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### Evaluating the Efficacy of Ultrasound-Guided Percutaneous Tenotomy Procedure for the Treatment of Elbow Tendinosis (poster)

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# Evaluating the Efficacy of Ultrasound-Guided Percutaneous Tenotomy Procedure for the Treatment of Elbow Tendinosis.



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## Purpose

1. This study will investigate the efficacy of treating elbow tendinosis with ultrasound-guided percutaneous tenotomy (Tenex) procedure.
2. Evaluate any clinically significant improvements in the study group that can be attributed to the procedure.

## Introduction

- Elbow tendinosis is a common source of elbow pain caused by repetitive use of the flexor and/or extensor muscles of the forearm. In recent years, ultrasound-guided percutaneous tenotomy (Tenex) has gained popularity as a minimally invasive treatment of elbow tendinosis with promising outcomes for improving pain and functionality in patients. [1,2]
- Tenex uses a fine needle which is rapidly and repetitively passed through an affected tendon to break up scar tissue and create an acute local inflammatory response and promote proper tissue remodeling and healing. The use of ultrasound allows for accurate visualization of the affected tendon, minimizes unintended damage to surrounding structures, and shortens recovery time when compared to other surgical treatments. [1,3,4]



**Image 1.** Depiction of an ultrasound-guided percutaneous tenotomy procedure of the right lateral elbow

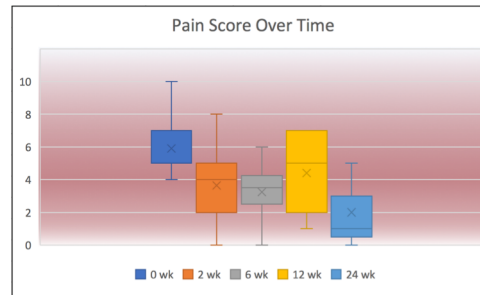
- Our particular study looks at the effectiveness of Tenex for improving pain related to elbow tendinosis in patients who have failed various combinations of conservative medical treatments including immobilization, oral drugs, local steroid injections, bracing, and physical rehabilitation.
- Recently, only a small number of studies have been done to look at the effectiveness of ultrasound-guided Tenex for tendinosis of various muscles.
- Our goal was to only use preexisting documented subjective and objective data from patient chart reviews in order to draw conclusions about the effectiveness of tenotomy. Additionally, we aimed to avoid certain research biases that may be associated with other similar studies that use patient surveys, including response bias, attrition bias, and Hawthorne effect.

## Hypothesis

- The ultrasound-guided Tenex procedure for elbow tendinosis shows statistically significant relief from pain and improved functionality in patients.

## Methods

- Ultrasound-guided percutaneous (Tenex) was performed by one physician at a Cooper Health Care Sports Medicine clinic on 11 elbows of 9 patients suffering from persistent elbow tendinosis refractory to conservative treatments from January 2017 - January 2020. Each patient was evaluated for pain using a numerical rating scale (NRS) of 0-10 during a pre-procedural office visit. The Tenex procedure was done using local anesthetic and sonographic guidance to fenestrate either the flexor or extensor tendons at the epicondyle of the target elbow. All patients were then assessed on the same NRS at a 2-week follow up visit, and some patients were also assessed at 6-week, 12-week, and 24-week post-procedural visits based on follow-up compliance.
- Data was analyzed using a T-test and non-parametric statistics to determine any significant difference among groups (pre and post-procedural).



**Figure 1.** Y-axis displays NRS pain score on a scale of 1-10. X-axis displays time after procedure (0 weeks represents the pre-procedural time point)

## Results

- Eleven ultrasound-guided Tenex procedures were performed on 9 patients for medial or lateral elbow tendinosis. Nine (82%) of 11 procedures showed a reduction in subjective pain and were considered successful at the 6-week post-procedure time. Two of those subjects (18%) remained pain free for the duration of the study period. One subject (9%) had improvement followed by reoccurring pain after 12 weeks. For the other 8 successful subjects, NRS scores (0-10 pain) were significantly reduced compared with the pretreatment score ( $P < 0.05$ ) with pre-procedural scores of 4 to 10 (average 6.25) and a final pain scores of 1 to 7 (average 2.4). Additionally, the average reduction in NRS score for successful treatments was 3.875 points.

## Discussion

- Currently, there is limited data related to the effectiveness of ultrasound-guided Tenex procedures for improving pain and functionality in patients with elbow tendinosis. Although pain and impingement from tendinosis can recur following a Tenex procedure, this treatment continues to show promising results for tendinosis refractory to conservative treatment.
- The results from our small study (n=11) showed an initial 82% success rate, which is consistent with similar existing literature of both prospective and retrospective study designs. [5] Additionally, we showed the effectiveness of the Tenex using existing data of basic NRS scores and without administering surveys, which can be subject to bias.
- Ultrasound-guided Tenex procedure is an effective and minimally invasive treatment of elbow tendinosis in patients who have failed conservative management and should be considered in chronic tendinosis patients.

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