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Original Research Article

Comparative Evaluation of Surgical Decompression and Steroid Injection for De Quervain's Disease

Amit Shah[1], Deval Pancholi[2], Samarth Pravinchandra Shah[3*]

[1]Consultant Surgeon, Department of Orthopedics, Aayush Orthopedic Hospital and Joint Replacement Center, Vadodara, Gujarat, India

[2]Senior Resident, Department of Orthopedics, Smt. NHL Municipal Medical College, Ahmedabad, Gujarat, India

[3*]Assistant Professor, Department of Orthopedics, GMERS Medical College and Hospital, Vadnagar, Gujarat, India

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Corresponding author: Dr. Samarth Pravinchandra Shah

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Abstract:

Background and Objectives: De Quervain's disease is a known cause of lateral wrist pain, often affecting individuals engaged in manual labor, such as housewives and butchers. While there is on-going debate about its management, conservative approaches involve administering corticosteroid injections combined with lidocaine into the first dorsal compartment or performing surgical release through an oblique incision.

This study aims to compare the efficacy of local corticosteroid injections and open surgical release for treating De Quervain's disease in terms of symptom relief, patient satisfaction, and complications.

Materials and Methods: 42 patients diagnosed with De Quervain's disease were randomly assigned to two groups, the first group (n=21) received local corticosteroid injections, and the second group (n=21) underwent surgical decompression. The study assessed recurrence rates and patient satisfaction using a 10-point visual analog scale (VAS) after intervention.

Results: The study included 35 females and 7 males, with a female-to-male ratio of 5:1. About 62% were very satisfied with the treatment in Group A (Local Steroid Injection), whereas about 81% were very satisfied with the treatment in Group B (Surgery). Incidence of complications was 67% in Group A and 10% in Group B.

Conclusion: Surgical release yielded superior outcomes for cases of De Quervain's tenosynovitis compared to local steroid injections.

Keywords: De Quervain disease, Wrist, Tenosynovitis, Decompression, Patient Satisfaction.

Introduction

De Quervain tenosinovitis [1] or stenosing tenosynovitis of the first dorsal compartment is primarily caused by friction-induced attritional forces. These forces lead to swelling and thickening of the extensor retinaculum covering the first dorsal compartment. Functional impairment arises due to restricted movement of the abductor pollicis longus (APL) and extensor pollicis brevis (EPB) within the narrowed fibro-osseous canal, resulting in pain and limited motion [2].

Several theories exist regarding the causes of de Quervain's disease, including trauma, increased frictional forces, anatomical abnormalities, biomechanical compression, repetitive microtrauma, inflammatory conditions, and increased volume states like during pregnancy [2, 3]. Anatomical variations, such as septation of the first dorsal compartment and multiple tendon slips of APL and EPB, have also been observed, potentially influencing the pathophysiology of de Quervain tenosynovitis [3].

For de Quervain disease, nonsurgical treatment should be the initial approach. Patients with mild to moderate pain that does not significantly impact daily activities should undergo rest, splinting, and the use of non-steroidal anti-inflammatory drugs (NSAIDs). Corticosteroid injections into the first dorsal compartment can also be considered [4]. Splinting effectively immobilizes the thumb and wrist, reducing friction and alleviating swelling and pain. However, some patients may experience a quick return of symptoms when they resume the activities that triggered the condition after splint removal [5]. The efficacy of NSAIDs is challenging to determine due to their often combined use with other treatment modalities in studies on de Quervain's tenosynovitis. For instance, Jirarattanaphochai et al. found no added

benefit of adding nimesulide, a selective cyclooxygenase-2 inhibitor, to corticosteroid injection in a randomized study [5]. Corticosteroid injections typically consist of 1 mL of corticosteroid mixed with 0.5 to 1 mL of a local anesthetic, and various corticosteroids combined with different local anesthetics have shown success [4]. When conservative treatments fail, operative intervention for De Quervain syndrome involves releasing the first dorsal compartment through incision of the extensor retinaculum at the ulnar border of the first dorsal compartment. Surgeons may also explore the compartment for the presence of a septum during this outpatient procedure [6]. This study aimed to compare the efficacy of local corticosteroid injections and open surgical release for treating De Quervain's disease in terms of symptom relief, patient satisfaction, and complications.

Material & Methods

This prospective study focused on a total of 42 patients (35 Females, 7 males) diagnosed with De Quervain's disease. Diagnosis was established through a combination of medical history evaluation and positive Finkelstein test [10, 11] results obtained during physical examinations. Additionally, X-rays were obtained for all patients to differentiate between various conditions, including thumb arthritis, metatarsophalangeal joint issues, scaphoid-trapezium-trapezoid (STT) joint problems, radiocarpal and intercarpal joint arthrosis, and scaphoid fractures.

Patients who could not adhere to a three-month follow-up period and those with connective tissue diseases were excluded from the study. The patients were randomly assigned to two groups: Group A, comprising 21 patients, received treatment through local corticosteroid injections, while Group B, also consisting of 21 patients, underwent surgical decompression.

In Group A, patients received a local injection of 2 ml of methylprednisolone 40 mg combined with 1 ml of lidocaine 2% into the first dorsal compartment. During the injection procedure, the wrist was positioned in slight ulnar deviation, and the injection site was sterilized. The examiner's thumb and index finger were used to straddle the borders of the first dorsal compartment, and a needle was introduced parallel to the tendons at the level of the styloid. Successful injections were confirmed by smooth and easy flow of the medication with visible and palpable compartment inflation. Patients were monitored immediately after injection to detect any immediate adverse reactions to the injected materials, and subsequent check-ups were scheduled at six weeks, two months, and three months post-injection. Improvement was defined as the relief of pain and tenderness in at least two out of three diagnostic tests without recurrence.

In Group 2, patients underwent surgical treatment. The procedure involved giving the patient a supraclavicular block. A skin incision was made, oriented from dorsal to volar in a transverse-to-oblique direction, parallel to the skin creases over the area of tenderness in the first dorsal compartment, and over the center of the radial styloid. The incision started approximately two and a half cm proximal and volar to the center of the radial styloid and ended two and a half cm dorsal and distal to it. Sharp dissection was carried out only through the dermis and not into the subcutaneous fat to avoid damaging the branches of the superficial radial nerve. After retracting the skin edges, blunt dissection in the subcutaneous fat was performed, taking care to identify and protect the sensory branches of the superficial radial nerve, typically found deep within the superficial veins.

Passive range of motion of the thumb was conducted while inspecting the extensor retinaculum through the open wound. This allowed for a clear assessment of the first dorsal compartment and its junction with the second dorsal compartment, determination of the retinaculum's extent (from distal to proximal), and ensured complete release. Tendons proximal to the stenosing dorsal ligament and sheath were identified and the first dorsal compartment was opened on its dorso-ulnar side. The APL and EPB tendons were lifted from their groove with the thumb abducted and the wrist flexed. If needed, additional "aberrant" tendons and separate compartments were examined. After deflating the tourniquet, the skin incision was closed, and a small pressure dressing was applied.

Prophylactic antibiotics in the form of cefotaxime (1 gram intravenously) were administered at the time of skin incision and another gram intravenously 6 hours post-operatively. The procedure typically took about 20 minutes. Following treatment, patients were encouraged to engage in active exercises for the thumb and hand immediately, with gradual increments as tolerated. An arm sling was used for one week to prevent edema at the operative site.

To assess the recurrence rate and patient satisfaction post-intervention in both groups, the 10-point visual analog scale (VAS) was employed. Overall satisfaction rates were categorized based on a 10-point scale score: 1-3, very dissatisfied; 4-5, dissatisfied; 6-7, satisfied; ≥ 8, very satisfied.

Results

In this study, there were 35 (83.33%) female participants and 7 (16.67%) male participants, resulting in a female-to-male ratio of 5 to 1. In

group A, there were 17 (80.95%) females and 4 (19.05%) males, and similarly, in group B, there were 18 (85.71%) females and 3 (14.29%) males (Table 1).

Table 1: Gender Distribution in study groups

Gender	Group A (Corticosteroids)		Group B (Surgery)	
	n	%	n	%
Female	17	80.95	18	85.71
Male	4	19.05	3	14.29
Total	21	100	21	100

Out of the 42 patients, 38 (90.48%) were right-handed, and 4 (9.52%) were left-handed. Among these patients, 29 had the disease on the same side as their dominant hand, whereas only 13 had the condition on the opposite side of their dominant hand (Table 2).

Table 2: Affected hand and dominant hand in study population

Parameter	n	%
Right-handed	38	90.48
Left-handed	4	9.52
Dominant hand affected	29	69.05
Non-dominant hand affected	13	30.95

About 62% were very satisfied with the treatment in Group A, whereas about 81% were very satisfied with the treatment in Group B. Incidence of complications was 67% in Group A and 10% in Group B (Tables 3-6).

Table 3: Patient satisfaction to Local Steroid Injection

Patient Satisfaction	n	%
Very satisfied	13	61.90
Satisfied	4	19.05
Dissatisfied	3	14.29
Very dissatisfied	1	4.76

Table 4: Complications in Local Steroid Injection Group

Complications	n	%
Immediate		
Injection site pain	8	38.10
Temporary paraesthesia-radial nerve	3	14.29
Late		
Hypopigmentation in skin	3	14.29
Total	14	66.67

Table 5: Patient satisfaction to Surgery

Patient Satisfaction	n	%
Very satisfied	17	80.95
Satisfied	3	14.29
Dissatisfied	1	4.76
Very dissatisfied	0	0.00

Table 6: Complications in Surgery Group

Complications	n	%
Scar Pain	1	4.76
Surgical wound infection	1	4.76
Total	2	9.52

Discussion

In our study, we employed two distinct methods for treating stenosing tenosynovitis at the radial styloid: surgical release of the first dorsal compartment and local steroid injections. We conducted this comparative analysis with a total of 42 patients, consisting of 35 females and 7 males.

Among them, 21 patients underwent local steroid injections (group A). The remaining 21 patients underwent surgical release of the first dorsal compartment, a procedure performed under local anesthesia in the operating room.

In our study, we observed that majority patients had the condition in their dominant hand, which aligns with the findings of Lane et al. [7] and Ismail et al. [8]. This high prevalence in the dominant hand could be attributed to the significant proportion of right-handed and dominant-handed

patients in our study. Regarding group A, treated with local injection, 13 patients (61.90%) experienced complete symptom relief and expressed great satisfaction.

These patients were able to resume normal activities, and while our results were slightly lower than Anderson et al.'s [9], the variance could be due to differences in injection accuracy and compartment separation. Within this group, 4 patients were satisfied, 3 were dissatisfied, and 1 was very dissatisfied due to persistent symptoms, possibly resulting from inaccurate injection sites or anatomical variations.

Complications associated with local injections in group A were as follows: immediate complications affected 11 patients (52.39%), with 8 patients (38.10%) reporting pain at the injection site, a result similar to Anderson et al.'s findings [9]. Additionally, 3 patients (14.29%) experienced transient radial nerve paraesthesia, which typically resolved within a month. This rate was higher than Anderson et al.'s [9], possibly due to material extrusion and pressure on the sensory branch of the radial nerve. Late complications included skin hypopigmentation at the injection site, affecting three cases (14.29%), which was lower than Anderson et al.'s [9] reported percentage of 35%.

In group B, treated surgically, 17 out of 21 patients (80.95%) expressed high satisfaction with the results, closely aligning with the findings of Finkelstein et al. [10] and Kent et al. [11], who reported satisfaction rates of 95% and 93%, respectively. These patients experienced complete satisfaction and resumed their daily activities. However, two patients (9.52%) did not respond well to surgical release, with one developing a painful surgical site scar and the other experiencing superficial wound infection.

The overall complication rate in our study was 9.52% in 2 patients, which is lower than the results reported by Kent et al. [11] at 9% and similar to that of Ismail et al. [8].

Conclusion

De Quervain's disease, a common painful wrist condition, is more prevalent in females. Treatment options include local steroid injections and surgery. Surgery is safe for outpatient care and is favored for its lower recurrence and complication rates. We suggest steroid injections for early cases and surgical decompression for chronic, resistant cases unresponsive to conservative treatment.

References

1. Leao L. De Quervain Disease: A clinical and anatomical study. J Bone Joint Surg. 1958;40-A:1063-70.
2. Allbrook V. 'The side of my wrist hurts': De Quervain's tenosynovitis. Aust J Gen Pract. 2019 Nov; 48(11):753-756.
3. Kutsumi K, Amadio CP, Zhao C, Mark E. Gliding resistance of the extensor pollicis brevis tendon and abductor pollicis longus tendon within the first dorsal compartment in fixed wrist positions. J Hand Surg. 2004; 23(2):243-248.
4. Ilyas AM, Ast M, Schaffer AA, Thoder J. De Quervain tenosynovitis of the wrist. JAAOS - Journal of the American Academy of Orthopaedic Surgeons. 2007 Dec 1; 15(12):757-64.
5. Ilyas AM. Nonsurgical Treatment for De Quervain's Tenosynovitis. J Hand Surg. 2009; 34A (5):928-929.
6. Mathes SJ, Hentz VR. Mathes plastic surgery, the hand, and upper limb, 2nd edition, Elsevier, Philadelphia. 2006; 7:1.
7. Lane LB, Boretz RS, Stuchin SA. Treatment of de Quervain's disease: Role of conservative management. Journal of Hand Surgery [British]. 2001; 26:258-260.
8. Ismail, Paresh, Mohit, Sudhanshu, Swapnil. Comparative study between surgical release and local steroid injection in treatment of De Quervain disease. International Journal of Orthopaedics Sciences. 2023; 9(3):40-45.
9. Anderson BC, Manthey R, Brouns MC. Treatment of De Quervain's tenosynovitis with corticosteroids: A Prospective Study of the Response to Local Injection, Arthritis, and Rheumatism. 1991; 34:793-8.
10. Finkelstein H. Stenosing tendovaginitis at the radial styloid process. J Bone Joint Surg-A. 1930; 12:509-540.
11. Ta KT, Eidelman D, Thomson JG. Patient Satisfaction and Outcomes of Surgery for de Quervain's Tenosynovitis J HandSurg-A. 1999; 24A: 1071-1077.