

Lateral Epicondylitis: Treatment Preferences from the Potential Patient Perspective

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Background: Knowing the questions and concerns that patients have regarding treatment options for lateral epicondylitis may allow for shared-decision making and potentially superior patient outcomes and satisfaction. In the present study, we aimed to further delineate patient preferences with treatment of lateral epicondylitis.

Methods: An online, survey-based, descriptive study was conducted through Amazon Mechanical Turk. Survey participants were presented with a clinical scenario regarding lateral epicondylitis and asked four questions regarding treatment preferences for nonoperative treatment, whether they would consider platelet-rich plasma (PRP) injection, and whether they would consider surgical intervention for recalcitrant symptoms. A Likert scale was used for responses. McNemar chi-square test was used for paired nominal data for statistical analysis.

Results: A total of 238 survey responses were included. A majority (63%) of respondents elected to proceed with formal physical therapy. When given additional information regarding corticosteroid injections, 50.8% of respondents reported preferring physical therapy. There were no differences between groups for questions 1 and 2 ($P = 0.90$). Of the respondents, 75.2% were “likely” or “extremely likely” to consider PRP injection. When asked about surgical intervention, 74.8% of respondents were “likely” or “extremely likely” to proceed with continued symptoms.

Conclusions: It is important to include patient preferences in treatment discussions of lateral epicondylitis. Survey respondents preferred formal physical therapy for initial treatment. A surprising majority of respondents were likely to consider a PRP injection. With prolonged symptoms, respondents were interested in discussions of surgical intervention and thus, it should continue to be offered to patients with recalcitrant symptoms. (*Plast Reconstr Surg Glob Open* 2024; 12:e5706; doi: 10.1097/GOX.0000000000005706; Published online 5 April 2024.)

INTRODUCTION

Lateral epicondylitis, or tennis elbow, is a common cause of lateral elbow pain, with a prevalence of 1%–3% within the United States.¹ Patients typically note lateral-sided elbow pain, made worse with resisted wrist extension. The underlying pathophysiology is unknown, though

is hypothesized to be due to an overload event causing small tears near the extensor carpi radialis brevis tendon insertion on the lateral epicondyle.^{2–5} Studies investigating histologic changes have found collagen fibril ruptures, fibroblast proliferation, and activation of the innate immune system.⁵ Risk factors include tobacco use, obesity, and work that involves manual labour.⁶

Although lateral epicondylitis can be debilitating, this condition is thought to be self-limiting in most cases. The majority of cases resolve within 1–1.5 years.⁷ A report of 72 orthopaedic surgeons with lateral epicondylitis found resolution of symptoms in 97% of surgeons at 2 years.⁸ Initial conservative therapies include bracing, nonsteroidal antiinflammatory drugs, and guided physical therapy. These initial therapies may be sufficient for most patients, however, a subset of patients continue to have symptoms. The median course of lateral epicondylitis for those who do not improve after 6 months of conservative treatment is 844 days.⁹ For patients who

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have significant pain, a glucocorticoid injection can be considered; however, this may result in worse outcomes and prolonged recovery.¹⁰ Newer therapies have also emerged, including platelet-rich plasma (PRP) injections, autologous blood injections, botulinum toxin injections, and extracorporeal shockwave therapy; though the efficacy of these therapies has not been well-established in the literature.¹¹⁻¹³ For recalcitrant cases, surgical debridement of the extensor carpi radialis brevis tendon origin can be considered. It is recommended that providers wait at least 1 year before proceeding with surgical intervention, as symptoms may resolve in the interim.^{9,14}

The multitude of conservative therapies available lends to differences in treatment practices between providers. A study of 612 fellowship-trained upper extremity surgeons found significant variations in initial management of lateral epicondylitis, with the most common treatments used including a home exercise program, nonsteroidal anti-inflammatory medications, steroid injections, bracing, or formal physical therapy.¹⁵

Given that there is no clear superior treatment option for lateral epicondylitis, patients should be included in these discussions. It remains unclear what patients prefer for treatment, and literature regarding patient preferences in lateral epicondylitis is limited. Knowing the questions and concerns that patients have regarding treatment options may allow for shared-decision making and potentially superior patient outcomes and satisfaction.

In the present study, we aimed to delineate patient preferences with treatment of lateral epicondylitis. We hoped to identify preferences for both initial conservative treatment modalities and surgery if desired. This information may lead to more informed discussions of treatment options when providing guidance regarding lateral epicondylitis.

MATERIALS AND METHODS

Survey Creation

An online, survey-based, descriptive study was conducted through Amazon Mechanical Turk (AMT), a crowdsourcing website. The present study was conducted in a similar fashion as outlined previously.^{16,17} Participants recruited were members of AMT. Of note, prior studies have shown that this can reflect the general United States population with internet access.^{18,19} Institutional review board approval was not required given that respondent data was anonymous.

AMT respondents are required to be at least 18 years of age. They are restricted to one completion of the survey. Only Mechanical Turk Masters were allowed to participate in this survey: individuals who show consistent high-quality responses in earlier studies. To ensure that responses were entered in good faith, an attention check question was included. Those who answered the attention check question were thus excluded. Respondents were compensated through the AMT platform for their time (\$0.50 for this study).

Takeaways

Question: What are patient preferences regarding treatment of lateral epicondylitis?

Findings: A total of 238 participants were surveyed. A majority of respondents (63%) preferred physical therapy. For continued symptoms, 74.8% were “likely” or “extremely likely” to consider surgery.

Meaning: Patients may prefer physical therapy initially and surgery for continued symptoms of lateral epicondylitis.

Scenario

Survey respondents were presented with the following scenario: “Imagine that you have pain at your elbow, located at the outside of your elbow. The pain is made worse with lifting and grasping activities. The pain has been present for 3 months. You see a doctor who informs you that your symptoms are due to lateral epicondylitis. This is also known as tennis elbow.”

Survey Questions

Participants were presented with a series of questions based on the above scenario. Questions 1 and 2 were rated based on treatment modality preferred. Questions 3 and 5 were rated according to a Likert scale, with options including extremely unlikely, unlikely, neutral, likely, and extremely likely.

Question 1: Your doctor discusses with you the options for treatment at this time. Options for treatment include a “wait-and-see” approach, supervised physical therapy, oral nonsteroidal antiinflammatory medications, or a corticosteroid injection. Which would you choose?

1. Wait-and-see
2. Physical therapy
3. Nonsteroidal antiinflammatory medications (taken by mouth)
4. Corticosteroid injection

Scenario 2: Suppose you are told in the long term that no method of treatment has been shown to be more effective than a “wait and see approach.” Corticosteroid injections can provide relief or improvement in symptoms for 4–6 weeks but may not confer any long-term benefit.

Question 2: With this additional information, which of the following would you choose as your treatment?

1. Wait-and-see
2. Physical therapy
3. Nonsteroidal antiinflammatory medications (taken by mouth)
4. Corticosteroid injection

Scenario 3: After 3 more months of nonsurgical treatment, you continue to have pain. You are referred to an orthopaedic surgeon and inquire about newer interventions, including PRP. This would involve your doctor taking a sample of your blood and spinning it down to isolate the plasma. The concentrated plasma is then injected

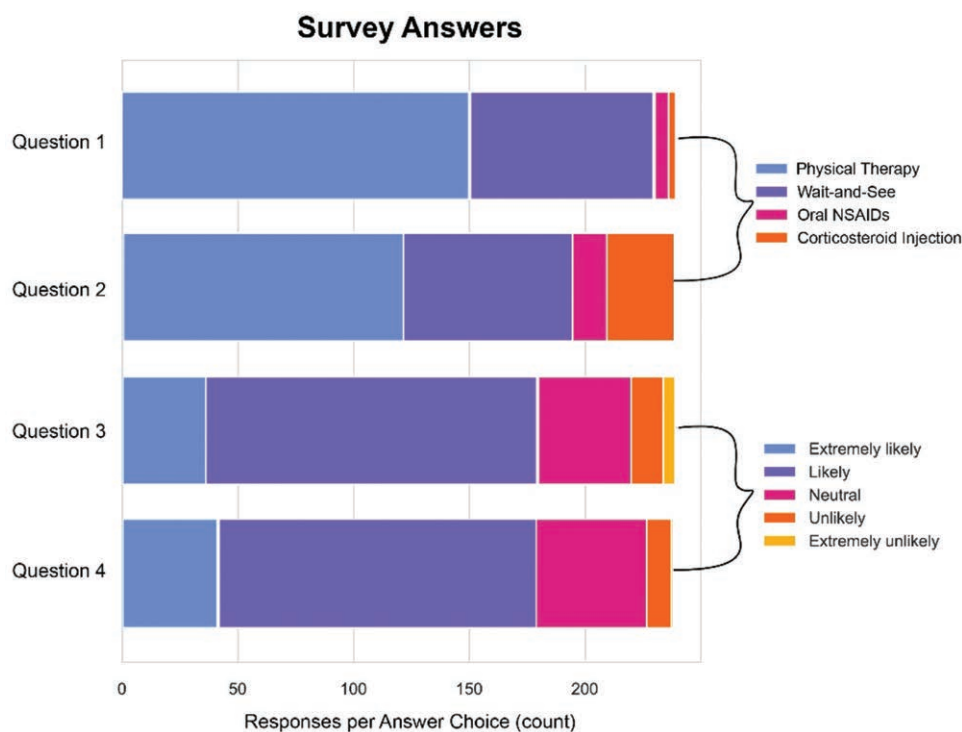


Fig. 1. Answers to the four-question survey.

directly into the affected area (your elbow) to promote healing. You are told that this treatment may help with temporary pain relief. However, there is no conclusive scientific evidence to suggest any long-term benefit compared with placebo treatments.

Question 3: With this information, how likely are you to choose PRP injection?

1. Extremely unlikely
2. Unlikely
3. Neutral
4. Likely
5. Extremely likely

Question 4: Attention check. Please do not answer. Please leave the question blank.

Scenario 4: After 9 months of nonoperative treatment, you are still having pain. You discuss the option of surgery with your orthopedic surgeon. The potential procedure would involve removing the torn portion of tendon at the elbow. As with any surgery, there are risks of surgery which include infection, nerve and blood vessel damage, possible prolonged rehabilitation, loss of strength, loss of flexibility, or the need for further surgery. You are told the success rate of surgery is around 75%.

Question 5: With this information, how likely are you to proceed with surgical treatment?

1. Extremely unlikely
2. Unlikely
3. Neutral
4. Likely
5. Extremely likely

Statistical Analysis

Descriptive data were presented in frequencies and percentages. McNemar chi-square test was used for paired nominal data. Chi-squared distribution was assumed and continuity correction used. The alpha value was set at 0.05. Data analysis was performed using custom analysis scripts in Python 3.10.

RESULTS

A total of 247 people responded to the survey outlined above within the AMT database. Nine respondents failed the attention question, and their responses were removed from further analysis. A total of 238 respondents were thus included in the final cohort. Study results are summarized in Figure 1.

Answers to questions 1 and 2 are outlined in Table 1. Question 1 asked respondents their preferred initial modality of treatment. A majority of respondents (63%) elected to proceed with formal physical therapy, followed by the wait-and-see approach (33.2%), oral NSAIDs (2.5%), and corticosteroid injections (1.3%). Question 2 asked respondents their preferred initial

Table 1. Answer Choice Distribution for Questions 1 and 2

	Question 1	Question 2
Physical therapy	150 (63.0%)	121 (50.8%)
Wait-and-see	79 (33.2%)	73 (30.7%)
Oral NSAIDs	6 (2.5%)	15 (6.3%)
Corticosteroid injection	3 (1.3%)	29 (12.2%)

McNemar chi-square test used to compare the responses from questions 1 and 2 revealed a P value of 0.90.

Table 2. Answer Choice Distribution for Questions 3 and 5

	Question 3	Question 5
Extremely likely	36 (15.1%)	41 (17.2%)
Likely	143 (60.1%)	137 (57.6%)
Neutral	40 (16.8%)	48 (20.2%)
Unlikely	14 (5.9%)	11 (4.6%)
Extremely unlikely	5 (2.1%)	1 (0.4%)

treatment modality with the additional information of pain relief provided by a corticosteroid injection. With this additional information, 50.8% of respondents reported preferring physical therapy, followed by 30.7% for the wait-and-see approach, 6.3% for oral NSAIDs, and 12.2% electing for corticosteroid injections. McNemar chi-square test was used to compare the responses from questions 1 and 2 and revealed a *P* value of 0.90, revealing no difference between responses for questions 1 and 2.

The results for questions 3 and 5 are summarized in Table 2. Question 3 asked respondents the potential to use PRP for treatment. A majority of respondents (75.2%) were likely or extremely likely to do so, while 16.8% of respondents were neutral, 5.9% of respondents were unlikely, and 2.1% of respondents were extremely unlikely. Question 5 asked respondents how likely they were to proceed with surgical intervention for continued symptoms. A majority of respondents (74.8%) were extremely likely or likely to do so, while 20.2% of respondents were neutral, and 5% were unlikely or extremely unlikely to proceed with surgery.

DISCUSSION

Numerous treatment options have been proposed for lateral epicondylitis: a debilitating cause of lateral elbow pain. Due to the multitude of available treatments and conflicting evidence, the optimal treatment algorithm for lateral epicondylitis remains unclear. In the present study, we surveyed 238 respondents on the AMT database to better delineate the patient perspective. When presented with the most common options for initial treatment, a majority of the cohort preferred formal physical therapy (Table 1). When provided additional information regarding potential pain relief with the corticosteroid injection without long-term benefit, formal physical therapy still remained the preferred answer (Table 1). An increased proportion of respondents elected to proceed with the corticosteroid injection; however, this did not reach statistical significance.

Without receiving any background information, survey respondents collectively preferred physical therapy over a wait-and-see approach to initial nonoperative management of lateral epicondylitis. This finding suggests that patients may prefer some form of active treatment compared with observation alone. A prior meta-analysis reveals no difference in overall improvement, patient outcome scores, and grip strength between patients undergoing nonoperative treatment versus observation with follow-up of at least 6 months.²⁰ Perhaps the discrepancy between wanting to pursue physical therapy without any clear

clinical benefit can be attributed to inadequate patient education.²¹ Patients should be informed that observation, or the wait-and-see approach, is a reasonable choice given that lateral epicondylitis is often a self-limiting condition.²¹ If provided with this additional information, it is possible that more respondents would have selected the wait-and-see answer choice, representing a potential gap in patient education regarding lateral epicondylitis.

When asked regarding PRP as a potential treatment option, 75.2% of survey respondents reported being “likely” or “extremely likely” to proceed with PRP injection. This is interesting because the question stem mentions “there is no conclusive scientific evidence to suggest any long-term benefit.” This statement was based on the findings of a prior systematic review by Simental-Mendía et al.²² A review of five trials found that there was no statistically significant difference appreciated for pain and functional outcome scores between PRP and placebo injections.²² The findings of our study are somewhat surprising, in that respondents would potentially consider PRP injections despite inconclusive scientific evidence. This suggests that perhaps respondents may have heard favorably about PRP injections—potentially from what they have read previously or what they have heard from others’ experiences. Medical providers should factor this into discussions of PRP injections with patients, knowing that patients may have a predisposition for undergoing PRP injection for treatment of lateral epicondylitis.

When asked about surgery for continued symptoms, the vast majority of patients were “likely” or “extremely likely” to proceed with surgical intervention (74.8%, Table 2). In a retrospective study of 1213 patients with lateral epicondylitis, 75% of patients returned to full activities without pain. With various open and arthroscopic techniques now being used, around 70%–80% of patients are satisfied with surgical intervention.¹⁴ These studies served as the basis for the success rate proposed to survey respondents. Interestingly, a majority of patients were willing to consider surgical intervention, despite not being guaranteed complete success of the operation. This suggests that in patients with prolonged lateral elbow pain due to lateral epicondylitis refractory to nonoperative treatment, discussion of surgical intervention may be warranted.

Counseling patients with lateral epicondylitis can be a difficult task due to the multitude of treatments available. Inconsistencies between treatment guidelines can make these conversations even more challenging. The Canadian Shoulder and Elbow Society recommends the wait-and-see approach for nonoperative treatment of lateral epicondylitis, due to the inadequate evidence for the efficacy of physical therapy or injections.²³ The Japanese Orthopaedic Association clinical practice guidelines recommend pursuing a corticosteroid injection for short-term pain relief, and are in support of physical therapy.²⁴ Patient perceptions of their condition can also play a role in overall treatment. Lee et al found that patients who used more positive phrases were more likely to cope with observation when recommended.²⁵ Thus, if observation is being discussed with patients for treatment of lateral epicondylitis, physicians should take into account

each patient's attitude and coping strategies used. For patients with more negative attitudes, perhaps there is a role for physical therapy given that it is safe and relatively low-risk.²⁴ This would align with what respondent preferences in the survey administered in the present study.

Limitations of the present study are similar to those of prior survey-based studies.^{16,17} It is possible that respondents may change their answers if they actually had symptoms of lateral epicondylitis. Perhaps with the sensation of actual pain, respondents of the survey may prefer more invasive options for treatment initially, such as a corticosteroid injection. A future study to address this may include a cohort of patients in a clinic setting with lateral epicondylitis administered the same survey as those in the present study. This may also provide further insight into AMT as a tool to elucidate the patient perspective on other pathologies. In addition, we did not verify that the population answering the survey matched that of the general population, though AMT respondents are considered to be representative of the general population in prior studies.^{18,19} This was not possible as we did not collect demographic information. Another limitation in our survey was that in asking respondents about preferences for PRP injection, we did not factor in discussions of treatment costs into this. Perhaps having to pay out of pocket for this treatment may change the likelihood that respondents would be willing to proceed with PRP injection. A future iteration of this study may compare preferences for PRP versus corticosteroid injections among patients to further elucidate between these two options. However, the present study has the strengths of having a large sample size, better allowing us to define treatment preferences for lateral epicondylitis.

CONCLUSIONS

In the setting of numerous treatment options and no standardized treatment algorithm, it is important to include patient preferences in treatment discussions. From our survey, we found respondents preferred formal physical therapy for initial treatment, even when the possibility of a corticosteroid injection was mentioned. A surprising majority of respondents also were likely to consider a PRP injection, even when told that evidence for PRP injections is inconclusive. With prolonged symptoms, respondents were interested in discussions of surgical intervention. As we discern between various treatment options for lateral epicondylitis, perhaps these preferences can be incorporated into the development of future treatment guidelines.

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DISCLOSURE

The authors have no financial interest to declare in relation to the content of this article.

REFERENCES

- Degen RM, Conti MS, Camp CL, et al. Epidemiology and disease burden of lateral epicondylitis in the USA: analysis of 85,318 patients. *HSS J*. 2018;14:9–14.
- Jobe N, Ciccotti N. Lateral and medial epicondylitis of the elbow. *J Am Acad Orthop Surg*. 1994;2:1–8.
- Coombes BK, Bisset L, Vicenzino B. Management of lateral elbow tendinopathy: one size does not fit all. *J Orthop Sports Phys Ther*. 2015;45:938–949.
- Kraushaar BS, Nirschl RP. Tendinosis of the elbow (tennis elbow). Clinical features and findings of histological, immunohistochemical, and electron microscopy studies. *J Bone Joint Surg Am*. 1999;81:259–278.
- Bishai SK, Plancher KD. The basic science of lateral epicondylitis: update for the future. *Tech Orthop*. 2006;21:250–255.
- Shiri R, Viikari-Juntura E, Varonen H, et al. Prevalence and determinants of lateral and medial epicondylitis: a population study. *Am J Epidemiol*. 2006;164:1065–1074.
- Sims SE, Miller K, Elfar JC, et al. Non-surgical treatment of lateral epicondylitis: a systematic review of randomized controlled trials. *Hand (N Y)*. 2014;9:419–446.
- Mens JM, Stoeckart R, Snijders CJ, et al. Tennis elbow, natural course and relationship with physical activities: an inquiry among physicians. *J Sports Med Phys Fitness*. 1999;39:244–248.
- Sanders TL, Jr, Maradit Kremers H, Bryan AJ, et al. The epidemiology and health care burden of tennis elbow: a population-based study. *Am J Sports Med*. 2015;43:1066–1071.
- Coombes BK, Bisset L, Brooks P, et al. Effect of corticosteroid injection, physiotherapy, or both on clinical outcomes in patients with unilateral lateral epicondylalgia: a randomized controlled trial. *JAMA*. 2013;309:461–469.
- Gosens T, Peerbooms JC, van Laar W, et al. Ongoing positive effect of platelet-rich plasma versus corticosteroid injection in lateral epicondylitis: a double-blind randomized controlled trial with 2-year follow-up. *Am J Sports Med*. 2011;39:1200–1208.
- Schroeder AN, Tenforde AS, Jelsing EJ. Extracorporeal shock-wave therapy in the management of sports medicine injuries. *Curr Sports Med Rep*. 2021;20:298–305.
- Placzek R, Drescher W, Deuretzbacher G, et al. Treatment of chronic radial epicondylitis with botulinum toxin A. A double-blind, placebo-controlled, randomized multicenter study. *J Bone Joint Surg Am*. 2007;89:255–260.
- Gregory BP, Wysocki RW, Cohen MS. Controversies in surgical management of recalcitrant enthesopathy of the extensor carpi radialis brevis. *J Hand Surg Am*. 2016;41:856–859.
- Niedermeier SR, Crouser N, Speeckaert A, et al. A survey of fellowship-trained upper extremity surgeons on treatment of lateral epicondylitis. *Hand (N Y)*. 2019;14:597–601.
- Blough C, Najdawi J, Kuschner S. Patient preference for trigger finger treatment. *World J Orthop*. 2022;13:1006–1014.
- Blough CL, Kuschner SH, Berihun H, et al. Carpal tunnel syndrome: as seen from the perspective of the patient. *Plast Reconstr Surg Global Open*. 2023;11:e5146.
- Bartneck C, Duenser A, Moltchanova E, et al. Comparing the similarity of responses received from studies in Amazon's Mechanical Turk to studies conducted online and with direct recruitment. *PLoS One*. 2015;10:e0121595.
- Buhrmester M, Kwang T, Gosling SD. Amazon's Mechanical Turk: a new source of inexpensive, yet high-quality, data? *Perspect Psychol Sci*. 2011;6:3–5.
- Sayegh ET, Strauch RJ. Does nonsurgical treatment improve longitudinal outcomes of lateral epicondylitis over no treatment? A meta-analysis. *Clin Orthop Relat Res*. 2015;473:1093–1107.
- Wolf JM. Lateral epicondylitis. *N Engl J Med*. 2023;388:2371–2377.
- Simental-Mendía M, Vilchez-Cavazos F, Alvarez-Villalobos N, et al. Clinical efficacy of platelet-rich plasma in the treatment of

- lateral epicondylitis: a systematic review and meta-analysis of randomized placebo-controlled clinical trials. *Clin Rheumatol*. 2020;39:2255–2265.
23. Lapner P, Alfonso A, Herbert-Davies J, et al; Canadian Shoulder and Elbow Society (CSES). Position statement: nonoperative management of lateral epicondylitis in adults. *Can J Surg*. 2022;65:E625–E629.
 24. Amako M, Arai T, Iba K, et al. Japanese Orthopaedic Association (JOA) clinical practice guidelines on the management of lateral epicondylitis of the humerus—Secondary publication. *J Orthop Sci*. 2022;27:514–532.
 25. Lee DO, Gong HS, Kim JH, et al. The relationship between positive or negative phrasing and patients' coping with lateral epicondylitis. *J Shoulder Elbow Surg*. 2014;23:567–572.