Incidence and Characteristics of Patients with Extensor Pollicis Longus Rupture After Distal Radius Fracture ORIF

Tia Alexander, Jeremiah Alexander Adams, Stephanie Ann-Gie Kwan, Richard W. Mckinney, Asif M Ilyas, Jonas Leif Matzon

INTRODUCTION: The purpose of this study was to determine the incidence of extensor pollicis longus (EPL) rupture following distal radius fracture (DRF) open reduction internal fixation (ORIF). We hypothesized that there were no specific patient demographics nor fracture characteristics that predisposed patients to EPL rupture following DRF ORIF.

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 DRF ORIF, our patient database was queried for CPT 25607, 25608, and 25609. To identify patients with an EPL rupture, this DRF ORIF 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 ruptures following ORIF. Patient demographics were identified. Dates of DRF ORIF and subsequent EPL rupture were recorded. Postoperative radiographic measurements of volar tilt, radial inclination, radial height, Lister's tubercle height, Soong classification, and dorsal screw prominence were measured. Descriptive statistics were performed.

RESULTS:

From 2016 to 2024, 7,330 patients underwent DRF ORIF, and of those, 40 patients developed an EPL rupture (38 with volar plating and 2 with dorsal plating). The incidence of EPL rupture following operatively treated DRFs was 0.55%. Patients with EPL rupture were a mean age of 62 years (range 17-84), mostly female (82.5%), and had a mean BMI of 25. In this cohort of 40 patients, 5% had diabetes mellitus, 15% had thyroid disorder, 7.5% had rheumatoid arthritis, 27.5% had a smoking history, and 50% had at least 1 alcoholic drink per week. In regards to timing following DRF ORIF, 45% patients experienced their EPL rupture within 3 months, 22.5% between 3 - 12 months, and 32.5% at greater than 12 months. Average postoperative radiographic measurements were 7.5 degrees (range: 0.5 - 26.1) for volar tilt, 19.6 degrees (range: 12.4 - 27.3) for radial inclination, 8.6mm (range: 5.3 - 13.8) for radial height, and 4.4mm (range: 2.2 - 7.1) for Lister’s tubercle height. Per Soong classification, 34.2% were grade 0, 39.5% were grade 1, and 26.3% were grade 2. Only 42.1% of patients with volar plating had dorsal screw prominence (range: 1.0 - 7.8mm).

DISCUSSION AND CONCLUSION:

The incidence of EPL rupture following DRF ORIF is low and can occur even after acceptable radiographic alignment has been restored. Further study is needed to identify specific risk factors for EPL rupture following DRF ORIF.