

## Physiotherapy vs Corticosteroid Injection as a First Line Conservative Treatment for De Quervain's Tenosynovitis

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### Abstract

### Original Research Article

**Background:** De Quervain tenosynovitis “mommy’s thumb” is a common disease that affects women more than men. The pain can result in decreased level of daily activity. Conservative treatment consists of physiotherapy, occupational therapy; use of orthotics, corticosteroid injection, with no one is superior to others. **Objective:** The aim of this study is to compare the outcome of two forms of conservative treatments for De Quervain tenosynovitis as a first line treatment. **Design:** A retrospective study was conducted at Princess Rashid Hospital in IRBID/ JORDAN. **Methods:** The files of 131 patients who has visited the PMR clinic and diagnosed to have De Quervain’s tenosynovitis in prince rashed hospital between 5/2018 and 9/2019 were reviewed. According to the files data, 74 patients’ files were eligible for the study according to inclusion criteria. The 74 files were divided into two groups, the group A included the patients who were treated with physiotherapy (active pain-free range of motion exercises, strengthening, tendon gliding, self administered friction massage and eccentric training exercises) in addition to thumb spica. The group B included the patients who were treated with one steroid injection (1 cc Betamethasone, 1 cc 1% lidocaine). The follow up was done after two months of treatment initiation. And the outcome was compared in the two groups. **Result:** 74 files were reviewed in this study. The mean age was 53,  $33 \pm 14$ , 01 (26-80). Of the 74 patients the males were 27 patients (36, 48%) with mean age of ( $55, 29 \pm 15$ , 02) and the females were 47 patients (63, 51%) with mean age ( $52, 21 \pm 13$ , 26). The group (A) (physiotherapy and thumb spica) was 45 patients (60, 81%). and the group (B) (steroid injection) was 29 patient (39, 18%). The patients in group A showed a non significant improvement in VAS pain score and in pressure pain threshold scale at two months evaluation after the treatment .from  $7,37 \pm 1,35$  to  $7.00 \pm 1.38$ ( $p>0.05$ )and from  $3,08 \pm 0,75$  to  $2,75 \pm 0,70$  ( $p>0.05$ ) respectively. Whereas The patients in group B showed a significant improvement in VAS pain score and in pressure pain threshold scale at two months evaluation after the treatment .from  $8,03 \pm 1,09$  to  $1.65 \pm 1.44$  ( $p<0.05$ )and from  $3,55 \pm 0,56$  to  $0,72 \pm 0,90$  ( $p<0.05$ ) respectively. **Conclusion:** We concluded that corticosteroid injection is more effective in treating. De Quervain’s tenosynovitis, and should be considered as an initial treatment.

**Keywords:** De Quervain’s tenosynovitis, Corticosteroid injection, Physiotherapy.

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## INTRODUCTION

De Quervain’s tenosynovitis (DQTS) is a common painful condition of upper limb. It was described as early as 1895 by Fritz de Quervain [1, 2]. It is considered the chief presenting complaint on initial visit of 8.3% of chiropractic patients [3]. With an incidence of 0.94 per 1,000 person-year [4]. DQTS is more in women than in men [4]. However, The highest prevalence of DQTS has been reported among subjects 30–55 years of age [5-7]. DQTS is a painful stenosing disease that affects the abductor pollicis longus tendon (APL) and the extensor pollicis brevis tendon (EPB) at the first dorsal compartment of the hand, leading to a difficult gliding of these tendon as a result of thickening

of the extensor retinaculum at the first dorsal (extensor) compartment of the wrist. Many De Quervain’s tenosynovitis has been described as a work-related musculoskeletal disorder caused by overuse and repetitive activities of the wrist and thumb [8]. However it may be caused by acute injuries, inflammatory diseases (rheumatoid arthritis), anatomical variations (intercompartmental septum), abnormalities of the first dorsal compartment, pregnancy, and nursing or lactating mother.

Although the name tenosynovitis indicates the presence of inflammatory process, Histopathological signs resembled to those of degenerative changes within

the tendon such as fibrocartilagenous metaplasia, deposition of mucopolysaccharide [9, 10]. And neovascularization [11]. A patient generally complaining of wrist pain over the first dorsal compartment, which lies above the styloid process of the radius, and it is aggravated by lifting objects or when doing ulnar deviation of the wrist. The pain is sharp and debilitating making daily activity become hard. Diagnosis is always made by Finkelstein's Test which is more accurate and more specific than Eichhoff's tests [12].

Differential diagnoses of De Quervain's tenosynovitis includes the following: nerve entrapment, radiculopathy, C6 cervical radiculitis/radiculopathy, osteoarthritis, Keinbock disease (osteonecrosis of the lunate), dorsal ganglion of the wrist, conservative treatment include local steroid injection, physiotherapy, splints, massage, ice, heat with ultrasound, lasers therapy, casting with rest and immobilization. Acupuncture. But there is no consensus about the treatment of De Quervain's tenosynovitis. Avci *et al.* has found the local steroid injection is superior to another treatment. Also peters-veluthamaningal *et al.* has found that corticosteroid injection is more effective than other treatments [13, 14]. Inversely, Alon Rabin *et al.* have found physiotherapy was successful and comparable to the success rate of corticosteroid injection [15].

The aim of this study is to investigate the Physiotherapy Vs Corticosteroid injection as a first line conservative treatment of De Quervain's disease.

## PATIENTS AND METHODS

### Ethics

This retrospective study was conducted at Prince Rashid Hospital/ Royal Medical Services (RMS) in IRBID/ JORDAN. And was approved by the ethical committee of the RMS.

### Patients

The files of 131 patients who has visited the PMR clinic and diagnosed to have De Quervain's tenosynovitis in prince rashed hospital between 5/2018 and 9/2019 were reviewed. According to the files data, 74 patients' files were eligible for the study according to inclusion criteria which was pain over the radial side of wrist, sharp tenderness over the 1<sup>st</sup> dorsal compartment, positive Finkelstein's test and normal wrist x-ray to rule out any other cause for the pain. Exclusion criteria were patients with chronic medical illness (such as gouty arthritis or rheumatoid arthritis or renal failure or DM), pregnant patient, preceding wrist surgery, history of previous steroid injection for the treatment of de Quervain's tenosynovitis within last six months.

The 74 files were divided into two groups, the group A included the patients who were treated with

physiotherapy (active pain-free range of motion exercises, strengthening, tendon gliding, self administered friction massage and eccentric training exercises) in addition to thumb spica. The group B included the patients who were treated with one steroid injection (1 cc Betamethasone, 1 cc 1% lidocaine). The follow-up was done after two months of treatment initiation.

The success of treatment was defined as complete resolution of the symptoms and the patient did not seek any further medical advice. While failure of treatment was defined as persistence of symptoms and seeking for further medical advice.

The information about VAS (Visual Analogue Scale) and pressure pain threshold scale at first visit and after two months follow up was extracted from the patient's files.

The VAS pain score (0–10 : 0 = no pain, 10 = very severe pain) and the pressure pain threshold scale was grade 0 no pain, grade 1 mild pain, grade 2 moderate pain, grade 3 sever pain, grade 4 noxious intolerable pain.

### Intervention

All injections were performed by the same PMR doctor. Using the same technique. A mixture of 1 ml (2 mg) of Betamethasone and 1 ml of 1% lidocaine hydrochloride was used for injection. And all the physiotherapy session (active pain-free range of motion exercises, strengthening, tendon gliding, self administered friction massage and eccentric training exercises) were done by the same expert physiotherapist. And all the thumb spica also was done by the same occupational therapist.

All analyses were performed using the SPSS (Statistical Package for Social Sciences) Version [19]. A value of  $P < 0.05$  was considered significant. Data are presented as the Mean  $\pm$  SD.

## RESULT

74 files were reviewed in this study. The mean age was 53,  $33 \pm 14$ , 01 (26-80). Of the 74 patients the males were 27 patients (36, 48%) with mean age of (55,  $29 \pm 15$ , 02) and the females were 47 patients (63, 51%) with mean age (52,  $21 \pm 13$ , 26).

The group (A) (physiotherapy and thumb spica) was 45 patients (60, 81%). and the group (B) (steroid injection) was 29 patient (39, 18%).

The patients in group A showed a non significant improvement in VAS pain score and in pressure pain threshold scale at two months evaluation after the treatment .from  $7.37 \pm 1.35$  to  $7.00 \pm 1.38$  ( $p > 0.05$ ) and from  $3.08 \pm 0.75$  to  $2.75 \pm 0.70$  ( $p > 0.05$ ) respectively.

Whereas The patients in group B showed a significant improvement in VAS pain score and in pressure pain threshold scale at two months evaluation after the treatment .from  $8,03 \pm 1,09$  to  $1.65 \pm 1.44$  ( $p<0.05$ )and from  $3,55 \pm 0,56$  to  $0,72 \pm 0,90$  ( $p<0.05$ ) respectively.

## DISCUSSION

There are several treatment options for De Quervain's tenosynovitis.the most common are physiotherapy with using of thumb spica and the steroid injection with or without using thumb spica. But there is still no definite consensus about which treatment is superior over the other or which to start with. Alon et al has found that Physiotherapy Management of People Diagnosed with de Quervain's tenosynovitis was considered successful for three of four patients, and comparable to the success rate previously reported for corticosteroid injections (15). On the other hand, many studies have described the high cure rate of steroid injection when compared to other modalities. One literature review has found a 83% cure rate with steroid injection alone when compared to other treatment [16-19].

Our study supports the superiority of steroid injection over other treatments. We have compared the cure rate of steroid injection to physiotherapy. A few patients have mild side effect such as temporary pain, and change in skin color (hypo pigmentation), but it was resolved over a short time. The recurrence rate also was minimal and 5% were planned to a second injection.

In addition, we didn't found any relation between the occurrence of De Quervain's tenosynovitis and the age of patients. As the age range was variable in our study and included young and old ages.

Fortunately, we didn't observe any complication such infection or tendon rupture in our patients as these complications are rare.

Surgery is the last option for treatment for De Quervain's tenosynovitis. And should not be considered as first line treatment, as it is more invasive and more costly, and associated with more complication. Cyriac Peters-Veluthamaningal *et al.* found that local steroid injection is effective and alternative to surgical therapy, and should be considered as a first line treatment for De Quervain's tenosynovitis [20].

Our study limitation is the short term follow-up, and we need to try many types of corticosteroid in order to determine which one is more effective than the other.

## CONCLUSION

We concluded that corticosteroid injection is more effective in treating. De Quervain's tenosynovitis. And should be considered as an initial treatment.

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