radius Fracture Fixation Using a Volar Plate

Charlotte Louise Laane<sup>1</sup>, Anjuli Dijkmans, Chelsea J Messinger<sup>2</sup>, Mathieu Wijffels, Abhiram Bhashyam, Neal C Chen<sup>1</sup>  
<sup>1</sup>Massachusetts General Hospital, <sup>2</sup>Harvard Medical School

## INTRODUCTION:

This research sought to analyze a cohort of patients with extensor pollicis longus (EPL) ruptures after volar locked plating of distal radius fracture (DRF) to characterize the amount of ruptures that are likely to be unrelated to dorsal screw prominence.

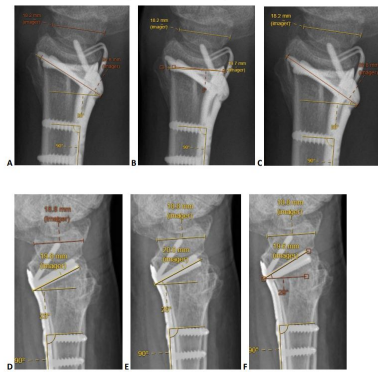
## METHODS:

This is a retrospective, observational, descriptive cohort study of all adults with operative fixation of a closed DRF fracture and an EPL rupture between 2002 and 2022. Eighteen patients with surgical fixation using a volar plate of a closed DRF had an EPL rupture. The cohort consisted 66% of females with an average age of 57.5 (P25 – P75 50-62). Median follow-up time was 14.5 months (P25 – P75 7-39).

**RESULTS:** Average time from distal radius fracture and DRF fixation to EPL rupture was 3.7 and 3.4 months respectively. Based on the operative record, in 2 of 18 patients (11%) the rupture was directly attributed to prominent hardware; however, in 4 of 18 patients (22%) rupture was not directly attributed to prominent hardware, and cause was indeterminate in 12 patients (67%). After radiologic measurements of radiographs of patients the indeterminate group, 6 of 12 patients had screws that were likely prominent, and the other half did not.

**DISCUSSION AND CONCLUSION:** In patients with EPL rupture after distal radius fracture fixation, approximately 50% of EPL ruptures are unlikely to be attributable to prominent dorsal screws. Although screw prominence is an important cause of EPL rupture, there is a substantial proportion of EPL ruptures with a different etiology of rupture.

Figure 2. Indeterminate patient with screw length exceeding (A,B,C) and not exceeding (E,F,G) maximum distal radius thickness, calculated with lunate depth.



Outcomes	n = 18	%
<b>Implant related EPL rupture</b>		
Yes	2	11%
No	4	22%
Indeterminate	12	67%
<b>Other causes of EPL rupture</b>		
Listers' tubercle	2	11%
Unknown, unlikely implant related	2	11%
EPL reconstruction	13	72%

Table 3. Exceeding screw lengths in indeterminate cases

Group	n=12	%
None	6	50%
Zone 1	2	17%
Zone 2	1	8%
Zone 3	1	8%
Multiple zones	1	8%
Unknown	1	8%