

General

A case report: Surgical Release for De Quervain Syndrome after conservative treatment of distal radius fracture

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Objective

Describe the clinical and paraclinical characteristics of De Quervain Syndrome and the result of the surgery for De Quervain Syndrome after conservative treatment of distal radius fracture

Subjects and methods

A case report.

Results

De Quervain Syndrome is a condition that involves tendon entrapment affecting the first dorsal compartment of the wrist. It has been reported that De Quervain Syndrome can also develop after distal radius fracture. We report a case that the patient was diagnosed with De Quervain Syndrome after conservative treatment of distal radius fracture. During surgery we noticed that the patient had separated tendon sheaths for abductor pollicis longus (APL) and extensor pollicis brevis (EPB). EPB tendon sheath was released and reconstructed to prevent tendon subluxation. After 6 months, patient was feeling no pain and very satisfied.

Conclusions

De Quervain Syndrome development after distal radius fracture is rare. The successful surgery got the patient came back to work normally.

INTRODUCTION

De Quervain's syndrome is named after the Swiss surgeon Fritz de Quervain, who first described it in 1895. It refers to the thickening and inflammation of the tendon sheath of the abductor pollicis longus and extensor pollicis brevis tendons at the radial styloid process.¹ This situation causes these tendons to get stuck in the first extensor compartment. In addition to common causes such as activities that excessively use the thumb and wrist (typical patient being is a woman after childbirth), due to localized inflammation,² De Quervain's syndrome can also occur following a fracture of the distal radius.³ We report a case of a patient diagnosed with De Quervain's syndrome following a distal radius fracture. A male patient with a fracture of the distal radius treated conservatively presented with wrist pain after 6 months, particularly when flexing and extending the thumb. The pain was at the radial styloid process. The patient was examined and got an MRI, which indicated inflammation of the thickened tendon sheath of the extensor pollicis brevis. During surgery, we found that extensor

pollicis brevis tendon sheath was inflamed and thickened. We released then reconstructed the tendon sheath to prevent subluxation. Six months after the surgery, the patient no longer experiences pain, and their flexion and extension functions are good.

CASE REPORT

A case of a 19-year-old male patient who sustained a sports injury while playing football, falling on his outstretched hand in September 2023. The patient was diagnosed with a minimally displaced fracture of the distal radius at another hospital and was treated a cast for 3 months. After 6 months, the patient began to experience pain in the wrist, especially when flexing the thumb, primarily located at the radial styloid process. Medical treatment with painkiller did not help the patient with the pain. Clinical examination showed positive Finkelstein test and WHAT test. X-ray showed that the radius was completely healed. On MRI indicated inflammation of the extensor pollicis brevis tendon sheath. The patient was scheduled for surgery to release



Figure 1. X-ray of the Patient's radius

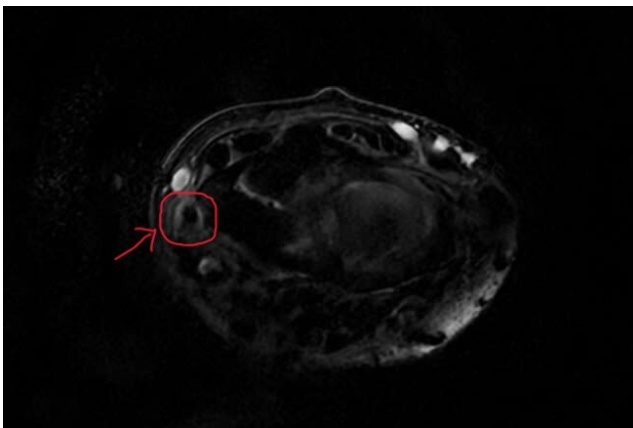


Figure 2. MRI indicated inflammation of the extensor pollicis brevis tendon sheath

the tendon in the first extensor compartment. The incision was 2 cm long, approaching directly above the first extensor compartment. During surgery, we found that the patient had anatomical variations with separated tendon sheaths for abductor pollicis longus (APL) and extensor pollicis brevis (EPB). The extensor pollicis brevis was constricted in the section by the thickened and inflamed tendon sheath. We released the EPB tendon and then reconstructed the tendon sheath to prevent subluxation. Six months after the surgery, the patient is pain-free, and the flexion and extension functions are good.

DISCUSSION

De Quervain's syndrome is primarily found in women, several times higher than in men, and is commonly seen in

two age groups: those of childbearing age and those in perimenopause.⁴ The condition can occur in patients who perform many repetitive movements using the thumb and wrist movements tilted towards the ulnar side.⁴ Our patient is a young male, with a normal job and lifestyle, doesn't have pressure on the thumb or the wrist of the right hand. There are cases that has been reported of De Quervain's tenosynovitis development after trauma. Finkelstein reported 6 cases in 1930⁶, while Lipscomb also reported a few patients with the onset of the condition in 1951⁴. The cause is believed that bleeding after injury caused the process of fibrosis, which lead to the narrowing of the tendon sheath.³

Fractures of the distal radius are one of the common bone injuries in the upper limb⁵ and can lead to several complications related to the surrounding soft tissues, typically including nerve damage, carpal tunnel syndrome, tendonitis, tendon rupture, infection, etc.⁵ Common tendon injuries including tendon rupture or tendon entrapment. Complications causing tendon tenosynovitis (De Quervain) is rare. In a 10-year retrospective study of 1,451 cases of distal radius fractures, Thomas J. Carrol et al³ indicated that only 41 (2.83%) patients developed De Quervain's syndrome within one year after injuries. 17 out of 41 those patients required surgery. All 17 patients who underwent surgery had separate extensor pollicis brevis sheath.

For treating De Quervain's tenosynovitis, patients can undergo conservative treatment by taking pain-killer and anti-inflammatory medication. Corticosteroid injection is considered as well. If symptoms do not improve after 6 months post-injection, surgery is the option presented to the patient.² The case of the patient who came to us had undergone medication treatment but had not received any injections. Clinically, there are signs of the EPB being stuck after flexing the finger. Recognizing that corticosteroid injections would be unlikely to improve the condition, the patient was advised to undergo surgery to release the EPB sheath.

According to Hiranuma,⁶ his classification for anatomical variations in the first compartments includes: Normal type of De Quervain disease (Hiranuma type I): APL and EPB run in the same sheath. Complete septation (Hiranuma type II): APL and EPB run in separate tendon sheaths. Incomplete septation (Hiranuma type III): APL and EPB run in separate tendon sheaths in only the distal portion. EPB-lacking type (Hiranuma type IV): Tendon sheath is normal but lacks EPB. In cases of anatomical changes with separate tendon sheaths, the inflammatory on the EPB sheath is often more severe than the APL sheath when detected via ultrasound.⁷ Intraoperative, we noticed the patient had type 2 Hiranuma's Classification, the EPB sheath was inflamed and thickened. We also believed that bleeding after injury caused the process of fibrosis, which lead to the narrowing of the tendon sheath as shown above.³ All the inflamed tendon sheath was excised, releasing the EPB. A few cases of tendon subluxation after De Quervain's release were reported by White,⁸ Renson,⁹ etc. Renson used the extensor retinaculum to create a graft fixation with 2 anchors to prevent subluxation. After excising all the tendon sheath, the EPB tendon was dislocated from the origin position with

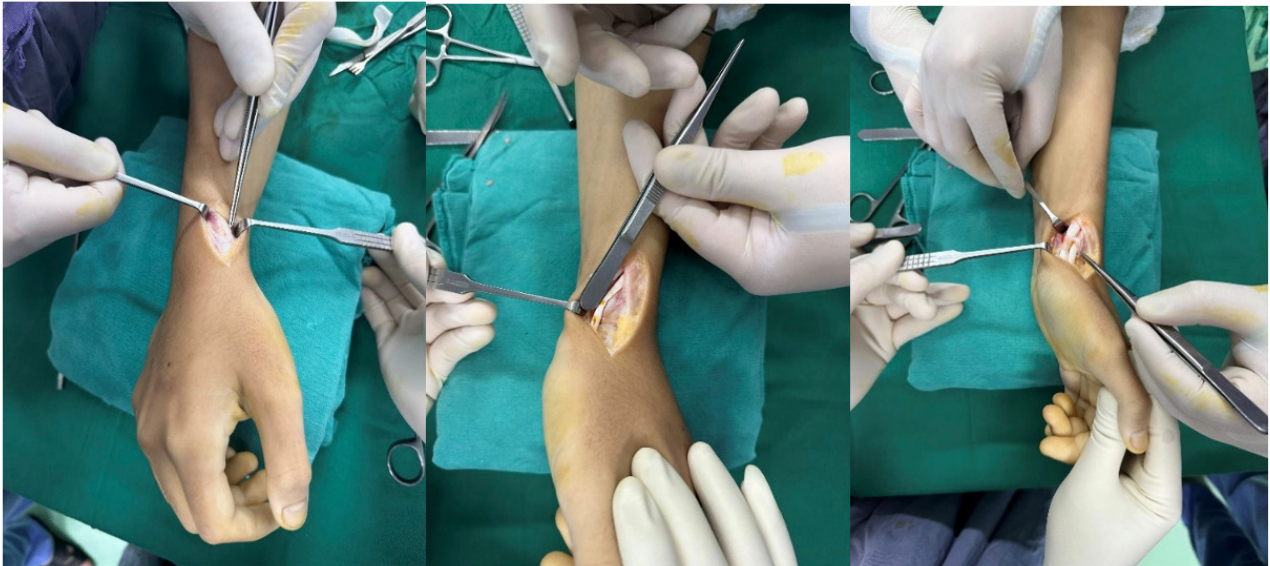


Figure 3. Released then reconstructed the EPB tendon sheath

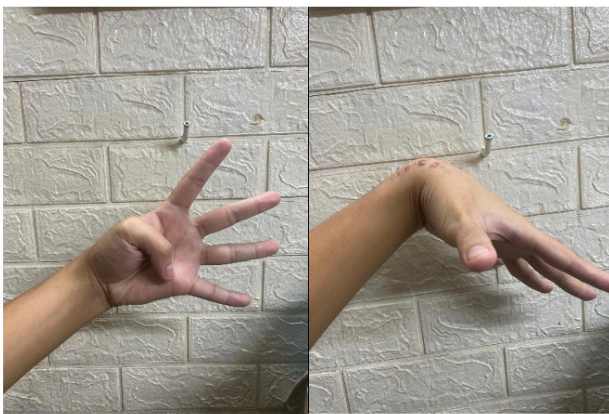


Figure 4. Normal hand function after surgery

the wrist hyperflexion and the thumb in abduction (WHAT test), we reconstructed the sheath using a Z-plasty graft by proximal half of the APL sheath. Finally, the stability of the EPB was aquired.

The patient was immobilized for 3 weeks with a removable forearm-thumb cast. We believe that at this time the

new sheath should be stabilizing, any early movements that could lead to instability. Follow-up after 6 months, the patient no longer had any pain, normally flexion and extension and there was no subluxation.

CONCLUSION

Fracture of the distal radius can lead to several complications such as tendon rupture, tendon entrapment, carpal tunnel syndrome, etc. Among these, the onset of De Quervain's syndrome following a distal radius fracture is rare, but this diagnosis should not be overlooked. The disease can be diagnosed through clinical examination and paraclinical. De Quervain's syndrome can be treated using both conservative and surgical methods. In cases where conservative treatment is not effective, surgery should be indicated for the patient. The results of the clinical case show that the surgery was successful, allowing the patient to return to their daily activities.

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SUPPLEMENTARY MATERIALS

Test after reconstructed the EPB tendon sheath

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test when the patient came to the clinic

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