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Sonographically-guided Percutaneous Ultrasonic Tenotomy and Debridement for Chronic Proximal Conjoint Hamstring Tendinopathy

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Introduction

- Chronic tendon injuries resulting in tendon degeneration are common problems encountered in musculoskeletal medicine.
- Conservative treatments for proximal hamstring tendinopathy may include rest, physical therapy with an emphasis on eccentric strengthening, and nonsteroidal anti-inflammatory drugs [1]
- Recently, mechanical procedures such as needle fenestration and percutaneous ultrasonic tenotomy (PUT) have drawn attention as they may address the underlying pathology by helping the body remove pathologic tissues [2]

Clinical Case

- Patient is a 48-year-old world championship level Taekwondo player who presents with acute on chronic right buttocks pain.
- Her symptoms originally started 10 years ago while performing repetitive kicks during Taekwondo. At that time, she was diagnosed with a right proximal hamstring avulsion tear, which was managed conservatively.
- During a competition 4 months prior to presentation, she experienced a “pop” in the right proximal hamstring area followed by a 6/10, constant, achy and sharp pain exacerbated by high roundhouse kicks.
- One week following this incident, she underwent a sonographically-guided right proximal hamstring intra-tendinous autologous conditioned plasma (ACP) injection at the right proximal hamstring tendon. Despite this intervention, her symptoms were marginally improved.
- 6 weeks after her ACP injection, she underwent a sonographically-guided percutaneous ultrasonic tenotomy and debridement (PUT) of the the right proximal hamstring tendon.
- She used crutches for one day, but has been full weight bearing since that time.
- She participated in a 12-week graduated rehabilitation program with progression from multidirectional isometrics, to concentrics, followed by eccentric strengthening with resolution of her symptoms at rest and 80% improvement in her symptoms during full contact sparring and competition.

Clinical Features/Imaging

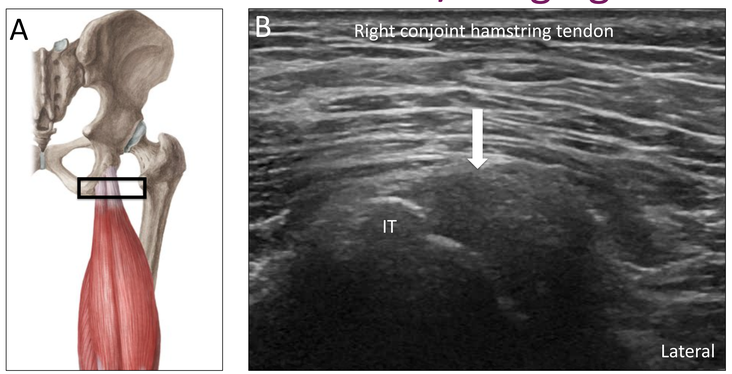

Figure 1: Sonographic features of acute on chronic right conjoint proximal hamstring tendinopathy. (A) Anatomy of the hamstring musculature and proximal tendon insertion. The black box indicates ultrasound probe positioning. (B) Sonographic visualization of the proximal aspect of the right conjoint hamstring tendon as it inserts on the ischial tuberosity (IT). The block arrow denotes the hypoechoic echotexture of the tendon, indicative of tendinopathy.

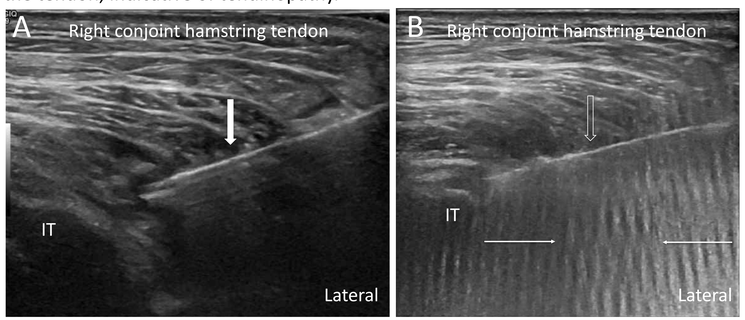

Figure 2: **Percutaneous ultrasonic tenotomy and debridement of the conjoint proximal hamstring tendon**. (A) Local anesthesia was obtained using a total of 8 mL of 1% lidocaine delivered initially with 30-gauge 1 inch needle, followed by a stab incision with #11 blade and subsequently using an 18-gauge 1.5-inch needle (arrow) under direct sonographic guidance using medial to lateral approach. (B) Thereafter, the TX2 device (open arrow) was advanced in a sonographic guided approach initially using an in-plane view. Subsequently, a percutaneous tenotomy and debridement was completed throughout the pathologic region of the medial conjoined hamstring tendon. Orthogonal long and short axis imaging was used to control Tenex tip position throughout the procedure. Care was taken to avoid the underlying and nearby sciatic nerve. In this manner, the entire tendinopathic portion of proximal hamstring tendon was treated. Total energy time was 150 seconds. The arrows indicate reverberation artifact from the activated TX2 device.

Discussion

- Percutaneous interventional treatments are often considered for chronic tendon degeneration when patients fail to improve with conservative treatment
- Historic percutaneous interventions have included corticosteroid and orthobiologic injections with limited data for long term benefits.
- Recently, mechanical procedures such as needle fenestration and PUT have drawn attention as they may address the underlying pathology by helping the body remove pathologic tissues [2]
- These local changes cause inflammation of the tendon, which is the initial phase of tissue healing, lasting up to 7 to 10 days after the procedure [3]. This phase of tissue healing is followed by targeted physical therapy to promote optimal healing and functional recovery.
- The most common tendons that have been treated with ultrasound-guided fenestration described in the literature include the common extensor tendon at the elbow, the patellar tendon, and the Achilles tendon.[4,5]
- While needle fenestration has been successfully employed for proximal hamstring injuries with mid-term success [1], there are no PubMed indexed reports on the use of PUT for proximal conjoint hamstring tendinopathy.

Conclusion

- The present case demonstrates that PUT can be an effective and safe treatment option for chronic proximal conjoint hamstring tendinopathy.
- Further studies are needed to elucidate a proper rehabilitation program, efficacy, and safety.

References

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