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Original Research

De Quervain's Tenosynovitis: As Seen from the Perspective of the Patient

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Purpose: Patient preferences and expectations following both nonsurgical and operative treatment of de Quervain's tenosynovitis are unclear. In this study, we aim to better delineate patient preferences for initial management of de Quervain's tenosynovitis. For patients considering surgical treatment, we hope to identify which factors of surgical care are most important for patients to receive counseling.
Methods: An online crowdsourcing platform, Amazon Mechanical Turk, was used to recruit study participants. Study participants were then led through a clinical scenario pertaining to de Quervain's tenosynovitis. They were then asked a series of questions regarding initial treatment options, important factors to consider during surgery, and postoperative expectations. A Likert scale was used for responses. Descriptive statistics and one-way analysis of variance were used to assess survey responses.
Results: In total, 199 survey responses were included, and 84% of respondents chose nonsurgical modalities for initial treatment of de Quervain's tenosynovitis. Survey items asking about the importance of cost, risks of surgery, expected recovery time, and expected pain level following surgery revealed that all factors were considered important to respondents. There were no differences between groups in the one-way analysis of variance.
Conclusions: Providers should remain cognizant that patients presenting with de Quervain's tenosynovitis may favor initial nonsurgical management. The vast majority of respondents rated the importance of cost, risks of surgery, expected recovery time, and expected pain level as having some level of importance when considering surgical care. When discussing outcomes of surgery, respondents were nearly divided on what would be considered a successful outcome of surgery. This suggests that treating physicians may benefit from clarifying expected outcomes during surgical discussions.
Type of study/level of evidence: Diagnostics IIb.

De Quervain's tenosynovitis is described as a stenosing tenosynovitis of the first dorsal compartment of the wrist. Common reported symptoms include dorsoradial wrist pain.[1] Physical exam reveals tenderness and swelling along the first dorsal compartment, with worsening pain with ulnar deviation of the wrist with the thumb in a clenched fist position.[2] Treatments range from nonsurgical to surgical release of the first dorsal compartment. Nonsurgical treatments include observation, nonsteroidal anti-inflammatory medications, physical therapy, splinting, and corticosteroid injection.[2]

Treatment outcomes following these nonsurgical modalities are mixed.[2] Evidence suggests that this condition may be self-limiting.[3–6] There is a lack of unanimity regarding nonsurgical management of de Quervain's tenosynovitis. Moreover, it remains unclear which treatments are disease modifying versus curative.[2] Thus, discussions with patients regarding treatment options and their own priorities and values are of even greater importance in deciding on the best option for an individual patient.

A paucity of literature exists regarding the patient's perspective in the treatment of de Quervain's tenosynovitis. Knowing the

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Figure 1. Survey photo demonstrating dorsoradial location of wrist pain proposed in the survey scenario.

concerns and questions patients have regarding their treatment options, both surgical and nonsurgical, may allow them to further engage in their care. In addition, identifying these concerns that patients have may allow physicians to better guide patients in terms of different treatment options that exist. In this article, we aim to identify patient preferences regarding various treatment options. In addition, we also hope to better delineate patient expectations with treatment outcomes. Understanding this information may allow physicians to have more informed discussions with patients regarding patient preferences and subsequently generate greater patient satisfaction with treatment.

Materials and Methods

Survey creation

An online, survey-based, descriptive study was conducted through the use of a crowdsourcing website, Amazon Mechanical Turk (AMT). Similar to its rationale for use in prior studies, AMT was selected as it allowed for a large number of responses from individuals with the highest rating allowed by the platform.[7,8] Responses are also monitored for time of completion by the AMT platform to ensure that quality responses were obtained. Participants for recruitment were randomly sampled from the general population for members of AMT. Of note, prior studies have shown that this can reflect the general US population with internet access.[9,10] Institutional review board approval was not required as all respondent data remained anonymous, however institutional approval was obtained prior to conducting the study.

AMT workers are required to be at least 18 years of age. By virtue of the AMT platform, respondents are restricted to one completion of the survey. Only Mechanical Turk Masters were allowed to participate in this survey. These are individuals who show consistent high-quality responses across a variety of topics. Those with a history of de Quervain's tenosynovitis were asked to self-exclude themselves from survey completion. To ensure that responses entered into the system are genuine, an attention check question (question 6 below) was included. Those who provided an answer to this question were excluded from data analysis. Respondents were compensated through the AMT platform for their time ($0.50 per response).

Scenario

Survey respondents were presented with the following scenario: Imagine that you have pain on the side of your wrist/forearm in the area indicated in the photograph (Fig. 1).

Pain has been present for several weeks and has not got better. You feel pain when using your hand/wrist to lift and grasp objects. Pinching objects also causes pain. Motion of the thumb is difficult and painful. You see a doctor who examines you and informs you that your symptoms are caused by tendonitis, a particular kind of tendonitis called de Quervain's tenosynovitis. You tell the doctor that your symptoms interfere with the quality of your life. You wonder if something can be done to make you feel better. Your doctor discusses the following options for treatment with you:

1. A supervised program of hand therapy, which can include the following:
   - Therapeutic ultrasound
   - Soft tissue massage
   - Therapeutic exercise
2. Use of a splint. This would involve wearing a splint that immobilizes the wrist and thumb, worn for 3 to 6 weeks, to be removed for hygiene. The splint could be a prefabricated splint ("off the shelf") or could be custom-made for you by a hand therapist.
3. Corticosteroid injection into the site of pain at the wrist. A single corticosteroid injection into the area of pain in the wrist provides relief of symptoms in 2/3 (66%) of patients. Risks of corticosteroid injection are low, but depigmentation (lightening of the skin) at the site of injection occurs approximately 1% of the time (1 in 100).
4. Surgery. Surgery involves opening the construction of tendons and can be done in the operating room under local anesthesia with or without sedation. Surgery is successful more than 90% of the time. Surgery is the treatment option that is most likely to result in permanent relief of symptoms.

Survey questions

Participants were presented with several questions and asked to rate the level of importance for each question according to a Likert scale. Options for question two included extremely unlikely, unlikely, neutral, likely, and extremely likely. Options for questions three, four, six, seven, and eight included unimportant, slightly important, moderately important, important, and very important.

1. With the information provided to you, which treatment would be your first choice?
   1. A supervised program of therapy
   2. Use of a splint
   3. Corticosteroid injection
   4. Surgery

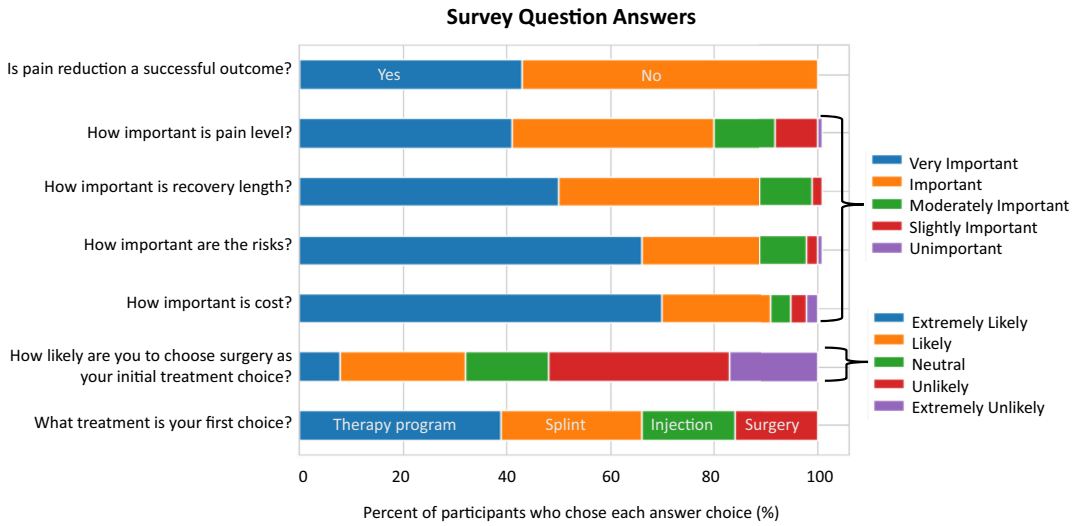

Figure 2. Summary of survey results.

2. Surgical treatment for de Quervain's tenosynovitis has a very high success rate. Knowing this, how likely are you to choose surgery as your initial/first choice of treatment?
3. How important is it for you to know whether the cost of surgery is covered by your insurance before deciding whether to proceed with surgery?
4. You are told that most patients have no complications after surgery for de Quervain's tenosynovitis. However, no operation is risk free. How important is it for you to know the risks of surgery before proceeding with surgery?
5. Attention check. Please do not answer. Please leave the answer blank.
6. How important is it for you to know how long it might take to recover following surgery? For example, how important is it for you to know how long you might be out of work or how long it might take for you to return to regular activities?
7. How important is it for you to know the level of pain you might experience after de Quervain's tenosynovitis surgery?
8. Suppose that after treatment you had less pain, but still some residual pain occurs with lifting and grasping activities. Would you consider this a successful outcome? (Yes/No answer).

Data analysis

The answer choices for each question were described in percentages. Prior studies have shown that parametric studies can be used to analyze results from Likert scale survey data to great effect and complement the direct representation via percentages and proportions.[11] For questions three, four, six, and seven, which use the same Likert scale, the responses were converted into a numerical scale where "unimportant" was given a value of 0; "slightly important" was given a value of 1; "moderately important" received a value of 2; "important" was given a value of 3; and "very important" was given a value of 4. The mean, standard deviation, median, and interquartile range were calculated. A one-way analysis of variance (ANOVA) was performed to determine whether there was any significant difference in what was important to participants. The alpha level was set at 0.05.

Results

A total of 202 participants completed the survey outlined above within the AMT database. Three participants were excluded because they did not correctly answer the attention check question. This left 199 participants that were included in the final study cohort. Study results are summarized in Figure 2.

Table 1
Participant Preference for Initial Treatment Modality

Treatment Modality	Number of Participants (n = 199)	%
Supervised program of therapy	77	39
Splinting	54	27
Corticosteroid injection	36	18
Surgical intervention	32	16

The first question asked participants what their first choice of treatment would be. In total, 77 participants (39%) chose a supervised program of therapy, 54 participants (27%) chose splinting, 36 participants (18%) chose a corticosteroid injection, and 32 participants (16%) opted for surgical treatment. These results are summarized in Table 1.

The second question asked participants what their likelihood of choosing surgical treatment would be if told that surgical treatment had a high success rate. In total, 34 participants (17%) chose "extremely unlikely," 70 participants (35%) chose "unlikely," 32 participants (16%) chose "neutral," 48 participants (24%) chose "likely," and 16 participants (8%) chose "extremely likely." These results are summarized in Table 2.

Questions three, four, six, and seven asked participants about the importance of cost, risks of surgery, expected recovery time, and expected pain level following surgery, respectively. As mentioned above, these questions were answered according to a Likert scale with options ranging from unimportant to very important. These results are summarized in Table 3. All factors had "very important" as the highest rated choice when considering surgical treatment of de Quervain's tenosynovitis. Of note, the largest proportion of survey participants rated the cost of surgery as being "very important" as it was selected among 70% of respondents. Expected pain level following surgery had the lowest proportion of respondents (41%) who selected "very important" (Table 3). The answer choices from these four questions were subsequently transformed into a numerical scale. The mean and standard deviation are presented in Table 4. A one-way ANOVA analysis was performed, which revealed no significant differences among the means of these four factors ($P = 3.46$). Of note, at least 80% of participants answered "very important" or "important" for all factors.

Table 2
Participant Likelihood for Choosing Surgical Intervention as Initial Treatment After Being Told That Surgical Treatment has a High Success Rate

Likelihood	Number of Participants (n = 199)	%
Extremely unlikely	34	17%
Unlikely	70	35%
Neutral	32	16%
Likely	48	24%
Extremely likely	16	8%

When asked about residual pain following surgery, 43% of respondents reported that residual pain with lifting and grasping activities would be considered a successful outcome, while 57% of respondents would not consider this a successful outcome.

Discussion

De Quervain's tenosynovitis is a common cause of dorsoradial wrist pain, subsequently causing disability of the wrist and thumb.[12] Treatment options range from observation, nonsteroidal anti-inflammatory medications, splinting, corticosteroid injection, and surgical release of the first dorsal compartment.[2] Of note, no consensus regarding an optimal treatment algorithm exists, as surgical complication rates up to 8% have been reported.[13,14]

Patients with de Quervain's tenosynovitis have been shown to have worse patient-reported outcomes in those with increasing emotional distress.[15,16] Thus, elucidating patient preferences may lead to more informed physician–patient discussions regarding treatment options of de Quervain's tenosynovitis. In the present study, we conducted a survey-based questionnaire to assess which treatment modality was preferred for the initial treatment of de Quervain's tenosynovitis. In addition, we aimed to better delineate which factors (ie, costs, risks, recovery, pain management) were more important when surgical intervention is considered.

In total, 199 survey participants were included in the final study cohort. For initial treatment of de Quervain's tenosynovitis, respondents favored nonsurgical management (84% of respondents) over surgical treatment. A supervised therapy program was the preferred form of nonsurgical treatment, selected by 46% of respondents choosing among the initial nonsurgical management modalities. The largest percentage of respondents (39%) preferred an initial course of supervised therapy, although a not insignificant amount also chose use of a splint (27%) and corticosteroid injection (18%). These preferences are reasonable clinically, as supervised hand therapy has been shown to increase patient pain and function in those with de Quervain's tenosynovitis.[17] Though splinting and corticosteroid injection may increase one's chances of conservative treatment, patient apprehension to an invasive procedure when seen initially is understandable.[17] Of note, head-to-head studies comparing supervised therapy, splinting, and corticosteroid injection are limited as many patients receive a combination of these treatments.

Based on the above results, we recommend discussion of each of these options with patients before selecting a modality to proceed with. Over half the respondents (52%) were "extremely unlikely" or "unlikely" to proceed with surgery initially despite being told that surgical intervention is associated with high success rates. Based on these results, providers should remain cognizant that patients presenting with de Quervain's tenosynovitis may favor initial nonsurgical management.

In terms of surgical treatment, respondents were asked to weigh the importance of cost, risks of surgery, anticipated recovery time, and expected pain level following surgery. Over 80% of respondents rated all of these factors as being either "important" or "very important" when considering surgical care. This is reflected in the means, as all four means were between three and four, the numerical conversion of "important" and "very important." Of note, a larger proportion of respondents rated costs associated with surgery and risks of surgery as "very important" compared to anticipated recovery time and pain levels following surgery. When discussing outcomes of surgery, respondents were divided on whether reduced but ongoing pain would be considered a successful outcome of surgery. This suggests that treating physicians may benefit from clarifying expected outcomes during surgical discussions and paying particular note to what a successful outcome would look like.

Given that de Quervain's may be self-limiting, patient treatment should revolve around each patient's goals and values.[13] Thus, treatment discussions should factor in the patient perspective into the overall treatment plan.[18] Despite this, the literature on patient preferences for treatment of de Quervain's tenosynovitis remains limited. Blackburn et al[13] looked at preoperative psychosocial factors to identify associations with pain and function 3 months following surgical treatment of de Quervain's tenosynovitis. They found that expectations of treatment were correlated with postoperative pain and function levels. Our results suggest that the majority of patients in fact would not consider residual pain with lifting or grasping objects as a successful outcome. This brings to light the notion that perhaps further discussions regarding what to expect after surgery should occur. In doing so, perhaps patients would anticipate more pain after surgery and thus consider their outcome more successful after being mentally prepared.

Another important consideration of surgical treatment of de Quervain's disease is that the complication rate is around 9% primarily due to recurrence, radial sensory nerve injury, and wound complications.[19] Moreover, one in 20 patients undergo reintervention following de Quervain's release.[20] As brought to light by our results, perhaps some of the patient dissatisfaction can be mitigated with further discussions of potential complications and expected recovery time.[21]

The limitations of our study mirror those of prior survey-based studies.[7,8] The most significant limitation is the potential for response bias due to the survey-based study design. Another limitation is that there was no way to verify that respondents have not had a history of de Quervain's tenosynovitis; however, individuals with a history of this condition were asked not to complete the survey. Thus, given that respondents were assumed to have no history of de Quervain's tenosynovitis, perhaps their responses would change if they had this condition. It is also possible that respondents represented younger individuals with more experience using the AMT platform; however, we were unable to verify this as no demographic information was collected. In addition, our perception of patient preference was constrained by the questions asked within the survey; no option was provided to allow respondents to communicate additional concerns they may have when considering treatment options. Nevertheless, we believe that some of these limitations are mitigated by the strengths of a high sample population in an area with minimal prior data.

In conclusion, patient perspectives are important to elucidate in conversations regarding treatment options for de Quervain's tenosynovitis. Prior studies have found that there is a large psychosocial component in treatment of this potentially debilitating condition.[13,14] Taken together with the findings of the present study, patient goals and values should be factored into the selection of treatment, and special care should be taken to adequately explain the anticipated recovery and potential complications of surgery. Future studies may aim to compare the validity of the survey administered to that of a clinic population. It would be

Table 3
Importance of Various Factors in Considering Surgical Treatment for Survey Participants

Importance	Cost of Surgery	Risks of Surgery	Recovery Time	Pain from Surgery
Unimportant	2%	1%	0%	1%
Slightly important	3%	2%	1%	7%
Moderately important	4%	8%	10%	12%
Important	21%	23%	39%	39%
Very important	70%	66%	50%	41%

Table 4
Means and Standard Deviations of Importance of Individual Factors in Consideration of Surgical Treatment After Transformation (or Conversion) From a Likert Scale Into a Numerical Scale

Factor	Mean	SD
Cost of surgery	3.55	0.85
Risks of surgery	3.52	0.77
Recovery time	3.37	0.72
Pain from surgery	3.12	0.93

SD, standard deviation.

interesting to compare the results of a clinic-based population versus those obtained from AMT, while providing another assessment for the potential use of AMT as a tool in assessing patient preferences.

Conflicts of Interests

No benefits in any form have been received or will be received related directly to this article.

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