

Outcome Of Intra-Sheath Steroid Injection For De Quervain's Tenosynovitis

D Shivanna, D Manjunath, L Holagundi, M Kumar HV

Citation

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Abstract

Introduction: De Quervain's tenosynovitis is a stenosing tenosynovitis of the first dorsal compartment of the wrist and leads to wrist pain along with impaired function of the wrist and hand. Various modalities of treatment include plinting, local corticosteroid injection and surgical decompression. In this prospective study the effectiveness of local corticosteroid injections for de Quervain's tenosynovitis was assessed.

MATERIAL & METHODS: Sixty patients with de Quervain's tenosynovitis with no response for oral and local NSAIDs were included. The severity of tenderness on first dorsal compartment and pain felt on Finkelstein test was recorded on Visual Analogue Scale. A mixture of 1 ml of methylprednisolone and 1 ml of 1% lidocaine hydrochloride was injected into the first dorsal compartment of the involved wrist. Patients were followed for clinical assessment fortnightly for 6 months. Outcome was assessed by reduction of pain according to visual analogue scale.

RESULTS: Out of 60, forty five patients (75 were symptom-free %) after the 1st injection at two weeks, fifteen patients who showed no improvement were given second injection two weeks after the first. At six weeks 58 (97%) patients were symptom-free and fully satisfied with the results. We found no recurrence in these patients after 1 year of follow-up. The two failed patients underwent surgery for release of the first dorsal compartment and were symptom-free at the 1 year follow up. Adverse reaction the steroids were seen in 10/60 (16%) of the patients, which subsided in 20 weeks. There was no incidence of nerve injury, tendon rupture, or infection.

CONCLUSION: We conclude that one or two local steroid injections in the first dorsal compartment leads to significant improvement in patients with de Quervain's tenosynovitis.

INTRODUCTION

De Quervain's tenosynovitis is a condition of the wrist that can lead to morbidity of the affected hand. It is caused by impaired gliding of the tendons of the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) muscles¹. This is most probably caused by thickening of the extensor retinaculum (the thickened part of the general tendon sheath that holds the tendons of the extensor muscles in place) of the wrist.

Fritz de Quervain's, a Swiss physician, is given credit for first describing this condition with a report of five cases in 1895 and eight additional cases in 1912^{2,3}. The term stenosing tenosynovitis is a misnomer because the pathophysiology of de Quervain's disease does not involve inflammation since on histopathological examination mainly degenerative changes such as myxoid degeneration, fibrocartilagenous metaplasia and deposition of

mucopolysaccharide are seen⁴.

The diagnosis is mainly clinical, made by history and physical examination. Symptoms consist of pain at the radial styloid sometimes radiating to the thumb, forearm or shoulder and on physical examination there might be swelling at the radial styloid with tenderness and crepitations on palpation. Finkelstein's test (deviation of the wrist to the ulnar side, while grasping the thumb, results in pain) is in typical cases positive⁵.

In a large community based study from the United Kingdom, the prevalence of de Quervain's tenosynovitis was 0, 5% for men and 1, 3% for women⁸. It was associated with considerable impact on daily activities and health seeking behavior. The prevalence and incidence of patients with de Quervain's tenosynovitis in primary care are not known. de Quervain's tenosynovitis can be treated by operative and

non-operative treatment. There is no consensus in the management of this condition¹³. It has been reported that treatment modalities like, rest massage, cold and heat applications, diathermy, splints and counter irritants, are not effective in this condition¹. Non surgical management involving bracing, physical therapy, and thumb spica cast are not rewarding. Local steroid injection has shown good promise, the effectiveness of injection therapy is often attributed to anti-inflammatory effects of corticosteroids but the exact mechanism of action remains unclear.

In a systematic review of effectiveness of corticosteroid injection for de Quervain's tenosynovitis that included seven observational studies (with totally 459 wrists), 83% of the 226 wrists that received injection alone were cured, 61% of the 101 wrists that received injection and splint immobilization were cured and only 14% of those who received splinting alone were cured¹².

In resistant cases, surgery is performed to release the first dorsal compartment of the wrist¹⁴. Surgery (dividing or excising a strip of the covering sheet of tendon) has been reported to be curative in 91% of patients, but it has been associated with higher costs and sometimes-surgical complications¹⁵. The lack of data regarding effectiveness of local corticosteroid injections prompted us to design this descriptive study to evaluate effectiveness of local steroid injections for de Quervain's tenosynovitis.

MATERIALS

A prospective study was done in Bangalore Medical College and Research Institute from august 2012 to march 2014. A total of 55 cases of de Quervain's tenosynovitis were included in the study. Patients with failed treatment with oral and local NSAIDs were included, on physical examination tenderness was noticed in and around the radial styloid (first dorsal compartment of wrist). Finkelstein test was positive in all patients. The severity of pain was noted on Visual Analogue Scale, (VAS 0-10), with 0 no pain, 1 to 3 as mild, 4 to 6 as moderate and 7 to 10 as severe pain. The exclusion criteria were age less than 18 years, evidence of diseases like rheumatoid arthritis, gout, diabetes mellitus, and pregnancy and previous history of trauma and steroid injection in the region.

Injection technique: under aseptic conditions, the affected tendon sheath was injected with a combination of 40 mg (1 ml) of methylprednisolone (and 1 ml of 2% plain lignocaine HCL at one point along the line of the tendon, just proximal or distal to the styloid, at the site of maximum tenderness.

The identical protocol was repeated for every patient. All the patients were followed at 1st, 2nd, 3rd and 4th weeks. At every follow up visit, they were assessed for improvement in wrist pain using Visual Analogue Scale questionnaire. Patients with unsatisfactory improvement (VAS 6-7) at 2nd week were injected again. No more than two injections were given to any patient. The patients were followed up for 1 year. Adverse reactions like local skin depigmentation and fat atrophy was noted.

RESULTS

Out of a total of 60 patients, 25 (42%) were men and 35 (58%) were women. The age ranged between 20 to 60 years. (mean age was 35 years). The right hand was affected in 34 (57%) and the left in 26 (43%) of the patients. The dominant hand was affected in 42 (70%) of the patients. The mean duration from the onset of symptoms to enrolment for this study was 6 weeks (range 4 weeks to 8 weeks). At the start of study the severity of pain on 10 VAS was recorded. Thirty-three had VAS score 8, fifteen patients had 6 and twelve patients had 4. Out of 60, fifteen patients were given second injection two weeks after first as they claimed no response. Forty-five patients (75%) were symptom-free after single injection. The patients were called every two weeks after the injections. At six weeks 58 (97%) patients out of 60 patients were symptoms free and fully satisfied with the results with negative Finkelstein test. We found no recurrence in these patients after 1 year of follow-up. The two failed patients with persistent pain and tenderness with positive Finkelstein test underwent surgery for release of the first dorsal compartment and were symptom-free at the 1 year follow up.

Adverse reactions from the steroids were seen in 10/60 (16%) of the patients but were transient. Temporary pain at the site of injection was reported by 3 (5%) patients, which subsided in 4 to 10 days. Local area of depigmentation was seen in 5 patients and atrophy of subcutaneous fat was observed in 2 patients. These changes reversed in around 20 weeks of time. There was no incidence of nerve injury tendon rupture or infection.

DISCUSSION

Since de Quervain's [3] reported pain along the radial styloid process caused by impaired tendon gliding in the first dorsal compartment of the wrist in 1895, there have been many reports on its clinical features and treatments. We performed intra-sheath injections of methylprednisolone for patients with de Quervain's disease and the efficacy rate was

97% in this study.

High level of success has been reported for local steroid injection in various studies. Richie and Eriner reviewed seven papers and concluded that local steroid injection is effective in 83% of patients. This cure rate was 61% for patients receiving injection and splint, and 14% for patients with splint only and it was 0% for those receiving rest or non-steroid anti-inflammatory drugs. It was found to be the most effective and successful treatment for this condition. In their analysis it was noticed that 327 wrists were injected and followed up for 9.6 months and no tendon rupture was found¹². Another study in Portland treated fifty-six cases of de Quervain's tenosynovitis (in 55 patients) with a "long-acting" corticosteroid, methylprednisolone acetate, and followed prospectively over a 4-year period. Approximately 90% of these patients were effectively managed either with a single injection (58%) or with multiple injections (33%) of this compound¹⁶. A recent Cochrane review found one controlled clinical trial by Avci of 18 participants (all pregnant or lactating women) that compared one steroid injection with methylprednisolone and bupivacaine to splinting with a thumb spica¹⁰. All patients in the steroid injection group (9/9) achieved complete relief of pain whereas none of the patients in the thumb spica group (0/9) had complete relief of pain.

McDermott JD et al, (2012) reported that at 6-week follow-up, 36 of the 37 wrists checked in 36 patients (97%) had relapse of symptoms. However 14% of the patients had recurrence of symptoms. No complications were noted¹⁷. This is in contrast to this study where we observed different complications in 16% of cases, this may be due to the comparatively prolong follow-up of 1 year in contrast to study of McDermott JD et al, where it was 6 weeks only.

Steroid injections may have adverse side effects e.g. pain at the injection site and skin hypo-pigmentation. These effects are transient. It is recommended that before starting the treatment the patients should be informed about these side effects.^{18, 19}. In our study we injected steroid blindly at one point and at the site of maximum tenderness while Kamel and Moghazy treated twenty one patients with the ultrasound guided steroid injections and documented that a significant decrease in the thickness of the tendon sheath was seen one week after the local corticosteroid injection, complete relief of symptoms and signs was further observed at 6 and 12 weeks. The VAS 0–10 scale and hand grip strength were significantly improved after the local injection ($p < 0.001$).²⁰

Similarly Jeyapalan and Choudhary also reported significant symptomatic relief (93.75%) with ultrasound-guided intrasynovial injection in de Quervain's disease. They concluded that ultrasound-guided injection of triamcinolone and bupivacaine is safe and useful in controlling symptoms of De Quervain's disease.²¹ Contrary to our one point injection technique, Sawaizumi reported that intra-sheath triamcinolone injection in the treatment of de Quervain's disease had an efficacy rate of 89%, with the treatment results of the two-point injection better than those of the one-point injection and concluded that accurate injection of triamcinolone into the sheath of both the extensor pollicis brevis and abductor pollicis longus tendon was considered very effective for de Quervain's disease.²² Similarly Pagonis and Ditsios reported that injections at 4 separate sites in the first dorsal compartment showed a higher response rate in high-resistance training male athletes than injections at 2 sites.²³

But the 2 or 4- point injection technique is additionally painful and the landmarks for accurate placement of the corticosteroid injection are not clearly visible. Our results have been excellent. However, we feel that with a larger case series, a longer follow up and refinement of the procedure, a fair conclusion can be drawn with regard intra-sheath steroid.

CONCLUSION

In this study effectiveness of intra-sheath corticosteroid injections for de Quervain's tenosynovitis was assessed and it was found that treatment of de Quervain's tenosynovitis with methylprednisolone injection rapidly controls the signs and symptoms. We conclude that one or two local steroid injections in the first dorsal compartment leads to early improvement in patients with de Quervain's tenosynovitis

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Author Information

Deepak Shivanna

Department of Orthopedics Bangalore Medical College And Research Institute
Bangalore, India
drdaynand.m@gmail.com

Dayanand Manjunath

Department of Orthopedics Bangalore Medical College And Research Institute
Bangalore, India

Lokesh Holagundi

Department of Orthopedics Bangalore Medical College And Research Institute
Bangalore, India

Manoj Kumar HV

Department of Orthopedics Bangalore Medical College And Research Institute
Bangalore, India