Case Report

Variants of the first extensor compartment of the wrist: Failure of steroid injections for de Quervain’s Tenosynovitis.

Nur Azree Ferdaus Kamudin¹,², Parminder Gill Singh¹, Nur Azuatul Akma Kamaludin¹, Tan Jin Aun¹, Jamari Sapuan¹, Shalimar Abdullah¹

¹ Department of Orthopaedics, Faculty of Medicine, Universiti Kebangsaan Malaysia, Cheras, Kuala Lumpur, ² Faculty of Medicine, Universiti Sultan Zainal Abidin, Kuala Terengganu, Terengganu

n.azree.kamudin@gmail.com

Abstract

De Quervain’s tenosynovitis is a common cause of radial sided wrist pain and is described as an entrapment tendinitis of the tendons in the first extensor compartment. Physiotherapy and splinting are initial conservative treatment. Steroid injections are an effective treatment modality but may fail due to the anatomical variation in the first dorsal compartment of the wrist. We present a 39-year-old female who failed conservative treatment. She received a steroid injection, but symptoms resolved for 6 months only. We proceeded to surgery and noted three subcompartments consisting of one for the extensor pollicis brevis and two for the abductor pollicis longus as opposed to one extensor compartment. The steroid injection may have failed to infiltrate all the subcompartments resulting in treatment failure. General practitioners and surgeons must be aware of this variation if there are to provide effective treatment. Ultrasonographic guidance may be required for steroid injections in recalcitrant de Quervain’s disease.

Key words: De Quervain's tenosynovitis, variants in de Quervain's tenosynovitis, failure steroid injection


Date received: 2nd February 2019 Date accepted: 20th April 2019
Background
A Swiss surgeon, Fritz de Quervain, described the problem in 1895. De Quervain’s tenosynovitis is a painful irritation of the tendons on the thumb side of the wrist. De Quervain’s tenosynovitis affects the tendons of the first dorsal compartment. The lubricating sheath lining this tunnel thickens and swells, resulting in less room for the enclosed tendons to move. Adhesions may form the lining sheath and the tendons. Despite great interest in the condition, its etiology and pathology remain uncertain. In histopathology, de Quervain’s disease (DD) is not characterized by inflammation, but by thickening of the tendon sheath and most notably by the accumulation of mucopolysaccharide, an indicator of myxoid degeneration. These changes should be pathognomonic of DD. It has been suggested that DD is more likely a result of intrinsic, degenerative mechanisms rather than extrinsic, inflammatory ones.

It occurs most often in individuals between 30 and 50 years of age. It is 10 times more common in women. Repetitive activities requiring sideways movement of the wrist while gripping may predispose to developing this disorder. It commonly occurs in mothers with young infant due to a combination of overuse and hormone-related tendon swelling. This diagnosis is mostly based on the history and clinical examination. A positive Finkelstein’s test is usually diagnostic in these patients. The initial treatment is to fully rest the wrist for a 4 weeks period wearing a splint that immobilizes the wrist and thumb. In most cases, the area is also injected with a steroid as this is a strong anti-inflammatory agent and helps reduce the swelling. This usually takes 3 to 4 weeks to be effective. However, some patients develop a hypopigmented patch as a result of the steroid injection. After 4 weeks in a splint, the hand therapist will start a series of stretching exercises to regain movement without redeveloping the symptoms. If the symptoms are longstanding (more than 3 months) or conservative treatment has failed, surgery is indicated. In this case, we went in for de Quervain’s release and noted a variant anatomy leading to failure of conservative treatment.

At present, laboratory confirmation of dengue depend on demonstration of the presence of DENV by (a) isolation of DENV from patient serum, (b) detection of viral RNA by reverse transcription– polymerase chain reaction (RT-PCR), and (c) detection of dengue-specific antibodies (immunoglobulin M (IgM)/ G (IgG)) by using enzyme-linked immunosorbent assay (ELISA). Each method has its advantages and disadvantages that define criteria for their selection in different settings. No single diagnostic assay can accurately detect dengue throughout the acute and convalescence phases.

Case Report
We present a 39-year-old Malay female with bilateral wrist pain, the right side more severe than the left. She also has diabetes on diet control, asthma and gastroesophageal reflux disease with associated gastritis. Additionally, she is morbidly obese treated with sleeve gastrectomy and has bilateral carpal tunnel syndrome which failed conservative management and finally treated with bilateral carpal tunnel release.

The right-sided wrist pain was symptomatic for one year and limiting her daily activities associated with a mild swelling. She was on a splint and attended several physiotherapy sessions with different modalities. The pain did not resolve after physiotherapy. She was given an injection of triamcinolone acetonide but within 6 months the symptoms recurred. The left wrist has a similar pain but less so with no swelling. Examination of the right hand revealed radial sided fullness over the 1st extensor compartment with a hypopigmented patch on the first extensor compartment. Tenderness over the first extensor compartment was aggravated by flexion of the thumb. The Finkelstein test was positive. The left first extensor compartment is tender with no swelling but the Finkelstein test is also positive. Both hands had no neurovascular deficit. Radiograph of both hands and blood parameters were normal.

As she had failed all conservative treatment, we proceeded for surgical release under general anaesthesia. A 3-cm skin incision was placed over the prominent radial margin, the superficial radial nerve was identified and protected, which runs superficial to the first dorsal compartment. Along its dorsal margin, the first dorsal compartment was sharply opened longitudinally for approximately 2 cm and the tendons inspected. The tendons within were a tight fit with fibrotic changes. We noted that there were one extensor pollicis brevis and two abductor pollicis longus present in different sub-compartments (Fig 1).

Fig 1: The extensor pollicis brevis and the abductor pollicis longus in two separate compartments together with an additional abductor pollicis longus.

The separating subcompartments were released and tendons confirmed by gently moving the patient’s thumb distinguishing one tendon from the other (Fig 2). If a tendon glides with metacarpophalangeal (MCP) joint motion, it belongs to the extensor pollicis brevis. Adhesions between the tendons were released. Prior to skin closure, an injection of triamcinolone acetonide 1ml was given at the site.
Ultrasound-guided injection has an increased rate of accuracy with a success rate of 91% after up to two injections as highlighted by Hajder et al. In another study by McDermott, patients were injected not by general practitioners or surgeons but by the radiologist under ultrasound guide. Of their 42 wrists, 52% were noted to have multiple sub-compartments and 14% with symptoms recurrence all had sub-compartments. In retrospect, our team should have re-injected steroid in our patient under ultrasonography guidance to ensure that any sub-compartments of the first extensor compartment are adequately infiltrated before proceeding to surgery.

Conclusion :

There are numerous variations in the subcompartments of the extensor compartment in the wrists leading to possible failure of steroid injections. Ultrasonography guidance may be required for accurate steroid infiltration in the subcompartments before proceeding to surgery.

References
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