

Index Finger Extensor Spontaneous Rupture After 10 Year-Old Distal Radius Volar Plating

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Abstract

Volar locking plate osteosynthesis is the gold-standard osteosynthesis method in the operative management of distal radius fractures. It has the benefits of more stable fixation and fewer complications. Along with the increase in operative management by this method, the character and frequency of complications have changed. The most frequent complications are flexor pollicis longus and extensor pollicis longus tears. The authors describe the case of a 36 year-old woman with previous volar plate osteosynthesis of distal radius fracture 10 years ago and no other medical conditions, which presents with recent spontaneous index extensor tendon rupture. After imaging, screw protrusion in dorsal aspect of the radius is noticed and the ultrasonography reports rupture at the VII extensor zone. After surgical exploration and debridement, an index extensor tenodesis to the long finger extensor was performed. After 2 months, the patient has index finger full range of motion and strength. The orthopedic surgeon must be aware of distal radius volar plating osteosynthesis complications, how to prevent them and how to manage them, even if they appear years later.

Keywords: Bone Plates, Radius Fractures, Suture Techniques, Tendon Injuries, Tenodesis

Introduction

Distal radius fractures are the most common fractures seen in the emergency room, representing 16% of all adult fractures and 3% of all upper extremity injuries, and there has been an increase in the preference for surgical treatment for unstable or displaced distal radius fracture patterns. [1-4] Volar locking plates osteosynthesis are the gold-standard osteosynthesis method in the operative management of distal radius fractures. This technique has the benefits of a more stable fixation and fewer complications. [1-3] The multidirectional screws in a fixed-angle locking plate are designed to hold the plate without displacement until complete union. [1,2] Along with the increase in the operative management by this method, the character and frequency of complications have changed, reaching up to 36%, including surgical exposure and hardware-related errors, tendinous complications, inadequate reduction, and internal fixation. [1,2,4,5]

Case Report

Mechanical irritation from the volar plate, screws penetration of the dorsal cortex and dorsal plating can lead to tendon rupture. [3-5] The most frequent tendon complications are flexor and extensor pollicis longus rupture, up to 8,6%. [1-6] Rupture of the extensor digitorum communis and the extensor indicis proprius are rare. [3,4]

To minimize tendon complications, the plate should be placed just proximal to the watershed line, the dorsal cortex should be drilled and the screws correctly measured. [4-6] The Soong classification offers an organized approach to assess the position of volar locked plates on the distal radius, to lower the risk of tendon rupture. [3] It can be an important guide to screen for patients at risk of tendon injury following volar plating. [3]

The authors report the case 36 year-old active woman with previous volar plate osteosynthesis of distal radius fracture 10 years ago, which is unable to extend the index finger. The patient has neither history of recent trauma nor other medical conditions. On physical examination, she has full passive range of motion but no wrist tenodesis effect of the index finger. After imaging, screw protrusion in dorsal aspect of the radius is noticed and the ultrasonography reports rupture at the VII extensor zone.

Results & Discussions

She was submitted to direct dorsal exploration and volar approach for implant removal (Figure 1). After surgical exploration and debridement, extensor indicis proprius rupture and tendon degenerative changes were identified and an index extensor tenodesis to the long finger extensor was performed, as end-to-end repair was not possible (Figure 2). Immediate postoperative tenodesis effect was present with both wrist flexion and extension (Figures 3 and 4). She was immobilized 4 weeks with a volar splint in extension.

After that time, she could actively move her index finger and then she started physical rehabilitation (Figures 5 and 6). After 2 months, the patient has index finger full range of motion and strength and is satisfied with the final result. No unexpected complications have been noticed.



Figure 1: Direct dorsal exploration of the wrist.



Figure 2: Index extensor tenodesis to the long finger extensor.

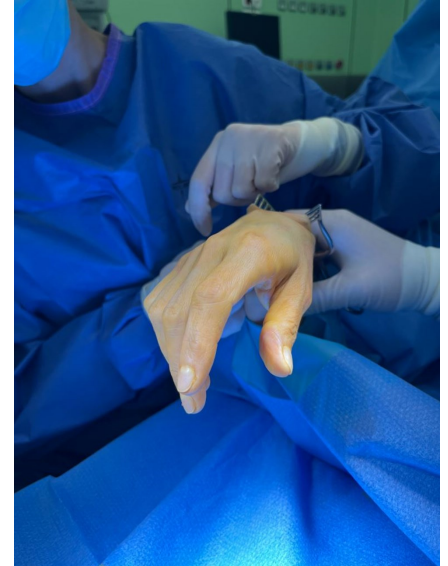


Figure 3: Tenodesis effect with wrist.



Figure 4: Tenodesis effect with wrist extension.



Figure 5: Post operative index extension.



Figure 6: Post operative index flexion.

Conclusion

This is an important case to remind the orthopedic surgeon about rare complications in distal radius volar plate osteosynthesis. This is a report of just one case of index finger extensor tendon rupture after distal radius volar plate osteosynthesis, managed by tenodesis to the next extensor tendon with good functional results.

Conflict of Interest

The authors declare that there is no conflict of interest.

Acknowledgement

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