

## “Island-Shaped” Fractures of Lister’s Tubercle Have an Increased Risk of Delayed Extensor Pollicis Longus Rupture in Distal Radial Fractures

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**Purpose:** We performed a retrospective case–control study to explore the hypothesis that conditions adjacent to Lister’s tubercle (LT) in patients with distal radial fractures (DRFs) exhibiting dorsal comminution would influence the extent of the delayed extensor pollicis longus (EPL) rupture.

**Methods:** Among patients treated by volar locking plates (VLPs) placed between March 2011 and December 2015, 314 met inclusion/exclusion criteria and were analyzed. We designated group 1 as “EPL rupture” and group 2 as “no EPL rupture”. Basic demographic data, radiological findings, and operative variables were evaluated. The fracture patterns around LT were classified as follows: type I, no fracture line/fragment in LT or the EPL groove (third compartment); type IIA, a fracture of LT or the EPL groove with displacement <2 mm; type IIB, a fracture of LT or the EPL groove with displacement >2 mm; and type III, the presence of an island-shaped fracture fragment of LT (isolated free fragment of LT).

**Results:** EPL ruptures were found in 18 patients (5.7%). The basic demographic parameters did not differ significantly among the groups. Clinically, neither the time to surgery nor the type of VLP used (of 3 different types) was not significantly associated with EPL rupture, nor was arthroscopically assisted reduction. In terms of radiological variables, the overall ratio of intra- to extra-articular fractures did not differ among the groups. However, the fracture type significantly affected the extent of the rupture ( $P < 0.001$ ), the odds ratio of which increased significantly in the fracture order IIA, IIB, and III, compared to type I (91.9, 220.1, and 342.06, respectively).

**Conclusion:** The extent of delayed EPL rupture after treatment of DRFs by VLPs was associated with the fracture pattern around the LT. Especially, an island-shaped LT fracture was associated with a high rupture risk because callus formation narrowed the EPL groove.