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Severe Laceration of Flexor Tendons after Locking Palmar Plate Fixation of Distal Radius Fracture: A Case Report

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ABSTRACT

We report a case of flexor pollicis longus and flexor digitorum profundus(II) laceration as a result of the severe tenosynovitis after volar locking plate fixation of distal radius fracture.

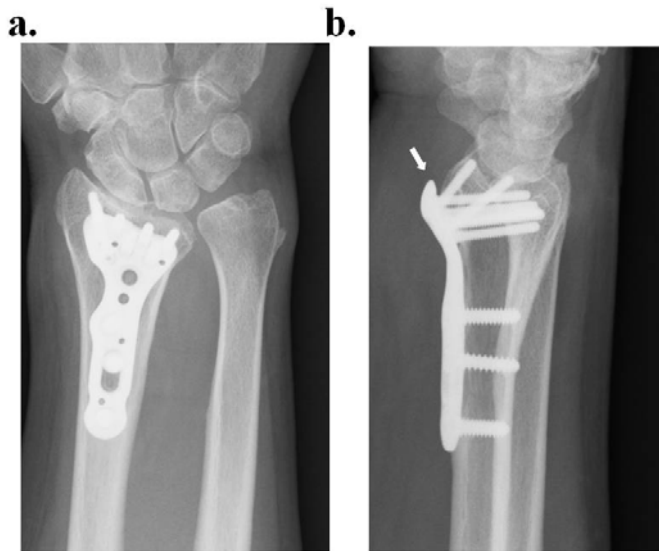
INTRODUCTION

Volar locking plates are designed to rigidly hold the distal radius fracture fragments while preventing tendon irritation. However, even with careful application of these plates, rupture of the flexor pollicis longus (FPL) or the flexor digitorum profundus (FDP) has been reported.^{1,2,5} We report a case of FPL and FDP laceration as a result of the severe tenosynovitis after volar locking plate fixation.

CLINICAL CASE

A 63 year-old woman injured her arm in a motorbike accident and sustained an intra-articular fracture of the left distal radius. She was treated with a locking palmar plate fixation (Acu-loc, Acumed, USA) at a previous hospital and initially recovered well. However, she began to feel numbness in her middle finger and noticed a swelling at the ulnar side of her wrist six months after surgery. On her visit to our hospital, the ulnar side of the wrist was swollen and numbness from the thumb to middle finger was noted. Dorsal flexion of the wrist was 60° and palmar flexion was 55°. The fracture had already united on radiographs, however the lateral view showed the distal end of the plate was prominent (Fig. 1).

Figure.1



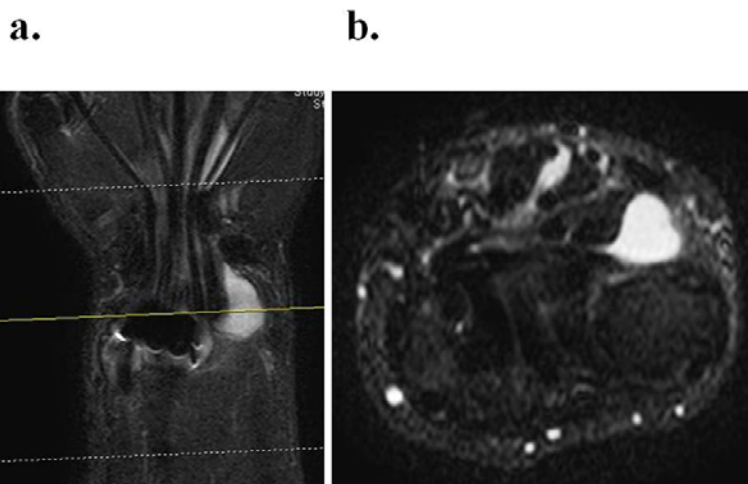
Radiographs of the wrist one year postoperatively

a. AP view b. Lateral view

Radiograph showing the prominence of the distal end of the plate. (White arrow)

Carpal tunnel syndrome was confirmed by nerve conduction tests with a delay of distal motor latency (7.42ms) and sensory nerve conduction velocity at wrist level (21.1m/s). Magnetic Resonance Imaging showed an occupational lesion at the ulnar side of the wrist and effusion was noted at the carpal tunnel (Fig.2).

Figure.2

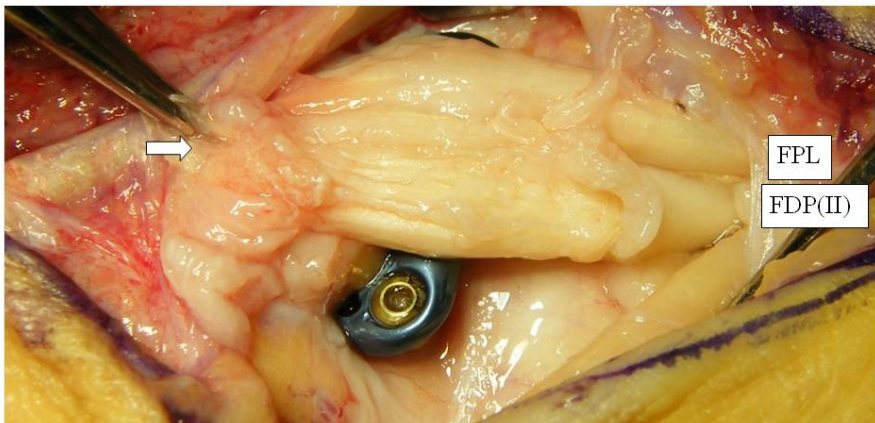


MRI of the wrist

a. STIR image (coronal view) b. STIR image (axial view)

The patient was diagnosed with carpal tunnel syndrome as a result of severe tenosynovitis after palmar plate fixation. During the carpal tunnel release surgery, serous fluid effusion was noted, with the tenosynovitis extending into the carpal tunnel. The FPL and FDP (II) tendon were lacerated severely at the distal plate edge (Fig.3).

Figure.3



Operative findings

The tumor like lesion (white arrow) around the flexor tendon, the abraded FPL and FDP (II) tendon.

The mass lesion was resected and the tendons were repaired after removal of the implant. Discomfort and the numbness had disappeared one year after surgery.

DISCUSSION

Volar locking plate fixation of distal radius fractures has become a common technique. However, tendon ruptures have been reported.^{1,2,5} A major factor has been reported to be implant prominence at the watershed line.⁴ But the sign of incomplete ruptures has not been identified easily. Therefore surgeons should avoid improper plate placement, loss of reduction, and screw head prominence.^{1,2,5} In our patient, the dorsal tilt was not adequately reduced. Additionally, the distally placed plate contributed to tenosynovitis and the subsequent severe laceration of the flexor tendons. She was operated for the severe tenosynovitis and the carpal tunnel syndrome. The severe laceration of the flexor tendons happened to be found at the intraoperative finding. There were no reports that occult laceration of the flexor tendons was found after the locking plate fixation. Some authors reported that tendon rupture might be prevented by plate removal in patients who complained of tendon irritation or tenosynovitis.^{3,6} In case of the prominence of the distal end of the plate, we should primarily concern the possible laceration of the flexor tendons. MRI is one of the useful imaging tests to confirm the synovitis around tendons. If the effusion was admitted at the wrist after the surgery, the early plate removal was desired.

SEVERE LACERATION OF FLEXOR TENDONS

This case stresses the importance of adequate plate placement and appropriate fracture reduction, when using a locking palmar plate. If tendon irritation or tenosynovitis occurs at the volar side of the wrist, early removal of the implant is advised to prevent tendon rupture.

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