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ARAŞTIRMA MAKALESİ **RESEARCH ARTICLE**

The Effect of Using a Long Wrist–Thumb Immobilization Splint and a Short Wrist Splint on Clinical Outcomes in De Quervain's Tenosynovitis

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Abstract

Aim: De Quervain's tenosynovitis is an inflammatory condition of the first dorsal extensor compartment. Splinting is a common conservative treatment, yet the clinical impact of splint length remains uncertain. To compare the clinical outcomes of long versus short wrist–thumb immobilization splints used with non-steroidal anti-inflammatory therapy.

Materials and Methods: This retrospective study included 40 patients diagnosed with De Quervain's tenosynovitis who had pre- and post-treatment Mayo Wrist Scores. Patients received diclofenac potassium and either a long (n=21) or short (n=19) thumb-spica splint. Within-group changes were analyzed using the Wilcoxon test, and between-group differences using the Mann–Whitney U test.

Results: The mean Mayo Wrist Score improved significantly in all patients (68.8±11.5 to 91.5±8.4, $p \leq 0.05$). Both splint types showed significant improvement, with no statistical difference between long and short splints ($p \geq 0.05$).

Conclusion: Long and short wrist–thumb immobilization splints provide similarly favorable early outcomes in De Quervain's tenosynovitis. Restricting wrist motion with a long splint offers no additional benefit, and splint choice may be based on patient comfort.

Keywords: *De Quervain's tenosynovitis, Mayo Wrist Score,Thumb immobilization splints*

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De Quervain Tenosinovitinde Baş Parmağı Sabitleyen Uzun El Bileği Ateli ile Kısa El Bileği Atelinin Klinik Sonuçlar Üzerindeki Etkisi

Özet

Amaç: De Quervain tenosinoviti, birinci dorsal ekstansör kompartmanın inflamatuvar bir hastalığıdır. Atelleme yaygın bir konservatif tedavi yöntemidir; ancak atel uzunluğunun klinik etkisi belirsizliğini korumaktadır. Bu çalışmada, non-steroidal anti-inflamatuvar tedavi ile birlikte kullanılan uzun ve kısa el-başparmak immobilizasyon atellerinin klinik sonuçlarının karşılaştırılması amaçlandı.

Gereç ve Yöntem: Bu retrospektif çalışmaya, De Quervain tenosinoviti tanısı almış ve tedavi öncesi-sonrası Mayo El Bileği Skoru bulunan 40 hasta dahil edildi. Hastalara diklofenak potasyum ile birlikte uzun (n=21) veya kısa (n=19) başparmak ateli uygulandı. Grup içi değişimler Wilcoxon testi, gruplar arası farklar Mann–Whitney U testi ile analiz edildi.

Bulgular: Ortalama Mayo El Bileği Skoru tüm hastalarda anlamlı şekilde arttı (68.8±11.5'ten 91.5±8.4'e, $p \leq 0.05$). Her iki atel tipi de anlamlı iyileşme sağladı ve uzun ile kısa atel arasında istatistiksel olarak anlamlı fark bulunmadı ($p \geq 0.05$).

Sonuç: Uzun ve kısa el-başparmak immobilizasyon atelleri, De Quervain tenosinovitinde benzer şekilde olumlu erken sonuçlar sunmaktadır. El bileği hareketini uzun atelle kısıtlamanın ek bir faydası yoktur; atel seçimi hasta konforuna göre yapılabilir.

Anahtar Kelimeler: *De Quervain tenosinoviti, Mayo El Bileği Skoru, Başparmak immobilizasyon atelleri*

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INTRODUCTION

De Quervain's tenosynovitis is a pathology of inflammation of the abductor pollicis longus and extensor pollicis brevis tendons. It is defined as entrapment an inflammation of first dorsal extensor compartment tendons located within the fibro-osseous tunnel of the wrist (1). It affects women aged 30-50 years the most (2). Clinically it can be diagnosed by the localized tenderness over the radius styloid, combined with provocative testing, such as the Finkelstein or Eichhoff testing (3, 4).

The conservative treatment options are activity modification, non-steroidal anti-inflammatory drugs, splinting, modalities of physical therapy, corticosteroid injection among others where as surgical management is usually avoided until all the other treatment options fail (5).

During standard treatment thumb-spica immobilization splints are designed to minimize painful gliding of the tendons and to limit movements of the thumb and wrist that will decrease symptoms; however, the ideal length of immobilization of the wrist is not well-established. A more distal (shorter) splint could potentially allow for increased comfort, functional toleration, and compliance, as well as long splint rests to the first dorsal compartment by limiting wrist motion. The purpose of this study was to retrospectively evaluate the early clinical outcomes of long and short thumb-spica splints used together with NSAID in patients with De Quervain's tenosynovitis and to explore whether extended wrist immobilization appears justified in routine conservative management.

MATERIALS AND METHODS

Patients were retrospectively evaluate for De Quervain tenosynovitis diagnosed during the years 2023 – 2024 in the outpatient clinic. Inclusion criteria were age 18 – 60 years, first diagnosis of De Quervain tenosynovitis, and presence of both pre-treatment and post-treatment Mayo Wrist Score documentation. Forty patients had the inclusion criteria. In routine

clinical practice the treatment was diclofenac potassium 50 mg twice daily along with a thumb-spica splint.

Patients were divided retrospective according to clinical documentation for splint type: long thumb spica splint (Group 1, n=21) or a short thumb spica splint (Group 2, n=19). Splint choice was based entirely on physician preference and documented clinical practice for this retrospective, non-randomized trial; there was no attempt to randomize splint design. Injectable corticosteroids were not a treatment modality within this study because this study compares designs within a pathway of initial conservative treatment with NSAID therapy and immobilization.

The post-treatment Mayo Wrist Score examined in this study was the score noted at the follow-up visit. While all patients received a post-treatment assessment, the follow-up interval varied and was not fully standardized for every case. Specific details, like daily splint-wearing time, total splint duration, and treatment adherence, were not consistently recorded in the retrospective records. As a result, we could not analyze them reliably.

Statistical analysis

Normality of data distribution was tested. The Wilcoxon signed-rank test was used to analyze pre-treatment and post-treatment Mayo Wrist Scores, as the variables were not normally distributed, and between group comparisons were analyzed with Mann–Whitney U tests. Statistical significance was defined as a two-sided p-value of <0.05. Additional estimates, such as effect sizes and confidence intervals, could not always be extracted from the retrospective dataset available for this study and need to be addressed in future prospective analyses.

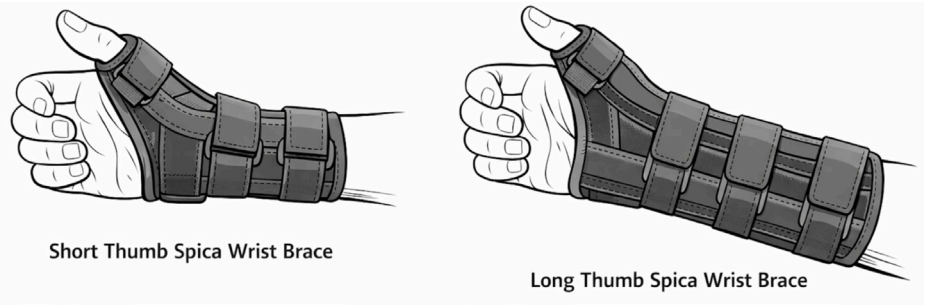
This study was approved by the Bahçeşehir University Ethics Committee for Non-Interventional Studies (2025-20/02) and all participants provided written informed consent before enrolment, in accordance with the principles of the Declaration of Helsinki.

RESULTS

This study included 40 patients (Table 1), including 34 female (85%) and 6 male (15%) subjects with a mean age of 37±9.4 years. The mean Mayo Wrist Score improved from 68.8 ± 11.5 before treatment to 91.5 ± 8.4 after treatment ($p <0.05$), indicating a significant clinical improvement in the overall cohort. We found that Group 1 (long splint) had a mean age of 33.5±8.5 years and improved from a mean Mayo Wrist Score of 67.1±12.1 before treatment to 91.6±8.4 after treatment ($p<0.001$). In Group 2 (short splint), at mean age of 32.8±10.6 years, the Mayo Wrist Scores improved from79.8±10.7 to 91.3± 8.8. Both groups demonstrated significant within-group improvement, whereas no statistically significant between-group difference was observed in post-treatment outcomes. Because several baseline clinical variables, including symptom duration, affected side, and detailed comorbidity profiles, were not consistently documented in the retrospective records, these variables could not be compared reliably between groups.

Table 1: Baseline demographic and clinical characteristics of patients treated with long and short wrist–thumb immobilization splints.

Variable	Overall (n=40)	Long splint (n=21)	Short splint (n=19)
Age, years	33.2±9.4	33.5±8.5	32.8±10.6
Sex, female/male	34/6	18/3	16/3
Pre-treatment Mayo Wrist Score	68.8±11.5	67.1±12.1	70.8±10.7
Post-treatment Mayo Wrist Score	91.5±8.4	91.6±8.4	91.3±8.8



DISCUSSION

De Quervain's tenosynovitis is a common form of hand tendinitis (6). Conservative treatment typically includes non-steroidal anti-inflammatory drugs, splinting, and physical therapy modalities (7). Surgical intervention is considered in cases where conservative management fails to provide adequate relief (8). In our study, no patients were identified as requiring surgery following conservative treatment. The relatively short follow-up period may have contributed to our inability to detect patients who might eventually require surgical intervention.

De Quervain's tendinitis is observed more frequently in women than in men. It has been reported to occur 6 to 10 times more commonly in women (9). In our study, there were 6 male patients, and the female-to-male ratio was consistent with the findings reported in the literature.

This study's main finding is in patients with De Quervain's tenosynovitis receiving concurrent NSAID medication, both long and short thumb-spica splints were linked to a positive early improvement in Mayo Wrist Scores. Our data did not show an additional short-term clinical benefit when compared to shorter splints, despite the fact that lengthy splints theoretically offer better immobilization of the wrist and may further minimize tendon excursion. This implies that the choice between long and short splints may be influenced by patient comfort, tolerance, and ease of daily use in addition to the potential benefits of immobility. Our results do not support the regular preference for extended immobilization, but a longer splint may still be considered in certain patients with significant irritation, marked discomfort, or clinical concern about recurrent aggravating wrist movements.

The majority of recent research supports corticosteroid injection and PRP therapy as a successful first-line conservative treatment for De Quervain's tenosynovitis, especially when paired with brief immobilization (10-14). When compared to immobilization alone, corticosteroid injection plus orthosis has been shown to produce better short-term pain and functional outcomes in recent systematic reviews and network meta-analyses (10,15). However, some patients may still benefit clinically from isolated orthosis (16). Since our goal was to assess whether the degree of wrist immobilization affected results within a standard initial conservative protocol based on NSAID treatment plus splinting rather than to compare injection-based regimens, corticosteroid injection was excluded in this study. As a result, our results shouldn't be interpreted as proof against injectable therapy.

There are a number of limitations to this study. First, control over treatment uniformity, group assignment, and the completeness of reported variables is restricted by its retrospective design. Second, the lack of a significant difference should not be seen as evidence of equivalency because the small sample size may have made it more difficult to identify minute but possibly clinically significant between-group differences. Third, selection bias may have been introduced since the distribution of long and short splints was not randomized and instead reflected standard clinical practice. Fourth, the medical records did not always contain comprehensive information about the duration of the symptoms, the afflicted side, comorbidities,

the amount of time spent wearing the splint each day, the total amount of time spent using the splint, and treatment compliance. Lastly, a wider range of patient-reported or imaging-based outcomes were not included in the analysis, which depended on Mayo Wrist Scores. To provide therapy recommendations, prospective, well powered research with defined treatment regimens are required.

In patients with De Quervain's tenosynovitis receiving concurrent NSAID medication, both long and short thumb-spica splints have positive early clinical improvement in this retrospective study. This study did not show any advantages of prolonged wrist immobilization. As a result, it is reasonable to choose a splint based on factors including comfort, tolerance, and usefulness. Treatment suggestions require larger prospective studies.

Author's contribution: Conceptualization: UOK, ÖK; Design: ÖK; Data Collection: UOK; Literature Search: ÖK, UOK; Analysis and Interpretation: UOK, ÖK; Writing and Editing: UOK, ÖK; Review: ÖK.

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