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Research Article

Thumb Spica Cast For the Management of De Quervain, S Tenosynovitis -

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ABSTRACT

Objectives: To evaluate the results of De Quervain's tenosynovitis with thumb Spica cast treatment.

Methodology: This prospective randomized clinical study was carried out from January 2017 to January 2018 at DHQ Hospital Daggar District Buner Pakistan. A total of 44 patients were included in the study. Diagnosis of De Quervain's tenosynovitis was made by 3 clinical findings, pain at the radial wrist with resisted extension or abduction of the thumb, tenderness at the wrist dorsal extensor compartment over the styloid process of the radius, and a positive Finkelstein test. Patients with a previous history of acute trauma, wrist fracture, steroid injection, pregnancy, or rheumatoid arthritis were excluded from the study. 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. All patients were subjected to thumb Spica cast for 4 weeks. After cast removal improvement in the above 3 clinical signs was measured by VAS. The data was analyzed by SPSS version 20.

Results: Out of 44 patients, there were 29 (65.9%) females and 15 (34.1%) males age ranging between 22 to 60 years with a mean age of 43.00 ± 11.12 . Duration of the disease was 1 to 10 weeks with a mean of 4.86 ± 2.39 right sides (dominant hand) were involved in 35 (79.5%) and left side in 9 (20.5%) patients. All patients were given Spica cast for 4 weeks and patients were discouraged to use any analgesics. After 4 weeks the cast was removed and the response was assessed in terms of three clinical findings by VAS score. Out of 44 patients, fourteen (31.8%) patients had no pain (0), eighteen (40.9%) patients had mild (1-3) pain, twelve (27.3%) had moderate (4-6) pain and there was no patient with severe pain.

Local area of skin depigmentation was seen in 2 patients. These changes reversed in 6 weeks' time. There was no incidence of nerve injury, tendon rupture or infection.

Conclusion: Our study shows that casting alone is a viable option for the treatment of De Quervain's tenosynovitis.

Keywords: De Quervain's tenosynovitis; Thumb Spica cast; Visual Analogue Scale (VAS); Pain; Conservative

INTRODUCTION

De Quervain's tenosynovitis is named after Swiss Surgeon Fritz de Quervain, who mentioned it in 1895 for the first time and reported a series of five cases in 1912 [1]. The condition De Quervain's disease is referred for the first time in an article which was read at the New England Surgical Society in 1936 at Bridgeport Hospital [2]. In 1989, Hoffmann published first article about the condition in American literature [3]. Considering forearm deformities, de Quervain's is only second to trigger finger in incidence which is 20 times more common [4]. It occurs usually in adults 30 to 50 years old. Incidence in women is ten times more as compared to men. It affects the Extensor Pollicis Brevis (EPB) and Abductor Pollicis Longus (APL) tendon sheaths [4,5]. The exact etiology of the disease has not been well described yet. Literature focused on overuse of the wrist as the major etiologic factor for the disease [6,10]. Repetitive ulnar deviation while the metacarpophalangeal joint of the thumb is in flexion, like typing, lifting etc., is considered to result such clinical problem [4,10]. Cumulative trauma from repetitive strain is triggering the pathologic changes [4,5,7]. Symptoms comprise of pain or tenderness at the radial styloid at times radiating to the thumb, shoulder or forearm. On physical examination there might be swelling at the radial styloid with tenderness and crepitation's on palpation [8,9,11]. In typical cases Finkelstein's test is positive [7,10]. The Finkelstein's test is performed as the patient clenches the fist with thumb inside and ulnar deviates the hand at the same time. Patient with De Quervain's tenosynovitis feels pain at the affected site [1,8]. Non-surgical treatment, comprising of local corticosteroid injections, bracing, physical therapy, and thumb spica cast, is mostly rewarding [1,7,8,11]. This approach is most successful within the 1st six weeks after onset of the disease. There is no consensus on the best protocol for wrist immobilization [8]. Surgery is performed in resistant cases to release the first dorsal compartment of the wrist [1,7,8,10]. Releasing the first dorsal compartment of the wrist surgically is the final resort of treatment¹. Ninety-one percent of patients have been found to be cured with surgical management. Higher costs and complications rate limit the use of surgical procedures [12]. It is in interest of patient

to use non-surgical modes before going for surgical release. The objective of this study is to evaluate the result of thumb spica cast in the management of De Quervain's tenosynovitis.

MATERIALS AND METHODS

This prospective randomized case series study was carried out from January 2017 to January 2018 at DHQ Hospital Daggar District Buner Pakistan. A total of 44 patients of either sex with the age ranging from 22 to 60 years were included in the study. Diagnosis of disease and inclusion in the study was based on three clinical findings, pain at the radial side of wrist with resisted extension or abduction of the thumb, tenderness at the wrist dorsal extensor compartment over the styloid process of the radius, and a positive Finkelstein test. Patients with a previous history of acute trauma, wrist fracture, steroid injection, pregnancy, or rheumatoid arthritis were excluded from the study. 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.

All patients were given explanations of the nature of the disease and plan of treatment. Written informed consents were given by the patients. Spica Casts were given to all patients for 4 weeks meanwhile discouraging them to use any painkiller. After 4 weeks the cast were removed and the outcome was assessed in terms of the three physical signs; including wrist pain, tenderness and Finkelstein test. Treatment was considered successful if all three of these findings resolved and the patient had at least 90% improvement in the pain score. Failure was defined as absence of any one of these three findings and/or less than 90% improvement in the pain score.

All statistics were performed using SPSS 20. Continuous variables were expressed as mean \pm Standard Deviation (SD). Categorical variables were expressed as frequencies.

RESULTS

Out of 44 patients, 29 (65.9%) were female and 15 (34.1%) were male (Table 1). The age ranged between 22 to 60 (Mean of $43.00 \pm$

11.12 years) (Table 2). The right hand was affected in 35 (79.5%) and left in 9 (20.5%) patients (Table 3). The dominant hand (Right) was most commonly affected. The mean duration from the onset of symptoms to enrolment for this study was 4.86 ± 2.39 weeks (range 1 week to 10 weeks) (Table 2). At the start of study, the severity of pain on 10cm VAS was recorded. Twenty-nine (65.9%) had severe pain (VAS 7-10), and fifteen patients (34.1%) had moderate pain (VAS 4-6) (Table 4). All patients were given Spica cast for 4 weeks and patients were discouraged to use any analgesics. After 4 weeks the cast was removed and the response was assessed in terms of three clinical findings, pain at the radial wrist with resisted extension or abduction of the thumb, tenderness at the wrist dorsal extensor compartment over the styloid process of the radius, and Finkelstein test. VAS score was measured and categorized as no pain (VAS 0), mild pain (VAS 1-3), moderate pain (VAS 4-6) and severe pain (VAS 7-10).

Out of 44 patients, fourteen (31.8%) patients had no pain (0), eighteen (40.9%) patients had mild (1-3) pain, twelve (27.3%) had moderate (4-6) pain and there was no patient with severe pain (Table 5).

Local area of skin depigmentation was seen in 2 patients. These changes reversed in 6 weeks time. There was no incidence of nerve injury tendon rupture or infection.

DISCUSSION

De Quervain's Tenosynovitis, although an insignificant condition, is very serious disorder for the patient as it hinders the performance

of the basic function of the hand. Various methods of treatment for De Quervain's Tenosynovitis have been advised over the years including analgesics, splinting, multiple corticosteroid injections, thumb Spica cast and surgical release. Intralesional corticosteroid injection is effective with cure rates of up to 50%. The combination of two treatment modalities intralesional steroid and immobilization by Spica cast is hypothesized to be much better than a single modality alone.

A total of 44 patients were included in the study. There were 29 (65.9%) females and 15 (34.1%) males age ranging between 22 to 60 years with a mean age of 43.00 ± 11.12 . Duration of the disease was 1 to 10 weeks with a mean of 4.86 ± 2.39 right sides (dominant hand) were involved in 35 (79.5%) and left side in 9 (20.5%) patients. On presentation 15 patients had moderate pain (VAS 4-6) and 29 patients had severe pain (VAS 7-10).

After cast removal at 4 weeks out of 44 patients, fourteen (31.8%) patients had no pain (0), eighteen (40.9%) patients had mild (1-3) pain with a success rate of (72.7%). twelve (27.3%) still had moderate (4-6) pain leading to a failure rate of (27.3%) and there were no patient with severe pain (7-10).

In a local study by Shinwari, et al. [8], out of 35 patients 32 (67.0%) had no pain after casting alone for 4 weeks with a success rate of (67.0%) and 13 (37.0%) patients had no response to casting with a failure rate of (37.0%). These results are comparable to our study.

In another study by Mehdinasab SA, et al. [11], who studied the results of casting alone in which out of 36 patients, 13 (36.1%) were completely pain free and 23 (63.9%) had no pain relief with a success (36.1%) and failure (63.9%) rate respectively.

Rabin A, et al. [13] showed in his study that conservative management is more effective and concluded that all the participant in his study at six months period had reported minimal pain and no recurrence of symptoms using Numeric Pain Rating Scale and Disabilities of the Arm, Shoulder and Hand.

Cavaleri R, et al. [14] has done a study on conservative versus steroid injection for the management for De Quervain's disease in which he concluded that cast immobilization with combination of corticosteroid injection are more effective than injection alone in the treatment of de Quervain's disease.

CONCLUSION

No signal treatment is effective in the management of De Quervain's disease. Combination therapy either in form of surgery with pharmacological treatment or steroid injection with casting is more effective as shown in literature. However, the current study of casting alone is also a viable option for the treatment of De Quervain's tenosynovitis.

REFERENCES

1. Ashok WU, Nagakumar JS, Mittal V, Arun HS. The efficacy of local steroid injection versus conservative management in De Quervain's disease: A prospective randomised study. *International J Orthop*. 2018; 4: 263-265. <https://bit.ly/2BX0hQU>
2. Patterson DC. De Quervain's disease: Stenosing tendovaginitis at the radial styloid. *New England J Med*. 1936; 214: 101-103. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/14042803/>
3. Hoffmann PH. A common, undescribed affection of the extensor muscles of the thumb. *Trans Am Ortho Assoc*. 1898; 11: 252-256.

Table 1: Gender wise distribution.

		Frequency	Percent
Valid	Female	29	65.9
	Male	15	34.1
	Total	44	100.0

Table 2: Age and duration wise distribution.

		Age	Duration
N	Valid	44	44
	Missing	0	0
Mean		43.0000	4.8636
Std. Deviation		11.12090	2.39759
Minimum		22.00	1.00
Maximum		60.00	10.00

Table 3: Side wise distribution.

		Frequency	Percent
Valid	Right	35	79.5
	Left	9	20.5
	Total	44	100.0

Table 4: Vas score before cast.

		Frequency	Percent
Valid	Moderate Pain (4-6)	15	34.1
	Severve Pain (7-10)	29	65.9
	Total	44	100.0

Table 5: Vas score after cast.

		Frequency	Percent
Valid	No Pain	14	31.8
	Mild Pain (1-3)	18	40.9
	Modrate Pain (4-6)	12	27.3
	Total	44	100.0

4. Guerini H, Pessis E, Theumann N, Le Quintrec JS, Campagna R, Chevrot A, et al. Sonographic appearance of trigger fingers. *J Ultrasound Med*. 2008; 27:1407-1413. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/18809950/>
5. Menendez ME, Ring D. De Quervain tendinopathy: "Success" and other subtleties. *J Hand Surg*. 2014; 39: 1232-1233. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/24862123/>
6. Patel KR, Tadisina KK, Gonzalez MH. De Quervain's disease. *Eplasty*. 2013; 13. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/23943679/>
7. Ceylan HH, Kaya O, Çaypınar B, Ozturk MB. Factors effecting the success of conservative management in de Quervain cases. *Archives Clin Experimental Med*. 2018; 3: 6-9. <https://bit.ly/3hkH8J7>
8. Shinwari MR. Comparison of the Outcome of Pain Relief Between Corticosteroid Injection with Thumb Spica Cast and Casting Alone in the Treatment of de Quervain's Tenosynovitis. *J Rawalpindi Med Coll*. 2018; 9: 30. <https://bit.ly/2B0W8eu>
9. Le Manac'h AP, Roquelaure Y, Ha C, Bodin J, Meyer G, Bigot F, et al. Risk factors for de Quervain's disease in a French working population. *Scandinavian J Work Environ & Health*. 2011; 1: 394-401. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/21431276/>
10. Ahmed GS, Tago IA, Makhdoom A. Outcome of corticosteroid injection in De Quervain's tenosynovitis. *J Liaquat Uni Med Health Sci*. 2013; 12: 30-34. <https://bit.ly/30B248E>
11. Mehdinasab SA, Alemohammad SA. Methylprednisolone acetate injection plus casting versus casting alone for the treatment of de Quervain's tenosynovitis. *Archives of Iranian Med*. 2010; 13: 270. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/20597558/>
12. Ta KT, Eidelman D, Thomson JG. Patient satisfaction and outcomes of surgery for de Quervain's tenosynovitis. *J hand Surg*. 1999; 24: 1071-1077. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/10509287/>
13. Rabin A, Israeli T, Kozol Z. Physiotherapy Management of People Diagnosed with de Quervain's Disease: A Case Series. *Physiother Can*. 2015; 67: 263-267. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/26839455/>
14. Cavaleri R, Schabrun SM, Te M, Chipchase LS. Hand therapy versus corticosteroid injections in the treatment of de Quervain's disease: A systematic review and meta-analysis. *J Hand Ther*. 2016; 29: 3-11. **PubMed:** <https://pubmed.ncbi.nlm.nih.gov/26705671/>