

## INTRODUCTION

Achilles tendinopathy is the most common Achilles tendon disorder in athletic and sedentary individuals<sup>3</sup>. It leads to a triad of pain, swelling, and impaired performance. Symptoms can last anywhere from weeks to years causing significant difficulty with daily life. The Achilles tendon is the strongest tendon in the body and the influence of equinus is the strongest force leading to Achilles tendonopathy<sup>6</sup>. Conservative treatment usually begins with off-loading techniques such as the use of heel lifts along with shoe modifications or for more severe presentation, immobilization. Depending on patient progression, treatments such as topical anesthetics, oral anti-inflammatories, extracorporeal shockwave therapy and physical therapy can also be administered<sup>5</sup>. In cases where symptoms do not resolve, it may be indicated to reconstruct the tendon surgically. It has been found that the symptoms are due to stimulation of free nerve endings accompanying neovascularization rather than chronic inflammation<sup>3</sup>. **Prolotherapy** (Proliferative therapy) is a nonsurgical regenerative injection technique that introduces small amounts of chemical irritant (commonly hyperosmolar dextrose) to the site of painful and/or degenerated tendons or their insertions. This promotes healing by inflammation, leading to growth of normal cells and tissues. Studies have shown that dextrose injections into certain tissues can stimulate a number of growth factors, which are essential to tissue repair. Other substances used include saline and PRP. Furthermore, treatments are safe and can be administered up to 4-6 times until symptoms resolve. Under ultrasound guidance, a 25G needle is used to fenestrate and inject 0.5-1mL hyperosmolar dextrose to the injured area of the Achilles tendon (Fig 2). A risk of prolotherapy may be tendon rupture if not off-loaded appropriately. The use of prolotherapy along with other conservative modalities may help prevent the need for surgical intervention in certain cases. The purpose of this study is to evaluate the treatment response of prolotherapy in Achilles tendonitis.

## METHODS

We performed a retrospective analysis of patients being treated with prolotherapy for non-traumatic Achilles tendonitis at Boston Medical Center over the past 3 years. Results were recorded and analyzed.

## PROCEDURES

We reviewed 70 patients who underwent prolotherapy of the Achilles tendon from 2014-2016 via electronic medical record. Duration of pathology, number of prolotherapy sessions and final outcome data was recorded. Data was analyzed and results were recorded.

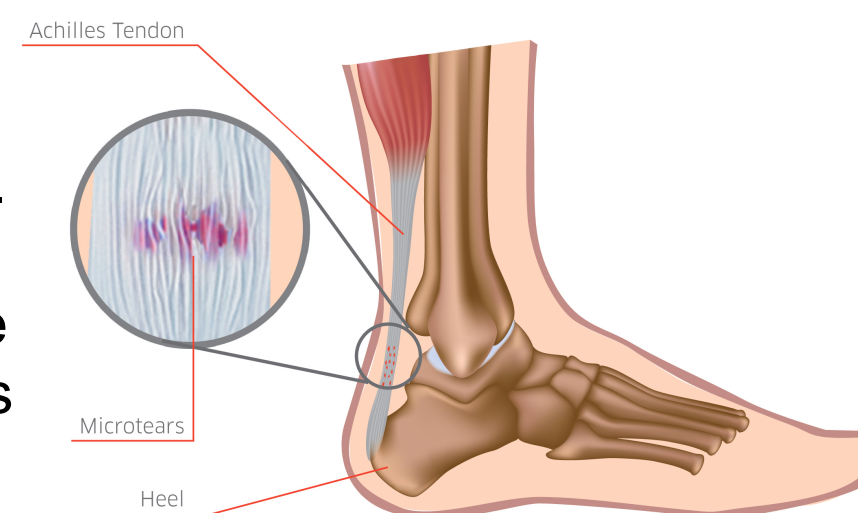
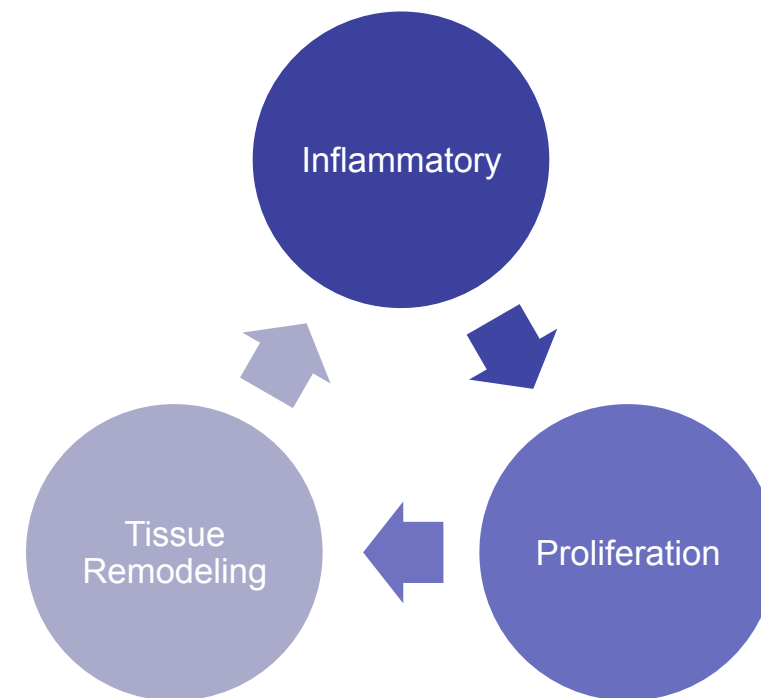


Figure 3: Area of inflammation can be midsubstance or insertional.



Figure 2: Ultrasound guided prolotherapy injection

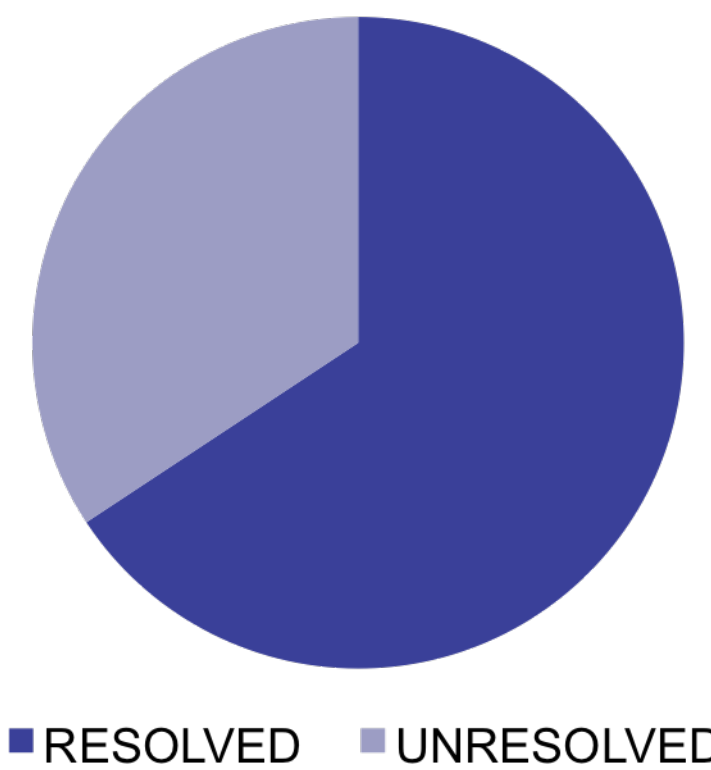


Figure 4: 66% of study set had resolution of symptoms. The remaining 34% continued to have pain and may have gone on to surgical intervention.

## RESULTS

The average age was  $56.2 \pm 8.7$  years composed of 46 female and 24 male patients.

- ❖ 46 (66%) had resolution of pain
  - ❖ 25 had only 1 treatment
  - ❖ 21 patients had 2 or more treatments
- ❖ 24 (34%) did not have resolution of pain
- ❖ Patients with >1 year of pain: 46% did not have resolution within 1 year

## CONCLUSIONS

In our institution, prolotherapy has been shown to be an effective conservative therapy for Achilles tendonitis. There was also a greater success rate with treatment of pain lasting less than one year. Of the patients who resolved symptoms, there was no significant correlation with the number of treatments and healing. With the combination of early identification, off-loading and appropriate physical therapy, prolotherapy may alleviate pain and prevent the need of surgical reconstruction.

There are a few limitations to the study. Our results do not differentiate insertional and midsubstance tendonitis. We also did not consider the influence of a Haglund's deformity. Prospective studies need to be done for further evaluation of prolotherapy in Achilles tendinopathy.

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