

## **Incidence and Characteristics of Patients with Extensor Pollicis Longus Rupture After Non-Operatively Treated Distal Radius Fractures**

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**INTRODUCTION:** The purpose of this study was to determine the incidence of extensor pollicis longus (EPL) ruptures following non-operative treatment of distal radius fractures (DRF). We hypothesized that there were no specific patient demographics nor fracture characteristics that predisposed patients to EPL rupture following non-operative DRF treatment.

### **METHODS:**

This was a retrospective cohort study of patients from a single academic orthopaedic hand surgery practice from 2016 to 2024. To identify patients who had undergone non-operative DRF treatment, our patient database was queried for CPT codes 25600 and 25605. To identify patients with an EPL rupture, this non-operatively treated DRF cohort was queried for CPT codes (25310, 26412, 26480 and 25274). Manual chart review was performed to ensure that the final cohort only included EPL tendon injuries in non-operatively treated DRFs. Patient demographics including age, sex, medical comorbidities, body mass index (BMI), tobacco and alcohol use were identified. In addition, dates of DRF injury and subsequent EPL rupture were recorded. Injury radiographs were measured for volar/dorsal tilt, radial inclination, radial height, ulnar variance and height of Lister's tubercle. Descriptive statistics were performed.

### **RESULTS:**

From 2016 to 2024, 8,612 patients underwent non-operative DRF treatment, and of those, 49 patients developed an EPL rupture. The incidence of EPL rupture following non-operatively treated DRFs was 0.57%. Patients with EPL rupture were a mean age of 62 years (range 21- 82), were mostly female (83.7%), and had a mean BMI of 25.9. In this cohort of 49 patients, 8% had diabetes mellitus, 20% had thyroid disorder, 10% had rheumatoid arthritis, 37% had a smoking history, and 59% had at least 1 alcoholic drink per week. In regards to timing following DRF, 53% of patients experienced their EPL rupture within 6 weeks, 31% within 6 - 12 weeks, and 16% at greater than 12 weeks. Finally, the average injury radiographic measurements were 5.1 degrees of volar tilt (range: volar tilt 17.8 - dorsal tilt 14.0), 19.4 degrees of radial inclination (range: 10.1 - 24.1), 8.6 mm of radial height (range: 5.0 - 12.1), and 4.0 mm of Lister's tubercle height (range: 1.8 - 6.0).

### **DISCUSSION AND CONCLUSION:**

The incidence of EPL rupture following non-operative treatment of DRF is low. As historically described, EPL ruptures tend to occur in patients with DRFs that have relatively normal radiographic alignment. Further study is needed to identify specific risk factors for EPL rupture following non-operatively treated DRFs.