Treatment of Achilles Tendinopathies Using Ultrasound Guided Achilles Tenolysis with dHACM and an Amnion Injectable

David Bernstein, DPM FAFAS, Neil Patel, DPM PGY2, Lucy Barrow, DPM PGY1

Bryn Mawr Hospital, Main Line Health

Purpose & Literature Review

This case series presents the benefits and accuracy of ultrasound guided Achilles tenolysis with injection of a dehydrated human amnion/chorion Membrane (dHACM) or an amnion product for treatment of Achilles tendinopathies. The definition of Achilles tendinopathy can include Achilles tendinitis, Achilles tendinosis and Achilles partial thickness tears < 3.0 cm. This case series presents our surgical technique and pre and post-operative protocol for the treatment of these pathologies using dHACM.

Current literature has given evidence that high-volume image guided injections (HVIGI) has been shown to improve pain and function over dry needling alone. Chaundry et al performed a literature review and found that HVIGI provided good short to long term results. However, the benefits of replacing the standard lidocaine and saline mixture with dHACM has not been proven as a alternative technique.

A study by Nicodemo et al showed that amnion injections in the Achilles tendons of sixty rats displayed accelerated reduction in the inflammatory response. Additionally, it provided a more intense proliferation of fibroblasts and organization of collagen fibers.

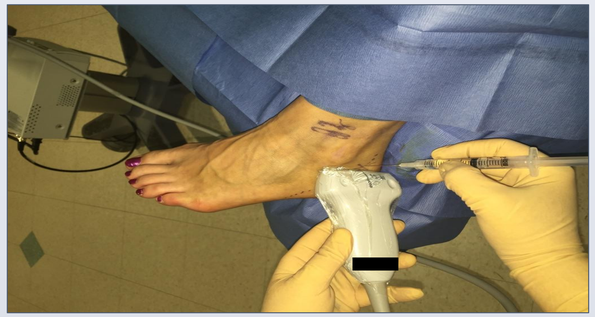
Another study by Gellhorn et al showed a 30% improvement in pain and activities of daily living in all 40 patients who were injected with ultrasound guided dHACM to various tendons in the body.

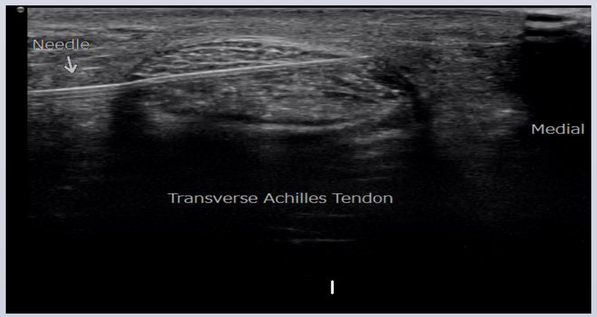
Methodology

Other methods of the tendon debridement such as open debridement and radiofrequency ablation can lead to incisional healing complications or inaccurate location of debridement. Ultrasound guided tenolysis is a less invasive and much more precise procedure for operative treatment of Achilles tendinopathies. In addition, the injection of dHACM and amnion products modulates inflammation, provides essential healing factors, and reduces scar tissue formation.

Procedures

12 patients underwent ultrasound guided Achilles tenolysis with injection of a biological product. All of them failed conservative therapy for Achilles tendinopathy, at which time an MRI was performed. Most MRIs showed either Achilles tendinitis, Achilles tendinosis, or partial thickness tears < 3.0 cm. Conservative therapy consisted of a CAM walker, night splint, oral NSAIDs and physical therapy for 4-6 weeks. Our ultrasound guided procedure utilized either 18, 20 or 22 gauge needles depending on the size of the tendon. It was passed 5 times per 1.0 cm– 1.5 cm through area the damaged portion of tendon in the longitudinal and transverse planes. Then an injection of dHACM or an amnion product was infiltrated into the area of tendon debridement.





Results

Patients recovered from the procedure quickly and could return to some of their daily activities as early as the two to three days. Post-operative course included a compression dressing for one week and weight bearing as tolerated in a CAM walker for six weeks. A multiple ligament ankle brace and physical therapy was utilized for 2-3 months. Patients are allowed to drive a car after one week with their ankle brace without the CAM boot. Most patient noted significantly less pain and swelling in their follow up appointments during the first two months and were 80 to 100% healed after 6-8 months.

Discussions

This case series details our use of ultrasound guided debridement with injection of either dHACM or an amnion material for treatment of Achilles tendinopathies. Our goal of this procedure is to offer an alternative, minimally invasive treatment plan for Achilles tendon pathologies. We believe that dHACM may offer an effective option to provide the patient with quicker healing and return to daily life activities.

Resources

1.Maffulli N, Spiezia F, Longo UG, Denaro V, Maffulli GD. High volume image guided injections for the management of chronic tendinopathy of the main body of the Achilles tendon. Phys Ther Sport. 2013;14(3):163-7.
2.Gellhorn AC, Han A. The Use of Dehydrated Human Amnion/Chorion Membrane Allograft Injection for the Treatment of Tendinopathy or Arthritis: A Case Series Involving 40 Patients. PM R. 2017
3.Chaudhry FA. Effectiveness of dry needling and high-volume image-guided injection in the management of chronic mid-portion Achilles tendinopathy in adult population: a literature review. Eur J Orthop Surg Traumatol. 2017;27(4):441-448.
4.Nicodemo MC, Neves LR, Aguiar JC, et al. Amniotic membrane as an option for treatment of acute Achilles tendon injury in rats. Acta Cir Bras. 2017;32(2):125-139.
5.Wheeler PC, Mahadevan D, Bhatt R, Bhatia M. A Comparison of Two Different High-Volume Image-Guided Injection Procedures for Patients With Chronic Noninsertional Achilles Tendinopathy: A Pragmatic Retrospective Cohort Study. J Foot Ankle Surg. 2016;55(5):976-9.
6. Esaote Clinical Images. Digital images. Esaote Clinical Images. Esaote, 10 Sept. 2014. Web. 27 July 2016

*Dr. David Bernstein is a speaker for MiMedx