

Original Research Article

Intra sheath corticosteroid injection for De Quervain's tenosynovitis

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ABSTRACT

Background: De Quervain's disease or stenosing tenosynovitis of the first dorsal compartment of the wrist is a common condition, which affects the Abductor pollicis longus and the extensor pollicis brevis tendons. There are characteristic signs and symptoms including a positive Finkelstein's test. Different options for treatment include conservative approaches like analgesics, splinting and physical therapy. If conservative options fail then steroid injection is considered.

Methods: This is a retrospective study of single dose intra-sheath triamcinolone and lignocaine injection in 32 patients at our institute who were followed up for a period of 12 months.

Results: In our study there were 25 females and 7 males with a mean age of 46.4 ± 8.03 years. Right side was involved in 17 patients and left side in 15 patients. The pre procedure VAS score was 8.65 ± 1.07 . The follow up VAS scores at 1, 6 and 12 months respectively were 1.4 ± 1.14 , 0.84 ± 1.06 and 1.03 ± 1.26 respectively. 4 out of 32 patients had positive Finkelstein's test at 1 year follow up. Common complications were pain at injection site, which was seen in 5/32 patients and depigmentation seen in 2/32 patients.

Conclusions: Thus intra sheath triamcinolone injection is a safe and effective procedure for treatment of De Quervain's disease.

Keywords: De Quervain, Steroid injection, Intra sheath triamcinolone, Failed conservative

INTRODUCTION

De Quervain's disease is a condition affecting wrist causing significant morbidity, first described by Swiss physician De Quervain by reporting five cases in 1895 and later eight cases in 1912.^{1,2} It is defined as stenosing tenosynovitis of the synovial sheaths of abductor pollicis longus and extensor pollicis brevis.³ It is caused by overuse and repetitive activities of wrist in ulnar deviation, extension and abduction of the thumb. This compartment at the radial side of the wrist containing the two tendons, abductor pollicis longus and extensor pollicis brevis are affected by inflammation and thickening of the sheath, causing impaired gliding of these tendons in the narrow and constricted fibro-osseous

compartment.⁴ It may be associated with rheumatoid arthritis or pregnancy.⁵ The histopathological examination shows mainly degenerative changes like myxoid degeneration, fibrocartilagenous metaplasia and deposits of mucopolysaccharide.⁶

The diagnosis can easily be made out by history and clinical examination. The main presenting symptom is pain at the radial styloid and on examination swelling, induration is noted at the radial styloid. Tenderness and crepitus is noted on palpation. Finkelstein's test is typically positive.⁷ Finkelstein's test is done by passively ulnar deviating the wrist holding the thumb. Severe local pain is considered as positive.

There is no consensus in the management of De Quervain's disease. The treatment modalities include non-surgical and surgical methods. Among the non-surgical treatment bracing, physical therapy, thumb Spica and local corticosteroid injection are most effective. There is no consensus for best immobilization method. Some authors due to the presence of inflammation had advised full time splinting or cast application for 4-6 weeks, and rest for 4-6 weeks will reduce inflammation and eventual symptomatic relief from pain. In a systematic review involving seven observational studies done by Richie et al showed a success rate of 83% with corticosteroid injection alone, 61% with corticosteroid injection along with splinting of the wrist and only 14% success rate with immobilization of the wrists in splinting alone.⁸ Surgery involves release of the first dorsal compartment of the wrist and dividing or excising a strip of tendon sheath. 91% success rate has been reported with surgical release but has been associated with higher cost and surgical complications.⁹ The complications associated with surgery are tendon injury, superficial radial nerve injury and infection. We describe the intra-sheath injection of triamcinolone acetonide for the treatment of De Quervain's disease and present the clinical outcomes.

METHODS

32 consecutive patients who underwent triamcinolone injection for De quervain's disease between May 2016-May 2017 at the Saveetha Medical College Hospital, Chennai were taken up in this study. All patients underwent a plain X ray to rule out fractures and other causes of secondary tenosynovitis

All these patients had tried oral analgesics, physiotherapy and splinting for a period ranging from 4 to 6 weeks. All had persisting pain, swelling, tenderness, in and around the radial styloid (first dorsal compartment of the wrist). All patients had positive Finkelsteins test. The severity of the score is noted in visual analogue scale (VAS 0-10).¹⁰ 0-no pain, 1-3 mild pain, 4-6 moderate pain, 7-10 as severe pain The exclusion criteria were patients aged below 18 years, with associated diseases like gout, rheumatoid arthritis, carcinoma, pregnancy, previous history of injury to the wrist and history of having undergone steroid injection for the De Quervain's disease.

Injection technique

Main author using the same technique performed single injections. 1 ml of triamcinolone and 1 ml of lidocaine hydrochloride solution were used for injection. Lidocaine solution is added as it prevents the immediate pain symptom following triamcinolone injection.

Procedure is done under aseptic precaution, the site of maximum tenderness and induration is noted. 27-gauge needle is used, it is passed parallel to the tendon directing

proximally towards the styloid process. While injecting, the stretching of the sheath due to volume effect is noted as a positive sign of proper placement of the needle. If the stretching does not happen then the needle is withdrawn and repeated till the stretching of the sheath is noted.

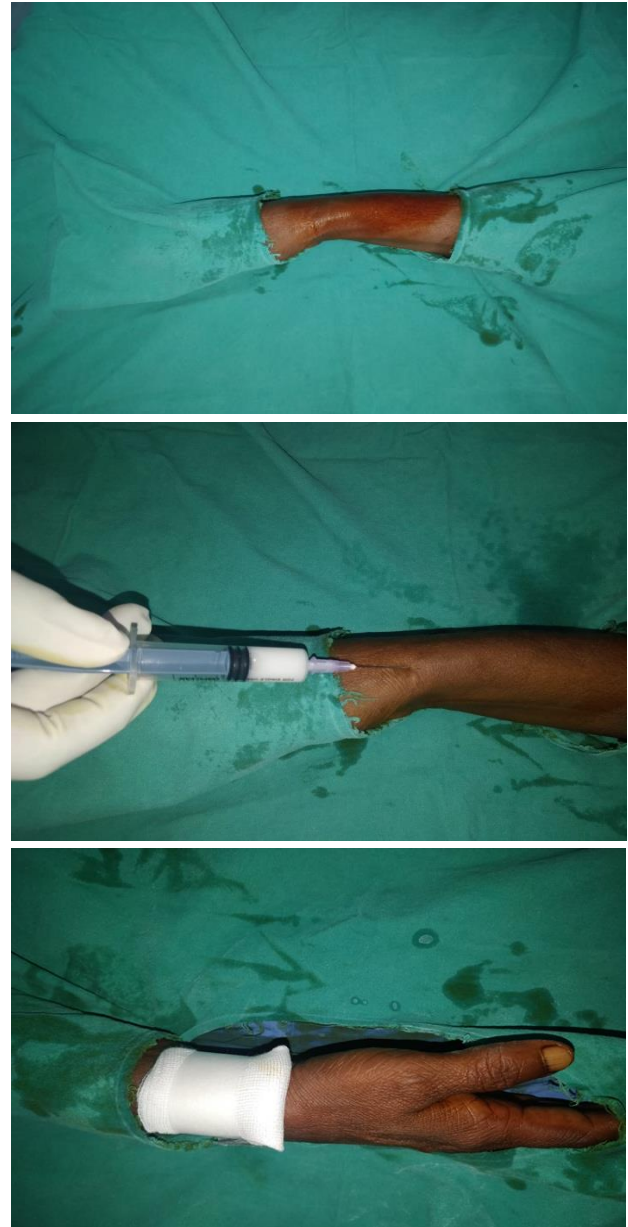


Figure 1: (A) Preparation for injection; (B) Injection into the sheath; (C) Post injection dressing.

Post injection patient is followed on 1, 6 and 12 months to assess the wrist pain by VAS score and Finkelsteins test. Treatment is considered successful if the VAS score is below 4 and negative Finkelsteins test and it is considered failure if VAS score is 4 and above and positive Finkelsteins test.

Further patient is followed up for 1, 6 and 12 months. All statistical analyses were performed using Microsoft Office (Microsoft, USA).

RESULTS

Out of 32 patients 25(78%) were female and 7 are male (22%). Average age of the patients is 46.40 ± 8.03 , ranging from 33 years to 60 years. Right hand was affected in 17 patients (54%) and left hand is affected in 15 patients (46%). Dominant hand is affected in 22 patients (70%).

Visual analogue scale score noted pre injection (8.65 ± 1.07) showed score of 10 in 9 patients, rest of the patients ranged from 7-9.

The VAS reduced 1.40 ± 1.14 in the immediate post injection phase. In the 6 months and 12 months post injection measurements the VAS was to 0.84 ± 1.06 and 1.03 ± 1.26 respectively.

In 4 patients out of 32 patients developed recurrence of symptoms with either positive finkelsteins test or a VAS score of 4 and above. 28 patients showed no recurrence at one-year follow-up. Overall the success percentage is 87.5%.

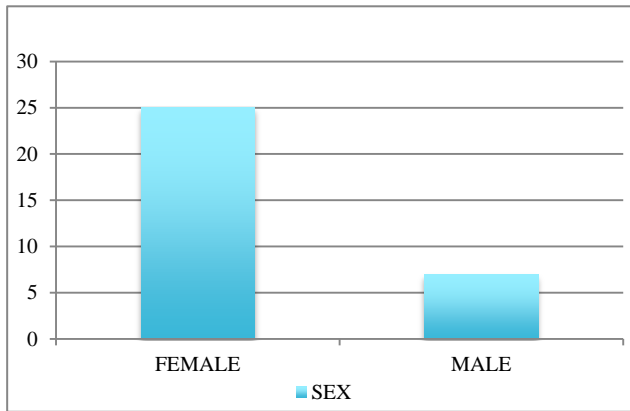


Figure 2: Sex distribution.

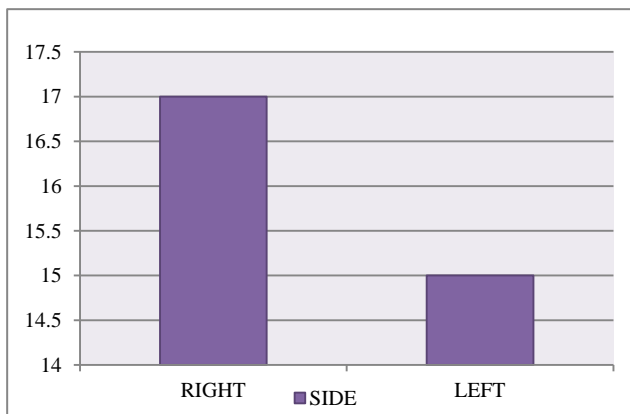


Figure 3: Side distribution.

There was no statistical correlation between side affected, Sex of the patient and poor outcomes ($p=0.65, 0.62$) respectively.

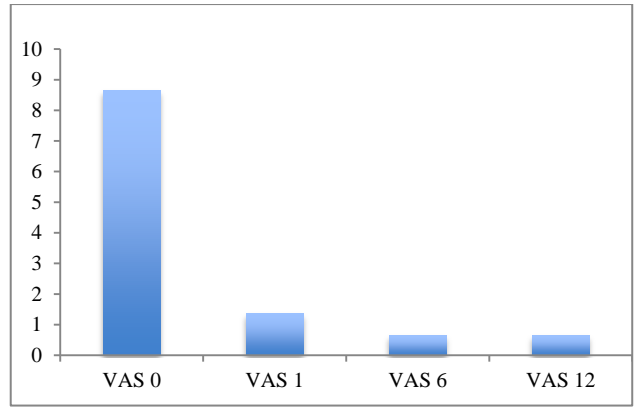


Figure 4: VAS scores.

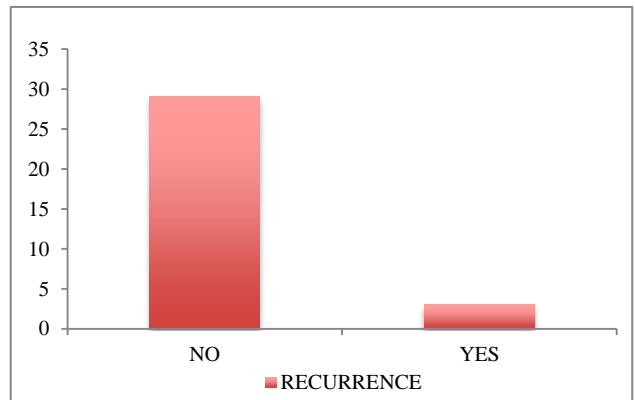


Figure 5: Recurrence.

Complications

Immediate side effect noticed at injection was pain in 5 patients, which resolved in 3-5 days. Serious complications like superficial radial nerve injury, infection, and tendon injury are not seen. Depigmentation of skin at injection site was noticed in 4 patients, which resolved in 6 months.

DISCUSSION

De Quervain’s disease first reported in 1895, since then lot of reports are made on clinical features, clinical test and treatment procedures. The first dorsal compartment which consists of extensor pollicis brevis and abductor pollicis longus are swollen, indurated and most of the tenderness is noted around the radial styloid. Variation in anatomy of the first compartment had been reported which include a separate synovial compartment or septa containing the extensor pollicis brevis tendon. In our study females formed 78% and the dominant hand is involved in 70% of the patients, which are comparable with the other studies. The common non-operative treatment of De Quervain’s disease consists of bracing, casting, anti-inflammatory drugs, and modification of wrist activities, corticosteroid injection and physical therapy.¹¹

Kitti et al reported results of De Quervain's disease treated by single injection of triamcinolone and compared with single injection of triamcinolone injection with supplemental nimesulide drug. He found supplemental oral administration of non-steroidal anti-inflammatory drug nimesulide did not improve the effectiveness of a single injection of triamcinolone acetone in the treatment of De Quervain's disease. He reported a success rate of 67% in non-nimesulide group and 68% in nimesulide group. Further he noted that patients with crepitation in the first dorsal compartment during thumb extension or abduction are at an increased risk of recurrence of the disease.¹²

In a study done by Froimson, surgical treatment was given as primary option without considering the conservative line of treatment due to its shorter treatment period and reduced recurrence rate.¹³ In our study has shown significant success rate 87.5% with single injection of triamcinolone injection. This study has shown better results can be achieved by intra sheath injection of triamcinolone alone and more patients will respond well to intra sheath triamcinolone injection and the surgery can be reserved for non-responsive chronic and recurrent De Quervain's disease.

Triamcinolone acetone consists of two methyl groups and its absorption is slower than other steroids, this makes them stay in tendon sheath for a longer time. The anti-inflammatory effect of the triamcinolone acetone is considered to persist from 2 weeks to about 1 month.¹⁴

Various studies has reported high success rate with corticosteroid injection alone. Systematic review involving seven papers was done by Richie and Eriner showed 83% success rate with corticosteroid injection alone. Only 61% showed success rate with patients who received injection and immobilization of wrist in splints. The patients who received only immobilization of thumb and wrist in the form of splints showed only 14% success rate. Local steroid injection alone was found to be most successful treatment than with local steroid injection with splinting the wrist and treatment with wrist splints alone.⁸

Anderson et al in his study has treated fifty-six cases in 55 patients with long acting corticosteroid injection alone and followed for 4 years prospectively. The patients were followed up for 4 years with one or two methyl prednisolone injection, the success rate is achieved was 90%.¹⁵ 58% of the effectively managed were given only one injection and 33% of the effectively treated patient needed multiple injections.

Avci et al published comparing the non-surgical treatment measures for De Quervain's disease of pregnancy and lactation found all patients treated with injection of methylprednisolone and bupivacaine were relieved of pain whereas none of the patients who were treated with splinting alone had relief of pain.¹⁶

In one study reported by McDermott et al showed an excellent outcome of 97% success rate with ultrasound guided injection to the tendon sheath in De Quervain's disease, however had a recurrence rate of 14%.¹⁷ The success rate is superior to our study probably because of the usage of ultrasound guide administration of steroid in the tendon sheath.

Kamel and Moghazy in their study of treating De Quervain's disease with corticosteroid injection using ultrasound had noticed reduction of thickness of tendon sheath in one week and complete relief of symptoms in all patients observed for one year.¹⁸

In similar study done by Jeyapalan and Choudhary gave significant results with ultrasound guided intrasynovial injection of steroid in De quervain's disease. They reported 93.75% patients were relieved of symptoms.¹⁹

Local steroid injection has potential side effect of local site pain and hypopigmentation, although it is transient and resolves over time, it is important the patients are informed about this complication.²⁰

Anatomic variation in the first dorsal compartment such as separate synovial compartment or septa containing the extensor pollicis brevis tendon has been reported in 40-90% cases treated by surgical method.^{21,22} Sawaizumi in his study reported the injection technique to give triamcinolone injection effectively. Initially he tried single injection technique and later followed up with two-injection technique. Single injection technique gave 89% efficacy rate and the two-injection technique produced symptomatic pain relief in all patients. He concluded that double injection technique which injects triamcinolone to both the extensor pollicis brevis and abductor pollicis longus sheath is superior to the single injection technique.²³

Pagonis and Ditsios did a study on high resistance training athletes recalcitrant De Quervain' disease with 2 injection and 4 point injection technique. Repeated injections are given to both the groups. He concluded that 4-point injection gave superior results than 2-point injection technique in recalcitrant De Quervain's disease.²⁴

Even though some studies have reported superior results with two or four point injection technique it is additionally painful and the landmarks are not clearly made out. Our study has given a result of 87.5% success rate with single injection of triamcinolone injection, which is on par with other reported study. The success rate can be improved by using ultrasound as reported in various studies.

CONCLUSION

The limitation of our study is its shorter duration and it's not possible to assess the recurrence of the disease. With

the superior success rate with local triamcinolone injection and further can be improved by using ultrasound, we conclude local steroid injection is a main stay in non-operative treatment for De Quervain's disease. Injecting triamcinolone into the tendon sheath produces good success rates and no major complications in patients with De Quervain tenosynovitis.

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Ethical approval: The study was approved by the institutional ethics committee

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