



## Management of extensor tendon injuries concerning distal radius fractures

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### ABSTRACT

**Introduction:** Rupture of the extensor tendons secondary to fractures involving the distal radius is a well-recognized rare complication. In patients with implants particularly, there exists a tendency for attributing the implant as a cause for the tendon rupture. We retrospectively studied the patients with extensor tendon injuries related to distal radius fractures, analyzed the factors leading to the rupture, suggest few preventive measures and describe the management strategy of these ruptures.

**Materials and methods:** 21 patients who were treated for extensor tendon rupture following distal radius fractures in the period of 2014–2022 were retrospectively analyzed. 19 patients had been managed with surgery and two patients conservatively for the distal radius fracture. The time interval between the fracture fixation and tendon rupture, the time interval between tendon rupture and presentation, the extensor tendons injured and the position of the impinging screws or bony spur in relation to the extensor compartments, necessity for implant removal and modality of tendon reconstruction were studied in these patients.

**Results:** Extensor pollicis longus was found to be ruptured in all the patients except one patient with Extensor indicis proprius rupture alone. The time interval between the fracture fixation and tendon rupture averaged at 32.5 months. End to end repair of the ruptured tendons was never possible even in patients who presented earlier. 10 patients underwent intertendinous bridge grafting and 11 patients underwent tendon transfer. All the patients achieved full extension of thumb with no donor deficit.

**Conclusion:** Distal radius fracture related extensor tendon injuries pose a technical challenge to the surgeon and concern to the patient in the form of recurring surgeries. However, with immediate presentation to the surgeon and their use of appropriately designed management algorithm, these patients could be immensely satisfied with the outcome.

### 1. Introduction

Extensor tendon injuries, predominantly extensor pollicis longus (EPL), secondary to distal radius fractures have been reported occasionally since the first ever description by Duplay in 1876. The incidence of this complication has been variably represented between 0.07% and 17% of distal radius fractures which includes those which are conservatively managed and those underwent internal fixation.<sup>1–3</sup> However, the incidence appears to be slightly higher with surgical treatment than the conservative treatment<sup>4</sup> leaving aside the possibility of under-reporting. The dorsal plating system that evolved primarily, quickly was realized to be notorious for causing extensor tendon irritation, attrition and even ruptures which led to the advent of the currently popular volar locking plates. These were designed with the claim of avoiding the aforementioned complication, but the recent literatures report

otherwise. Here, the culprit being the over projecting screw tip dorsally or off shooting of the drill while operating. Nevertheless, the ruptures have been also reported with conservatively managed distal radius fractures, especially the un-displaced ones wherein the extensor retinaculum remains intact (Fig. 1). Hematoma, bone displacement and callus formation further narrow the confined space in the compartment and predisposes the tendon to ischemia and attrition.<sup>5</sup>

From our hospital database, we identified patients who presented with rupture of EPL or other extensor tendons secondary to distal radius fractures (and implants in the distal radius) and retrospectively analyzed the factors leading to the tendon rupture. Based on our analysis, we herein suggest preventive measures to minimize the incidence of such ruptures and elaborate the reconstructive options available for treating them.

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