

Multimodal Care in the Management of a Patient With Chronic Tendinopathy of the Biceps Femoris: A Case Report

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ABSTRACT

Objective: The purpose of this case report was to describe the use of dry needling in conjunction with auricular acupuncture, core exercises, and light aerobic activity for treating chronic tendinopathy of the biceps femoris.

Clinical Features: A 30-year-old white female presented with chronic biceps femoris tendinopathy. The injury had occurred 18 months prior while training for a triathlon. Active stretching of her right biceps femoris while standing with her feet 6 inches apart aggravated the pain at the origin in the right tendon of the biceps femoris at 0 degrees of movement.

Intervention/Outcome: The combination of dry needling and auricular acupuncture with core rehabilitation exercises and light activity was employed. Alleviation of pain with full range of motion was achieved during hip extension, knee flexion, and standing biceps femoris stretch at the 11th, 16th, and 18th treatments. In addition, the patient also reported improvement in her symptoms, including night sweats, insomnia, anxiety, tension, and constipation.

Conclusions: This patient's symptoms and function improved after 18 treatments of multimodal care. Dry needling employed simultaneously with auricular acupuncture, core exercises, and light activity could be considered a possible strategy for treating chronic tendinopathy. (*J Chiropr Med* 2017;xx:1-7)

Key Indexing Terms: *Tendinopathy; Acupuncture; Chronic Pain*

INTRODUCTION

The American Academy of Pain Medicine estimated that 100 million people experience chronic pain.¹ In 2011, the treatment of chronic pain cost between \$261 billion and \$300 billion in the United States.¹ According to the Centers for Disease Control, doctors prescribed 259 million pain medications in 2012.²

An array of treatment strategies is available for patients with chronic pain, and these range from conservative therapies, including dry needling, auricular acupuncture, massage, or physical therapy, to more invasive options, such as surgery or injections. Several acupuncture techniques and dry needling have demonstrated efficacy for the treatment of certain types of chronic pain.³⁻⁵ These modalities may be used in combination with exercises to

supplement therapy. A case report described treatment of 2 runners with proximal biceps femoris tendinopathy with the use of a combination of eccentric loading and lumbopelvic stabilization exercises and dry needling. The therapy was administered once a week for 8 to 10 weeks, and clinical improvements were noted in pain, tenderness, and range of motion (ROM).⁶ Another example was the use of dry needling with stretching and strengthening exercises to treat chronic pain of the hip and thigh. Pain and functionality were improved according to the Lower Extremity Functional Scale and the Visual Analog Scale.⁷ The combination of these therapies was determined to be effective for treating chronic pain.⁷

The physiological effects of dry needling may manifest locally in tissues. Puncturing the epidermis with these minimally invasive needles has been shown to prevent collagen degradation by inhibiting matrix metalloproteinase activity. Matrix metalloproteinase is involved in the degradation of tissue resulting from damage. Inhibiting the activity of matrix metalloproteinase promotes tissue healing and repair.⁵ Evidence suggests that dry needling may downregulate the inflammatory cascade. It has the ability to inhibit the expression of nuclear-factor κ B, which disrupts the production of arachidonic acid, thus preventing the generation of inflammatory prostaglandins, leukotrienes, and thromboxanes.⁸ In addition, penetration of the

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tissue reduces inflammatory mediators tumor necrosis factor- α and interleukin-6.⁸

Available research data emphasize the potential benefit of dry needling for treating chronic pain. However, most studies utilizing dry needling for treating chronic pain were focused on musculoskeletal conditions. Information pertaining to the effectiveness of dry needling for tendinopathies is limited. In addition, only a minimal amount of information exists to validate the use of auricular therapy for pain management. In a study including 38 patients, true or sham auricular therapy was provided while patients were riding in an ambulance after a hip fracture. In patients receiving true auriculotherapy, less pain was observed in conjunction with lower levels of anxiety and a reduced heart rate, as well as overall satisfaction with treatment.⁴

The purpose of this case report is to describe the combination of dry needling and auricular acupuncture in conjunction with core exercises and light aerobic activity for the treatment of chronic tendinopathy of the right biceps femoris muscle.

CASE STUDY

History

A 30-year-old white female sought treatment for pain of her right biceps femoris muscle at its origin on the ischium. She noted that the pain had begun 18 months earlier. The onset of the pain was gradual. Pain would start during training, after running, or after cycling for a prolonged period. No trauma was associated with her injury. The pain intensified and eventually became constant during activity. The patient continued her training regimen and competed in the triathlon despite the nociceptive sensations, which were rated at 6 out of 10 on a numeric pain scale (NPS) with any activity requiring movement of the right lower extremity. The NPS ranged from 1 to 10 with 10 being the worst pain. However, the movements that generated the greatest exacerbation of pain were experienced during running and when riding a bicycle, activities that the patient continued to participate in on a weekly basis regardless of the pain. Pain was also noted during stretching of her biceps femoris tendon while standing with forward flexion of the trunk with feet apart and the legs extended and when seated for several hours in a car or at work.

The patient had previously tried several different treatment modalities. Active rehabilitation exercises, which consisted mainly of light cycling, stretching, and postisometric relaxation, in conjunction with ultrasonic therapy over the tendon of the biceps femoris, reduced her pain. However, the patient was not able to receive continuous care because of time constraints. Graston instrument-assisted soft tissue mobilization was applied to the tendon, and relief of pain did occur, but the patient discontinued care because of acute exacerbation of pain for 1 or 2 days after each treatment.

To aid in the selection of the auricular acupuncture points, history taking was performed according to Traditional Chinese Medicine. The patient stated that she typically felt hot but preferred drinks at warm temperatures. She tended to experience constipation frequently and was often hypersomnolent, sleeping for 8 to 10 hours a night, but she woke up feeling unrefreshed and fatigued. She had been experiencing disturbed sleep for over 2 years. She also had night sweats about 3 times a week sporadically in the past 2 years. Her demeanor was tense and anxious, and she felt “wired” most of the time and had for years prior to the onset of her chronic pain. She experienced polydipsia and craved sweet foods. Her pulse was wiry and rapid on the right side and choppy and rapid on the left. Her tongue was swollen and flaccid and had a thick, dry, yellow coating. From the perspective of Traditional Chinese Medicine, the patient was diagnosed with trauma *bi* syndrome complicated by spleen *qi* and kidney *yin* deficiency, resulting in deficiency heat.

Examination

Upon examination, no pain was elicited with unloaded active ROM. The patient had full active ROM of her right hip during extension while prone, which was 20 degrees, and right knee during flexion while prone, which was 130 degrees without pain. However, active stretching of her right biceps femoris while standing with feet 6 inches apart aggravated the pain at the origin in the right tendon of the biceps femoris at 0 degrees of movement. Full ROM with pain was 130 degrees. Nociceptive perception was 6 out of 10 on the NPS for active standing stretch of her biceps femoris. Right-sided hip extension and knee flexion against resistance were isolated to determine the quantity of pain produced by each movement. Resistance to both activities induced pain at 0 degrees upon initiation of movement, and she experienced a pain intensity of 5 out of 10 on the NPS.

Ischial tuberosity bursitis, biceps femoris tendinopathy, and an avulsion fracture were considered as potential differential diagnoses. The Erichsen test generated a minimal amount of pain in her sacroiliac joints bilaterally, and straight leg raise, Hibb, Yeoman, Mennell, and Laseque differentials, all tested on the right lower extremity, failed to reproduce pain. Palpation of the biceps femoris tendon at the ischium, and muscle body revealed hypertonicity and tenderness, as did palpation of the tensor fascia lata (TFL) and the iliotibial (IT) band.

On the basis of the information collected via evaluation and through history, the condition was not consistent with the signs and symptoms typically characteristic of ischial tuberosity bursitis or an avulsion fracture. Ischial tuberosity tendonitis typically manifests as localized pain in the hip or the buttock exacerbated by movement, which was the case in this patient.⁹ However, in this case, the pain was extending into the muscle body of the biceps femoris,

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