

Ultrasonographic Evaluation of Flexor Pollicis Longus Tendon and Volar Locking Plate of Distal Radius Fracture

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Introduction: Flexor pollicis longus (FPL) tendon rupture is one of the major complications after volar locking plate fixation of distal radius fractures. The aim of this study was to address the possibility of predicting the risk of FPL tendon rupture by using ultrasonography.



Fig 1. ultrasonography of FPL tendon

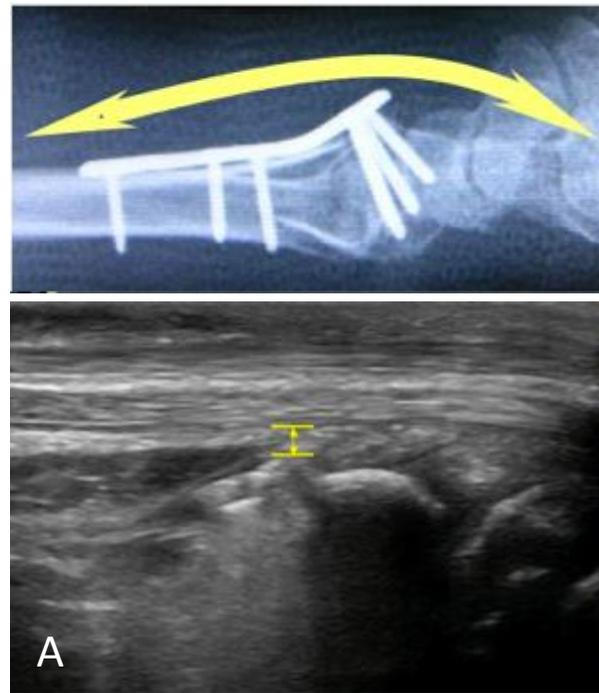


Fig 2. ultrasonographs of FPL tendon. FPL tendon was compressed (B)



Fig 3. high risk case

Methods: The subjects were 28 wrists of 27 patients who underwent the removal of the volar locking plate. Before the plate removal, radiography and ultrasonography were performed to assess the relation between the FPL tendon and the volar locking plate (Fig 1, 2). Intraoperatively, we evaluated the risk of tendon rupture as follows: the risk was low if there was an intact muscle belly or dense fibrous scar between the FPL tendon and the volar locking plate, and high if there was only a thin see-through membrane or less (Fig 3). Comparison was made between preoperative and intraoperative findings.

Result: The risk of FPL tendon rupture was strongly related to the distance between the FPL tendon and the volar locking plate in ultrasonography. The sensitivity to detect the high risk of FPL tendon rupture by ultrasonography was 95% and the specificity was 89% if the distance between the FPL tendon and the plate was less than 0.7 mm (Table 1), and 100% and 44% respectively if the distance was less than 0.9 mm. FPL tendon compression was seen in eleven cases (39.9%), which suggested the high risk of tendon rupture.

Conclusion: Our results showed that the high risk of FPL tendon rupture after volar locking plate fixation on distal radius fracture was predictable by ultrasonography.

Table 1. Relation between tendon-plate distance (US) and risk of FPL tendon rupture

Tendon-plate distance	high risk	low risk
less than 0.7 mm	18	1
0.7 mm or more	1	8

sensitivity 95%
specificity 89%
accuracy 93%
positive predictive value 95%
negative predictive value 89% p<0.0001