

ORIGINAL ARTICLE

Treatment Selection for de Quervain's Tenosynovitis Based on the Michigan's Hand Questionnaire

Michigan El Anketine Göre de Quervain Tenosinovit için Tedavi Seçimi

¹Tuğba Gün Koplay , ²Gökçe Yıldiran , ³İbrahim Çaltınır , ²Ahmet Rifat Doğramacı , ²Zekeriya Tosun 

¹Health Sciences University, Konya City Hospital, Department of Plastic Reconstructive and Aesthetic Surgery, Konya, Türkiye

²Selçuk University, Medical Faculty, Department of Plastic Reconstructive and Aesthetic Surgery, Konya, Türkiye

Correspondence

Tugba Gun Koplay, Konya City Hospital, Konya, Türkiye.

E-Mail: tugbagun@gmail.com

How to cite ?

Gün Koplay T. , Yıldiran G. , Çaltınır İ. , Doğramacı A. R. , Tosun Z. Treatment selection for de Quervain's tenosynovitis based on the Michigan's Hand Questionnaire. Genel Tıp Dergisi. 2023; 33(3)322-325.

ABSTRACT

Objective: De Quervain's disease is a stenosing tenosynovitis of the first dorsal compartment. Treatment options include conservative measures, injections, and surgery. The main purpose of this study is to eliminate uncertainty in the choice of treatment and to recommend the appropriate treatment to the patient based on Michigan hand questionnaire.

Material and Methods: The age, sex, and treatment modality of the patients were recorded retrospectively. Patients' Michigan outcomes were assessed, and patients were divided into three groups: Patients who benefited from conservative treatments (Group 1), from injections (Group 2), and from surgery (Group 3). Statistical analysis of the data was performed.

Results: The mean age of the 56 patients (54 women, 2 men) was 35.1±11.4 years. There was a difference between all groups in total hand function and pain scores ($p < 0.05$). Patients in group 1 were significantly different from the other groups ($p < 0.05$), and there was no significant difference between group 2 and group 3 ($p > 0.05$).

Conclusion: Various methods have been described for De Quervain's tenosynovitis's treatment. Choosing the right therapeutic steps for the right patients is important. It is possible to select treatment options by assessing overall hand function and activities of daily living with the Michigan Hand Outcome Questionnaire.

Keywords: De Quervain's tenosynovitis, Michigan hand questionnaire, treatment selection

ÖZ

Amaç: De Quervain's hastalığı birinci dorsal kompartmanın stenoizan tenosinovitidir. Tedavi seçenekleri konservatif önlemler, enjeksiyonlar ve cerrahi içerir. Bu çalışmanın temel amacı, tedavi seçiminde belirsizliği ortadan kaldırmak ve Michigan el anketine dayalı olarak hastaya uygun tedaviyi önermektir.

Gereç ve Yöntemler: Hastaların yaşı, cinsiyeti ve tedavi modaliteleri retrospektif olarak kaydedildi. Hastaların Michigan test sonuçları değerlendirildi ve hastalar üç gruba ayrıldı. Konservatif tedaviden (Grup 1), enjeksiyondan (Grup 2), cerrahiden fayda görenler (Grup 3). Verilerin istatistiksel analizi yapıldı.

Bulgular: Elli altı hastanın (54 kadın, 2 erkek) yaş ortalaması 35,1±11,4 idi. El fonksiyonu ve ağrı skorlarında gruplar arasında fark vardı ($p < 0.05$). Grup 1'deki hastalar diğer gruplardan anlamlı olarak farklıydı ($p < 0.05$), grup 2 ile grup 3 arasında anlamlı fark yoktu ($p > 0.05$).

Sonuç: De Quervain tenosinoviti için çeşitli yöntemler tanımlanmıştır. Doğru hastalar için doğru terapötik adımları seçmek önemlidir. Michigan El Anketi ile genel el fonksiyonlarını ve günlük yaşam aktivitelerini değerlendirerek tedavi seçeneklerini seçmek mümkündür.

Anahtar kelimeler: De Quervain tenosinoviti, Michigan El Anketi, tedavi seçeneği

Introduction

De Quervain's disease is a stenosing tenosynovitis of the first dorsal compartment, which is a common cause of radial wrist pain. Therefore, it represents a serious limitation of productivity at work and at occupation (1). The pain may present as tenderness in the first dorsal compartment, which limits the movements of the thumb. Patients frequently refer to hand surgery outpatient clinics for this pain and pain-related functional limitations.

Treatment options include conservative measures (lifestyle modification, nonsteroidal anti-inflammatory medications, splinting), injections, and surgery. It has

long been known that surgical treatment is successful more than 90%, but conservative treatments have come to the forefront as initial treatment thanks to publications reporting that injectable corticosteroids emerged in the 1950s and subsequently produced significant pain reduction (2, 3). However, it is not yet clear which patient benefits from which treatment modality.

One of the main reasons is that most studies on Quervain's tenosynovitis in the literature have been performed without using patient reports. Patient reports are one of the most reliable methods used in

daily practice to evaluate the efficacy of a treatment or to report the results of a study. Considering that hand injuries and diseases cause serious functional problems and significantly affect daily and occupational activities, it is expected that studies based on patient reports will become more important in hand surgery.

The Michigan Hand Questionnaire is a widely used hand-specific scale that assesses patient quality of life with adequate psychometric properties and can be safely used in the evaluation of any hand disorder or its treatment (4).

The main purpose of this study is to eliminate uncertainty in the choice of treatment and to recommend the appropriate treatment to the patient based on patient-reported outcomes (Michigan hand questionnaire). To this end, the patients admitted to the hand surgery outpatient clinic and were diagnosed with de Quervain's tenosynovitis were screened and presented in this study.

Materials and Method

The study was retrospectively designed and approved by the local ethics committee (No. 2022/26). Among patients admitted to the hand surgery outpatient clinic between November 2020 and April 2022, adult patients who were diagnosed with de Quervain's tenosynovitis in the hand surgeon's physical examination, presented with unilateral complaints, and had completed treatment were included in the study.

Age, sex, and treatment modality (conservative, injectable, and surgical treatment or combinations) of the patients were recorded.

Conservative treatment:

A de Quervain's splint was applied to all patients at night, keeping the thumb and wrist in a neutral position. Etofenamate gel was applied locally to the skin over the first dorsal compartment twice daily. Treatment was supplemented by oral therapy with acetaminophen 60 mg twice daily.

Injection treatment:

Injection treatment consisted of 0.1-0.75 ml methylprednisolone injections into the first dorsal compartment. The injections were performed by the same hand surgeon. Considering that each tendon in the first dorsal compartment may have different slips and different sheaths, the injections were performed.

Surgical treatment:

A radial longitudinal incision was made on the skin proximal to the wrist. The superficial dorsal sensory branch of the radial nerve was probed and preserved. The tendons of the abductor pollicis longus and extensor pollicis brevis were exposed. When the compartments were opened, they were cut as far dorsally as possible to avoid possible postoperative tendon subluxations. At least two slips of the abductor pollicis longus muscle were seen and released, and the extensor pollicis brevis tendon was released. The skin was primarily sutured. The dressing was changed

every other day, and the sutures were removed after two weeks.

Evaluation:

Overall hand function, activities of daily living, and pain scores were assessed using the Michigan Hand Outcome Questionnaire, and patient scores were determined by applying the raw scores to the normalization formula of the Michigan Hand Outcome Questionnaire.

Patients' Michigan outcomes were assessed by two independent plastic surgeons, and patients were divided into three groups based on these scores: Patients who benefited from medications, lifestyle modifications, and splinting treatments (Group 1), patients who benefited from injections (Group 2), and patients who benefited from surgery (Group 3).

Statistical analysis of the data was performed using the SPSS program and the One Way Anova test. $p < 0.05$ was considered significant.

Results

The mean age of the 56 patients (54 women, 2 men) was 35.1 ± 11.4 years. All patients presented with unilateral complaints and were treated unilaterally. Thirty-six of these patients had previously received conservative treatment at other centers, but 21 of them had not received these treatments regularly. Therefore, a total of 41 patients were offered conservative treatment at the time of admission.

The mean scores for total hand function, activities of daily living, and pain in these patients were 45.3, 48.9, and 57.3, respectively.

Injection therapy was performed in seven patients who had previously received conservative treatment and in five patients who did not benefit from or did not agree with conservative treatment. The mean scores for overall hand function, activities of daily living, and pain in these patients were 24.5, 3.3, and 85, respectively.

For the eight patients who underwent surgical treatment, the mean scores for total hand function, activities of daily living, and pain were 0, 0, and 100, respectively.

There was a difference between all groups in total hand function and pain scores ($p < 0.05$).

Patients in group 1 were significantly different from the other groups in activities of daily living ($p < 0.05$), and there was no significant difference between group 2 and group 3 ($p > 0.05$).

Table 1. Characteristics of patients treated conservatively.

Patient no.	Age	Gender	Pain before treatment	Overall functional score	Daily life score	Pain after treatment
1	22	F	24	5	15	96
2	20	F	5	100	100	20
3	19	F	25	0	20	100
4	40	F	5	75	25	20
5	44	F	25	0	30	100
6	24	F	6	70	100	24
7	36	F	15	55	75	60
8	31	F	12	25	0	48
9	25	F	18	20	15	72
10	52	M	19	5	35	76
11	24	F	14	60	80	56
12	45	F	16	5	35	64
13	24	F	18	10	35	72
14	56	F	18	0	45	72
15	41	F	17	5	55	68
16	40	F	7	55	55	28
17	56	F	17	45	70	68
18	20	F	11	35	55	44
19	24	F	16	70	50	64
20	43	F	6	95	75	24
21	31	F	7	100	80	28
22	24	F	18	35	15	72
23	41	F	14	10	25	56
24	42	F	16	10	20	64
25	41	F	10	100	70	40
26	44	F	15	25	75	60
27	42	F	7	100	70	28
28	36	F	8	100	65	32
29	60	M	15	0	45	60
30	20	F	10	100	80	40
31	33	F	9	100	80	36
32	26	F	7	95	70	28
33	43	F	9	100	95	36
34	24	F	9	100	80	36
35	30	F	5	80	75	20
36	24	F	15	30	50	60

Discussion

De Quervain's tenosynovitis is a tendonitis of the first dorsal compartment and a common cause of radial wrist pain (5). Various methods have been described for its treatment. Examples include nonsteroidal anti-inflammatory drugs, splinting and lifestyle modification, steroid injections, and surgical treatment.

Although there is no definitive treatment protocol, surgery has become accepted as a general approach as in the treatment of many orthopedic conditions in patients who do not benefit from conservative treatment and conservative treatment options as first-line treatment. In other words, there are no indications defined in the literature for conservative treatment or surgical treatment.

It remains unclear whether patients who benefit from the different forms of treatment show a systematic clinical difference (2). Clarification of such differences will strengthen the standard approach by removing

Table 2. Characteristics of patients treated with injection(s).

Patient no.	Age	Gender	Pain before treatment	Treatment modality	Overall functional score	Daily life score	Pain after treatment
37	54	F	20	Conservatif + 1 injection	45	40	80
38	48	F	25	Conservatif + 1 injection	0	0	100
39	38	F	25	Conservatif + 1 injection	0	0	100
40	33	F	25	Conservatif + 2 injections	0	0	100
41	19	F	25	Conservatif + 2 injections	0	0	100
42	28	F	20	1 injection	50	0	80
43	29	F	20	1 injection	50	0	80
44	49	F	20	1 injection	0	0	80
45	40	F	20	1 injection	50	0	80
46	30	F	15	1 injection	50	0	60
47	31	F	25	1 injection	0	0	100
48	19	F	15	1 injection	50	0	60

Table 3. Characteristics of patients treated surgically.

Patient no.	Age	Gender	Pain before treatment	Overall functional score	Daily life score	Pain after treatment
49	47	F	25	0	0	100
50	45	F	25	0	0	100
51	51	F	25	0	0	100
52	49	F	25	0	0	100
53	36	F	25	0	0	100
54	34	F	25	0	0	100
55	20	F	25	0	0	100
56	19	F	25	0	0	100

uncertainty in treatment selection and may benefit patients.

Therefore, the aim of this study is to determine the characteristics of patient groups that benefit from certain standard treatments. The Michigan Hand Questionnaire is an easy-to-perform assessment criterion that can be evaluated in hand surgery outpatient clinics. Patient-reported outcomes, which have recently become more popular, are used in this study as both an evaluation criterion and an indicator.

The proportion of patients who benefit from surgical treatment of de Quervain's tenosynovitis is quite high, but surgical release is usually performed in only a small group of patients, mainly because patients also benefit from nonsurgical treatments (6).

Corticosteroid injections are well described in the literature, and many publications report that they are more effective than splinting alone, and the multimodal approach to injection treatment has been shown to be good (7).

However, most of the classical treatment algorithms and regimens described in the literature have

been demonstrated based on treatment response, excluding meta-analyses. Today, however, patient-reported outcomes are extremely important in the evaluation of hand surgery, largely because the hand plays an important role in daily life functions. Michigan hand scoring is a scoring system that can be used in preoperative and postoperative reporting for almost any hand condition and is widely accepted. Blackburn et al. found that patient expectations were related to pain and functional outcomes after surgery (8). In this study, it was found that patients with more severe pain benefited more from surgery.

A limitation of this study is its retrospective cohort design. If the study were designed as a cohort, algorithms based on more standardized treatment principles and more homogeneous groups could be proposed.

Choosing the right therapeutic steps for the right patients when using current treatments is important to eliminate patients' symptoms in the initial phase and minimize the time of work loss. The severity of the patient's current symptoms can be used to guide the selection of treatments to be applied to patients and to predict treatment success. Some of the tests that can be used to determine the severity of symptoms are the Michigan Hand Outcome Questionnaire scores and the VAS pain score. This study showed that when patients' Michigan Hand Outcome Questionnaire scores were compared to normalized pretreatment general hand function scores, patients with low scores and significant functional limitations benefited from surgical treatment. When the normalized scores for activities of daily living are evaluated, it is possible to distinguish between conservative treatment, steroid injection, and surgical treatment when choosing treatment, and this evaluation may guide the choice of treatment. However, it does not appear to be a test that helps guide the choice of steroid injection or surgical treatment. The results obtained by evaluating patients' VAS scores before treatment also influence the choice of treatment. Although the VAS-score appears important in helping patients choose treatment, the nonobjectivity of the score and the subjectivity in the way patients describe the severity of pain make it necessary to evaluate the patient as a whole with other test scores.

Therefore, it is possible to properly select treatment options by assessing overall hand function and activities of daily living with the Michigan Hand Outcome Questionnaire prior to treatment and incorporating the VAS score into this assessment. This ensures that patients receive the right treatment in the early stages and benefit from it in the early stages, and that the decision to operate on patients who deserve surgical treatment is made without delay.

Ethics Committee Approval: The study protocol was approved by the local ethics committee (No. 2022/26).

Informed Consent: Written informed consent was obtained from all participants who participated in this study.

Conflict of Interest: The authors declare no conflict of interest.

Funding: The authors have no financial support to disclose.

Author Contributions: Conception: T.G.K., G.Y., Design: T.G.K, G.Y., Supervision: Z.T.Resource: T.G.K., G.Y., A.R.D., Materials: T.G.K.Data Collection and/or Processing: İ.Ç. Analysis and/or Interpretation: A.R.D., Literature Review:T.G.K, Writer: T.G.K.,Critical Review: G.Y., Z.T.

References

- 1.Allbrook V. 'The side of my wrist hurts': De Quervain's tenosynovitis. *Aust J Gen Pract* 2019; 48:753-756.
- 2.Kazmers NH, Liu TC, Gordon JA, Bozentka DJ, Steinberg DR, Gray BL. Patient- and Disease-Specific Factors Associated With Operative Management of de Quervain Tendinopathy. *J Hand Surg Am* 2017;42:931.e1-931.e7.
- 3.Scheller A, Schuh R, Honle W, Schuh A. Long-term results of surgical release of de Quervain's stenosing tenosynovitis. *Int Orthop* 2009;33:1301e1303.
- 4.Marks M. Which patient-reported outcomes shall we use in hand surgery? *J Hand Surg Eur Vol* 2020 ;45:5-11.
- 5.Look N, McNulty M, Rodriguez-Fontan F, Fenoglio AK. Radial-sided wrist pain differentials: presentation, pathoanatomy, diagnosis, and management. *Medicina (B Aires)* 2023;83:96-107.
- 6.Kachooei AR, Nota SP, Menendez ME, Dyer GS, Ring D. Factors associated with operative treatment of de Quervain tendinopathy. *Arch Bone Jt Surg* 2015;3:198e203.
- 7.Abi-Rafeh J, Kazan R, Safran T, Thibaudeau S. Conservative Management of de Quervain Stenosing Tenosynovitis: Review and Presentation of Treatment Algorithm. *Plast Reconstr Surg* 2020;146:105-126.
- 8.Blackburn J, van der Oest MJW, Chen NC, Feitz R, et al. Hand-Wrist Study Group. Are Patient Expectations and Illness Perception Associated with Patient-reported Outcomes from Surgical Decompression in de Quervain's Tenosynovitis? *Clin Orthop Relat Res* 2021;479:1147-1155.