Injury, Int. J. Care Injured 46 S7 (2015) S23–S27

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury

Case Report

Multiple ruptures of the extensor tendons after volar fixation for distal radius fracture: a case report

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KEYWORDS

fractures of distal radius
ruptures of tendons
open reduction internal fixation (ORIF)
secondary displacement
tendon transfer

ABSTRACT

A 62-year-old woman was admitted to our hospital after a bicycle accident with a displaced left (non-dominant) distal radius fracture. After closed reduction a long cast was applied. Due to loss of reduction, twenty-four days later open reduction internal fixation with locking compression plate (LCP) was performed. The patient returned to her normal activities but nineteen months after surgery showed functional impairment of the left thumb for Extensor Pollicis Longus (EPL) injury for which she necessitated transposition surgery. Twenty-six months after ORIF, functional deficit of the extension of the third and fourth left finger was noted secondary to injury of extensor tendons. Ultrasound and CT scan showed protrusion of the angular stability screws in LCP plate that caused a progressive wear resulting in rupture of the extensor tendons. Another tendon transposition surgery was performed with dorsal approach while the plate was removed utilising the original volar incision. Reconstruction of distal radius fractures with volar plating, requires accurate plate application with precise measurement of the length of the screws in order to prevent dorsal protrusion and thus avoiding tendon injuries.

Introduction

Distal radius fractures are the most common fractures of the upper extremity. These injuries demonstrate a bimodal distribution, with peak ages of 6 to 10 and 60 to 69 years of age.

Closed treatment of distal radius fractures is generally reserved for nondisplaced or displaced fractures that are reducible and stable. Surgical treatment is indicated for displaced and unstable fracture patterns and such devices have been used as external fixators, k-wires, plates and screws [1,2]. Irrespective of what device has been used, such post-operative complications have been reported as loss of reduction, implant failure, infection, stiffness and soft tissue irritation. In the herein study we present the development of late disruption of extensor tendons secondary to protruding metalwork from the previous volar plate fixation.

Case report

A 62-year-old woman was admitted to our hospital after a bicycle accident and having sustained a displaced left (non dominant) distal radius fracture (Figs. 1 and 2). The fracture was classified as B2 (AO/ASIF classification). Closed reduction was performed and a long cast was applied (Figs. 3 and 4). Three weeks after initial reduction follow up radiographs in the outpatient clinic revealed loss of reduction (Figs. 5 and 6), and open reduction and internal fixation (ORIF) was performed utilising a volar approach. The fracture was exposed using the flexor carpi radialis–radial artery interval. The brachioradialis muscle was not released and the pronator quadratus was reflected from the radius. The plate applied to the distal radius (Fig. 7) was secured with two bicortical screws proximally and an additional screw was placed distally. Four angular stability screws completed the reconstruction. The position of plate and screws as well as the restoration of volar tilt were assessed by fluoroscopic images. After surgery the wrist was immobilized in a cast for 10 days and then in a removable splint for 3 weeks. Follow up radiographs at 4 weeks confirmed good positioning of the plate and signs of healing (Figs. 8 and 9).

The removable splint was discontinued at 5 weeks when there was radiographic evidence of union of the distal radius fracture.

A short course of physiotherapy contributed to the restoration of a full range of motion seen by 10 weeks. The patient returned to her normal activities (dressmaker) but nineteen months after surgery, she developed functional impairment of the EPL of the left thumb (Fig. 10). She necessitated reconstructive surgery (transfer EIP to EPL). She had a good post-operative recovery. However, twenty-six months after original ORIF the patient appeared to have developed functional deficit of the extension of

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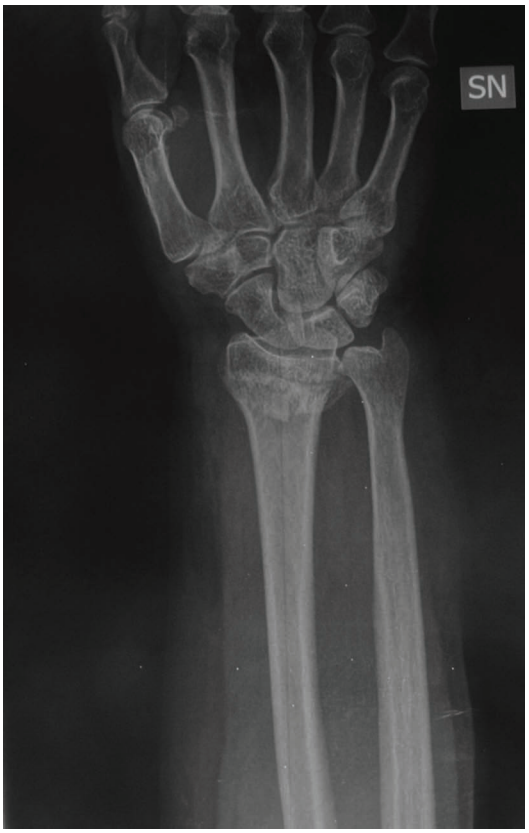

Fig. 1. Displaced left distal radius fracture.

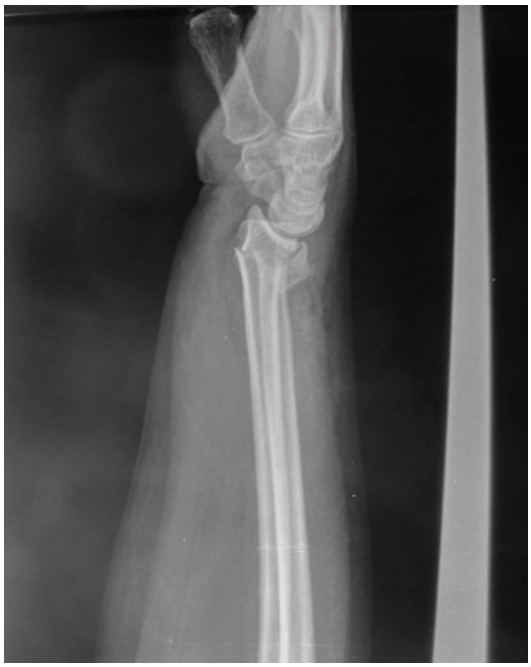

Fig. 2. Displaced left distal radius fracture.

the third and fourth finger of the left hand (Fig. 11). Ultrasound and CT scan (Figs. 12 and 13) showed dorsal protrusion of two angular stability screws that caused a progressive wear resulting in rupture of the extensor digitorum communis (EDC) III and IV tendons. Another tendon transposition surgery was performed (EDC III and IV tendons transfer respectively to EDC II and V tendons) with dorsal approach. At the same surgical setting the plate was removed using the previous volar incision (Figs. 14

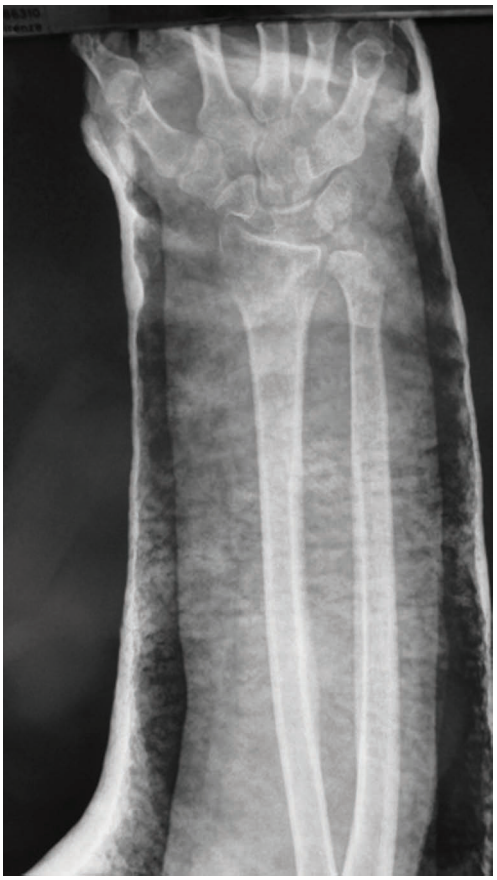

Fig. 3. Closed reduction and long cast application.

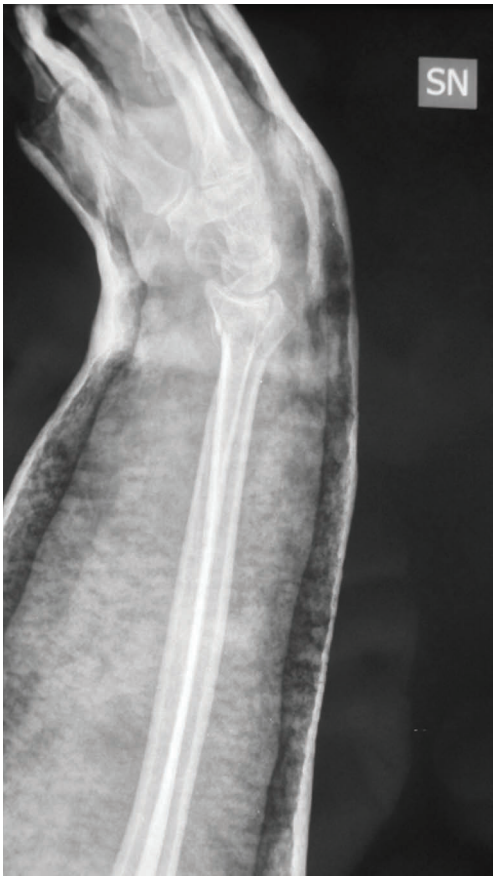

Fig. 4. Closed reduction and long cast application.