Gross CE, Hsu AR, et al. Injectable treatments for noninsertional Achilles tendinosis: a systematic review. Foot Ankle Int. 2013;34(5):619-28.

Design: Systematic review of randomized and nonrandomized clinical trials

Purpose of study: to review clinical outcomes of injection treatments of Achilles tendinopathy, to identify patient characteristics associated with success of treatment, and to provide treatment recommendations based on the best available evidence

PICOS:

- Patient population: patients over 18 with midportion noninsertional Achilles tendinopathy, exclusive of insertional and acute Achilles tendon injury

- Interventions: Interventions with several experimental agents
    - Platelet rich plasma (PRP)
    - Autologous blood injection
    - Sclerosing agent
    - Protease inhibitor
    - Deproteinized hemodialysate
    - Corticosteroid
    - Prolotherapy
- Comparison interventions: saline injections, lidocaine or Marcaine injection, eccentric loading exercise, or saline plus local injection
- Outcomes: Victorian Institute of Sports Assessment-Achilles (VISA-A), pain VAS, pressure-pain threshold, lateral/sagittal diameter dimension of the affected tendon, and “response to treatment" defined as resumption of normal activity with no pain to palpation on examination
- Study types: randomized and nonrandomized studies were both considered for inclusion, but some study designs were excluded
    - Retrospective studies without control groups
    - Pilot studies
    - Case reports
    - Systematic reviews and narrative review articles

Study selection:

- Databases were MEDLINE and EMBASE from inception through the first week of March 2012
- Data were abstracted by 1 reviewer and verified by a second author with graduate training in clinical epidemiology
- Study quality was assessed in the Detsky scale, which focuses on randomization, outcome measurement, inclusion/exclusion criteria, description of treatment, and statistics

    - Studies scoring greater than 75% were considered high quality, while those scoring less than 75% were considered low quality

Results:

- 643 citations were screened, 20 were potentially eligible, and 9 studies with 312 Achilles tendons were included, all of which were randomized trials with some level of blinding
- However, only one study met the definition of high quality with a 75% score on the Detsky scale, as it was double-blinded and has sound inclusion/exclusion criteria, objective outcome measures, and appropriate statistical analysis
    - This high-quality study (de Jonge 2011) enrolled 54 patients with chronic Achilles tendinopathy, all of whom had an eccentric training program but were randomized to PRP or placebo injection under ultrasonographic guidance, and at one year, no differences in VISA-A scores between groups were reported
- Two studies of steroid injection used different outcome measures and could not be combined
    - One study compared triamcinolone to placebo, and reported higher pain-threshold levels using algometry with the steroid than with the placebo group, but did not discuss the clinical relevance of that measure; the same study similarly compared tendon thickness on ultrasonography but did not explore the functional significance of that measure
    - The second study compared injection of methylprednisolone plus Marcaine with Marcaine alone, using return to normal activity as an outcome measure, with no difference between groups at 12 weeks
- One study of prolotherapy did not find that it was more effective than placebo
- One study of autologous whole blood similarly found it no more effective than placebo
- The reported rates of complications were low, and no patient had a frank Achilles tendon rupture, but reversible atrophy of the Achilles tendon was seen in half of the patients who had steroid injected next to the tendon in the one study which measured tendon thickness with ultrasonography

Authors' discussion:

- Most patients in the available studies had improvement with tendon injections, but similar improvements were seen in the placebo and control groups
- None of the studies showed a large treatment effect of any injection
- The study quality was low, and further research is very likely to have an important impact on treatment recommendations
- No definite recommendations can be made at this time

Comments:

- The date of the review is recent, and as of the time of publication, there appear to be insufficient high-quality studies to provide evidence of effectiveness of any of the several interventions reviewed by the authors
- The Detsky scale was published in 1992, and there are more current rating scales for study quality, but randomization, allocation concealment, blinding of outcome assessment, and adequate description of inclusion criteria and of interventions are mentioned and are relevant to the discussion; it is not clear why the authors chose the Detsky scale when they are aware of more recent developments such as the GRADE initiative for assessing study quality and relevance
- While the available evidence does not support any injections of Achilles tendinopathy, there is not sufficient evidence in terms of study power to form an evidence statement against their use in selected patients
    - The situation is therefore a case in which there is an absence of evidence of an effect of injections, not a case in which there is evidence of absence of an injection effect

Assessment: Adequate systematic review which nevertheless does not support evidence-based recommendations regarding the effectiveness of PRP, corticosteroid, or other injections for noninsertional Achilles tendinopathy

References:

de Jonge S, de Vos RJ, et al. One-year follow-up of platelet-rich plasma treatment in chronic Achilles tendinopathy: a double-blind randomized placebo-controlled trial. Am J Sports Med. 2011;39:1623-1629.

Detsky AS, Naylor CD, et al. Incorporating variations in the quality of individual randomized trials into meta-analysis. J Clin Epidemiol. 1992;45:255-265.