

Delayed Rupture Of Flexor Digitorum Profundus Tendon 12 Years After Volar Plating Of The Distal Radius

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Citation

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Abstract

Rupture of flexor digitorum profundus after volar plating of distal radius is rare. We describe such a case of delayed rupture, occurring twelve years after plating, in a fit 71 year old.

INTRODUCTION

Volar buttress plating has been a popular technique for the treatment of distal radius fractures with volar displacement, which are difficult to hold reduced in a cast. Volar tension band plating techniques have been popularised for the treatment of dorsally displaced and comminuted distal radius fractures. Rupture of flexor tendons is a recognised complication of volar plating, although there are very few reports published. We describe an unusual case with a 12 year delay between plating and flexor tendon rupture.

CASE REPORT

A 71 year old right hand dominant woman underwent volar buttress plating for an intra-articular fracture of her right distal radius. The fracture healed uneventfully, and she remained relatively asymptomatic after the operation, apart from some prominence of the plate on the volar radial aspect of the wrist, which was painful when knocked. Twelve years later, while pulling out a plug one day, she felt something snap in her wrist, after which she had no independent flexion of the tip of her index finger. She presented to our tertiary referral hand unit 5 months after this incident. She reported difficulty in doing up her buttons, picking up small objects and opening jars. She had adapted to her index finger flexion deficit by using her middle finger as a surrogate index for key pinch and tripod pinch. She had no background history of any significant systemic illness, long term medication, or steroid use.

On examination, the prominent plate could be felt on the volar radial aspect of the wrist, just under the operative scar. There was no active flexion of the distal interphalangeal joint of the index finger. Flexor digitorum profundus (FDP)

function in the middle, ring, and little fingers was intact. Flexor digitorum superficialis (FDS) function was intact in all fingers. Wrist range of motion was only terminally restricted when compared to the other side. Forearm rotation was full. Grip strength (Jamar level 2) was 16 kg force on the right side, compared with 26 kg force on the left. Wrist radiographs (Figure 1a and 1b) showed the plate prominence distally. X-rays of the index finger were normal.

Figure 1

Figure 1a: Initial post-operative radiograph

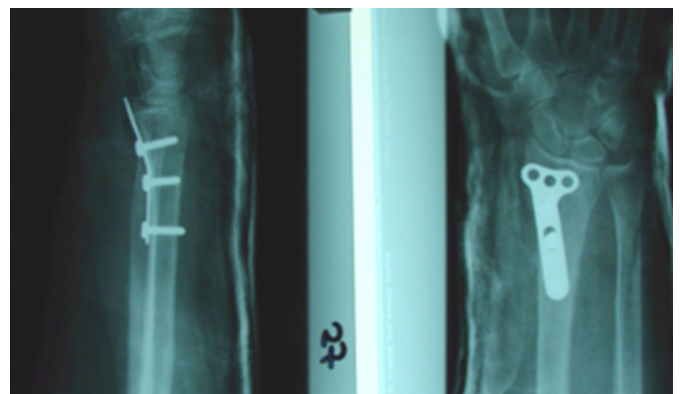


Figure 2

Figure 1b: Radiograph at presentation 12 years later



She underwent surgical exploration with a view to gaining some composite finger flexion in the index finger. The carpal tunnel was decompressed and the buttress plate removed. The FDP tendon to the index finger was found to be ruptured within the carpal tunnel. The distal stump of this was then attached to the middle finger FDP tendon using a Pulvertaft weave technique. The hand was rehabilitated using a CAM regimen with dorsal blocking thermoplastic splint (Belfast). She made an excellent post-operative recovery.

DISCUSSION

Although reported on a few occasions in the past, flexor tendon rupture due to prominent distal radius plate is rare. It was initially reported in 2 cases by Fuller et al (1) in 1973. One case involved the flexor digitorum profundus of the index finger, which ruptured at 6 months, and the other was a rupture of flexor pollicis longus 5 years after plating. Four more cases were reported in 1998 by Bell et al (2). Three were complete ruptures of the flexor pollicis longus, and one was a partial rupture discovered incidentally at plate removal. Interval from plating to rupture ranged from 4 to 10 months, and all 3 cases of complete rupture in their series had history of long term steroid intake.

Cognet et al (3) reported 4 more cases in 2005, and Hohendorff et al (4) reported another 1 in 2006. A recent report by Koo et al (5) described a case of delayed rupture of flexor pollicis longus tendon 5 years after volar plating. We

are not aware of any report of delayed rupture of the flexor digitorum profundus so far, nor of any tendon as late as 12 years after plating.

A volar buttress plate protects against volar displacement of the distal fragment. The distal edge of the plate may remain prominent due to improper initial placement or due to subsequent fracture collapse with effective radial shortening. Covering the plate with pronator quadratus may prevent tendon impingement and subsequent attrition rupture (10).

Current focus is on extensor tendon injury after volar buttress plating of the distal radius and this report should serve as a caution to proponents of this technique. Attention should be paid to plate position on the volar surface as well as to screw length relative to the dorsal cortex (6,7). Planned plate removal after fracture healing may help to avoid this unusual complication.

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