



International Journal of Orthopaedics Sciences

E-ISSN: 2395-1958
P-ISSN: 2706-6630
IJOS 2020; 6(3): 338-340
© 2020 IJOS
www.orthopaper.com
Received: 06-05-2020
Accepted: 10-06-2020

Dr. Jeff Walter Rajadurai
Consultant Orthopaedic Surgeon,
Subam Clinic, Coimbatore, Tamil
Nadu, India

Dr. Selva Micheal Papou J
Postgraduate, 2nd year in
Radiology, PIMS, Pondicherry,
Tamil Nadu, India

ES Jasmy
Post Graduate, Department of
Pharmacy Practice, Karpagam
College of Pharmacy,
Coimbatore, Tamil Nadu, India

M Vivetha
Post Graduate, Department of
Pharmacy Practice, Karpagam
College of Pharmacy,
Coimbatore, Tamil Nadu, India

A Robin
Post Graduate, Department of
Pharmacy Practice, Karpagam
College of Pharmacy,
Coimbatore, Tamil Nadu, India

Corresponding Author:
Dr. Jeff Walter Rajadurai
Consultant Orthopaedic Surgeon,
Subam Clinic, Coimbatore, Tamil
Nadu, India

Management of Dequervain's tenosynovitis with splint and intra-sheath steroid: A comparative study

Dr. Jeff Walter Rajadurai, Dr. Selva Micheal Papou J, ES Jasmy, M Vivetha and A Robin

DOI: <https://doi.org/10.22271/ortho.2020.v6.i3f.2219>

Abstract

Background: De Quervain's tenosynovitis is an overuse disease that involves a thickening of the extensor retinaculum, which covers the first dorsal compartment. This can be managed very well medically and surgical treatment is rarely needed. Different studies have shown the effectiveness of local corticosteroid injection, splinting or both. This study was performed to compare the outcome of corticosteroid injection against splinting for the treatment of De Quervain's tenosynovitis.

Methods: This prospective comparative study was conducted from May 2019 to June 2020 in the out patient department. A total of 98 patients with De-Quervain's tenosynovitis were treated with either of these methods:

1. Corticosteroid injection in first dorsal compartment of wrist,
2. Splinting, local ice or hot compression and topical Non-Steroidal Anti-Inflammatory (NSAIDs) gel.

Results: In the first group, a total of 49 patients were included (corticosteroid injection), and 49 patients in the second group (splinting, local ice or hot compression and topical Non-Steroidal Anti-Inflammatory (NSAIDs) gel). There were 82 women and 16 men. Overall success rate was 82.71% in the first and 65.31% in the second groups, with a significant difference for both groups with respect to pain score and cure rate ($P < 0.05$). Temporary pain was the most common adverse reaction at the site of injection and was noted in most of the patients.

Conclusion: Though steroid injection has excellent outcome, splinting can be an alternative viable treatment option for DQ especially in patients with low grade disease or reluctant to injection because of fear of probable adverse reactions.

Keywords: De Quervains tenosynovitis, corticosteroid injection, splinting, smartphone users, Finkelstein test

Introduction

De Quervain's disease is a painful stenosing tenosynovitis of the first dorsal compartment of the wrist. The 1st dorsal compartment of the wrist contains the tendons of extensor pollicis brevis and abductor pollicis longus.

It is usually caused by overuse or an increase in repetitive activity, resulting in micro trauma from repetitive gliding of the first dorsal compartment tendons beneath the sheath of the first compartment thus leading to thickening of the extensor retinaculum of the wrist. Predisposing movements include forceful grasping with ulnar deviation or repetitive use of the thumb [1]. Patients with De-Quervain's disease usually present with pain starting at the dorsolateral aspect of the wrist which later on gets referred towards the thumb and the lateral aspect of the forearm.

Specific activities that may incite complaints include wringing a washcloth, gripping a golf club, lifting a child, or hammering a nail [2].

Inflammation is increased with repeated performance of these or similar functional activities. Physical examination may reveal swelling and tenderness in the region of the first dorsal compartment. Finklestein's test, which involves thumb MP joint flexion within a closed fist combined with active or passive wrist ulnar deviation, can result in a painful response over the styloid process of the radius [3, 4]. This is due to a restricted gliding of the APL and EPB tendons in the narrowed compartment caused by a thickening of the extensor retinaculum and the APL and EPB tendons [3, 4].

Conservative treatment, including rest with a splint and intrathecal injection of steroid are most widely been used [5]. As some patients fear the steroid side effects and as each of these treatment modalities has its advantages and disadvantages, we carried out this study to compare the outcome of these two treatment methods.

Materials and Methods

Study design and setting

A prospective comparative study was conducted at Coimbatore South, Tamil Nadu, India between May 2019 and June 2020.

Study population: Sample size 98

Inclusion criteria

The following criteria were included in the study.

1. Physiologically active adults between 25 and 62 years were involved.
2. Patients having pain in the dorsolateral aspect of wrist.
3. Patients having positive Finkelstein's test.

Exclusion criteria

1. People of age below 22 years old and above 62 years old.
2. Patients with previous history of steroid injection.
3. Patients with previous history of wrist pathology.
4. Patients suffering from uncontrolled diabetes and pregnancy were excluded from study.

Data collection

The nature of the disease and the plan of treatment were explained to the patients. Only those who read and acknowledged the consent participated in the study. Patients were randomly assigned by simple random sampling and consequently separated in two groups: Group 1 and Group 2 respectively.

Under strict aseptic precautions, the patients in group 1 were injected with

40 mg of methyl prednisolone acetate along with 2ml of 1% lignocaine at about 2cm above the radial styloid process or at the site of maximum tenderness into the first extensor compartment [6, 7, 8].

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. Not more than two injections were given to any patient [9].

If there was no symptomatic improvement even after the second dose, it was considered as resistance to local steroid injection procedure and surgical procedure was advised.

Group 2 patients were advised readymade thumb spica splint and were asked to use the splint during their activities as much as possible and to use it even during rest [10]. Local ice compression was advised, but if worsened then switched over to local hot compression thrice a day. Topical NSAID gel was advised for local use thrice a day.

Table 1: Patient Profile

Parameters		Group 1	Group 2
No. of patients	Male	7(14.29%)	9(18.37%)
	Female	42(85.71%)	40(81.63%)
Age (year), Mean±SD, range		40.42±9.16(25-62)	39.2±9.17(25-62)
Duration of Disease (weeks), Mean±SD, range		5.43±2.42(5-7)	5.67±2.52(5-7)

Table 2: Sidedness

Side	Group 1	Group 2
Right(n)	40	43
Left(n)	9	7

Table 3: Outcome of treatment

Parameters	Group 1(n=49)		Group 2(n=49)	
	Success	Failure	Success	Failure
No. of patient	42	7	32	17
Percentage	82.71%	14.29%	65.31%	34.69%
P-value	0.018			

Table 4: Adverse reactions

Adverse reactions	No. Of patient
None	0
Pain at injection site	40
Skin discolouration	3
Infection	0
Radial nerve paresthesia	7

The patients were similar in both groups with respect to age, sex, duration of symptoms and criteria of diagnosis.

Treatment was considered successful if all three findings resolved and the patient had at least 90% improvement in the pain score. Relapse was considered if reappearance of the symptoms occurred after 3months of remission of symptoms. Categorical variables were expressed as number of patients and percentage of patients and compared across the 2 groups

using Pearson's Chi Square test. Continuous variables were expressed as Mean ± Standard Deviation and compared across the 2 groups using unpaired T test if the data followed normal distribution and Mann-Whitney U test if the data did not follow normal distribution. Statistical analysis was performed using SPSS ver 23 software. A p value less than 0.05 was considered significant.

Results

Out of the 109 patients who attended the out patient department, 98 patients came for regular follow up. They participated in the study. (Table 1) In group 1, 49 patients were treated with corticosteroid injection and 49 patients in group 2 were treated with splinting, cold compression and topical NSAIDs.

The mean, SD and range of age of all patients in group 1 was 40.42±9.16 (25-62) while in group 2 was 39.2±9.17(25-62). (Table 1) There were 82 women and 16 men. The overall success rate was 82.71% in injection group and 65.31% in splinting group. (Table 3) Pain was experienced by 40 patients which lasted less than one day post-injection. Skin discolouration at injection site was seen in 3 cases. (Table 4) There was significant difference between both groups ($P < 0.05$) in terms of pain scores. There was no adverse effect in splinting group.

Discussion

De Quervain's tenosynovitis was described by Fritz de Quervain in 1895 [1]. It is prevalent in adults belonging to 30

and 50 years old. Women are affected six to ten times more frequently than men [2]. The cause is almost always related to overuse injury or is associated with rheumatoid arthritis.

Patients who received corticosteroid injection for the treatment of DQST were statistically significantly more likely to have full resolution of their symptoms during the follow-up period. The corticosteroid group also had statistically significantly less pain and activity limitation at first follow-up post than their counterparts who received thumb spica splint.

At 24 weeks of follow up 82.71% of patients had significant pain relief in injection group and 65.31% of patients in splinting group.

In cases of patient refusing local corticosteroid injection, splints can be used as an alternative mode of treatment.

There is no chance of complications like, infection, tendon rupture, hypopigmentation if we use splints.

In a study done by Carlton A. Richie III, DO, and William W. Briner, Jr, MD there was an 83% cure rate with injection alone. This rate was much higher than any other therapeutic modality (61% for injection and splint, 14% for splint alone, 0% for rest or nonsteroidal anti-inflammatory drugs) [12].

In another study done by Cyriac Peters-Veluthamaningal, Jan C Winters, Klaas H Groenier and Betty Meyboom-de Jong it was found that, one or two local injections of 1 ml triamcinolone acetonide 10 mg/ml is an effective method of treatment provided by general practitioners for de Quervain's tenosynovitis with respect to short term outcomes when compared to placebo injection. The short-term effects were maintained for most of the outcome measures during the follow-up period of 12 months, but this was based on outcomes of the cohort of steroid responders and thus long term effectiveness is less clear [13].

In a study done by Alfred F. Tallia, M.D., M.P.H., and Dennis A. Cardone, D.O., C.A.Q.S.M. University of Medicine and Dentistry of New Jersey–Robert Wood Johnson Medical School, New Brunswick, New Jersey it was found that, pain associated with de Quervain's tenosynovitis is treated effectively by therapeutic injection [14].

In a prospective study done in Bangalore Medical College and Research Institute from august 2012 to march 2014 by D Shivanna, D Manjunath, L Holagundi, M Kumar HV 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 [15].

In another study done 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 compound [16].

Conclusion

Although the success rate was higher with corticosteroid injection, splinting can be considered as an alternative option for treatment of De Quervain's tenosynovitis especially in patients with low grade disease.

Also, splinting can be used as an effective mode of treatment in uncontrolled diabetes etc where invasive methods like injection can better be avoided.

References

1. De Quervain F. Uerbereine form von

chronishertendovaginitis. *Cor-Br F. Schweizaerzte*. 1895; 4:899–903.

2. Rettig A. wrist and hand overuse syndromes. *Clinics in Sports Medicine*. 2001; 20(3):591-611.
3. Ilyas A, Ast M, Schaffer A, Thoder J. de Quervain Tenosynovitis of the Wrist. *Journal of the American Academy of Orthopaedic Surgeons*. 2007; 15(12):757-764.
4. Jaworski C, Krause M, Brown J. Rehabilitation of the Wrist and Hand Following Sports Injury. *Clinics in Sports Medicine*. 2010; 29(1):61-80.
5. Weiss A, Akelman E, Tabatabai M. Treatment of de Quervain's disease. *The Journal of Hand Surgery*. 1994; 19(4):595-598.
6. Zinberg E, Palmer A, Coren A, Levinsohn E. The triple-injection wrist arthrogram. *The Journal of Hand Surgery*. 1988; 13(6):803-809.
7. Jianmongkol S, Kosuwon W, Thammaroj T. Intra-tendon sheath injection for trigger finger: the randomized controlled trial. *Hand Surgery*. 2007; 12(02):79-82.
8. Anderson B, Manthey R, Brouns M. Treatment of de Quervain's tenosynovitis with corticosteroids. A prospective study of the response to local injection. *Arthritis & Rheumatism*. 1991; 34(7):793-798.
9. Zinberg E, Palmer A, Coren A, Levinsohn E. The triple-injection wrist arthrogram. *The Journal of Hand Surgery*. 1988; 13(6):803-809.
10. Anderson B, Manthey R, Brouns M. Treatment of de Quervain's tenosynovitis with corticosteroids. A prospective study of the response to local injection. *Arthritis & Rheumatism*. 1991; 34(7):793-798.
11. Jianmongkol S, Kosuwon W, Thammaroj T. Intra-tendon sheath injection for trigger finger: the randomized controlled trial. *Hand Surgery*. 2007; 12(02):79-82.
12. Richie C, Briner W. Corticosteroid Injection for Treatment of de Quervain's Tenosynovitis: A Pooled Quantitative Literature Evaluation. *The Journal of the American Board of Family Medicine*. 2003; 16(2):102-106.
13. Peters-Veluthamaningal C, Winters J, Groenier K, Meyboom-deJong B. Randomised controlled trial of local corticosteroid injections for de Quervain's tenosynovitis in general practice. *BMC Musculoskeletal Disorders*, 2009, 10(1).
14. Zinberg E, Palmer A, Coren A, Levinsohn E. The triple-injection wrist arthrogram. *The Journal of Hand Surgery*. 1988; 13(6):803-809.
15. Jianmongkol S, Kosuwon W, Thammaroj T. Intra-tendon sheath injection for trigger finger: The randomized controlled trial. *Hand Surgery*. 2007; 12(02):79-82.
16. Anderson B, Manthey R, Brouns M. Treatment of de Quervain's tenosynovitis with corticosteroids. A prospective study of the response to local injection. *Arthritis & Rheumatism*. 1991; 34(7):793-798.