Successful Ultrasound-Guided Dry Needling for Treatment of Piriformis Syndrome

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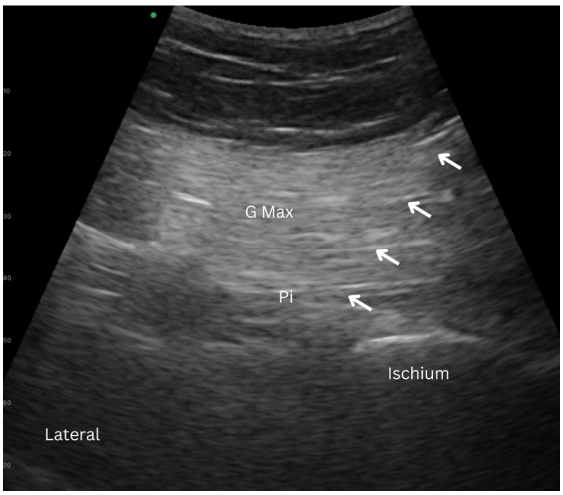

Figure 1. In-plane technique, ultrasound-guided dry needling of the piriformis muscle. G Max, gluteus maximus muscle; Pi, piriformis muscle; line arrows, needle

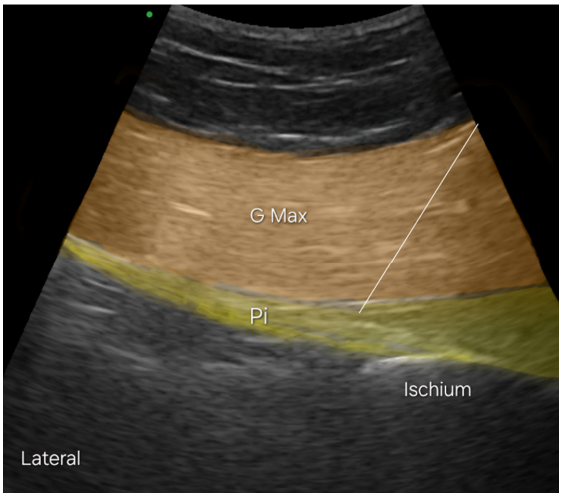

Figure 2. In-plane technique, ultrasound-guided dry needling of the piriformis muscle. G Max, gluteus maximus muscle; Pi, piriformis muscle; white line, needle

Piriformis syndrome is one of the overlooked differential diagnoses in middle-aged patients complaining of chronic buttock or low back pain, with or without radiation to the posterior thigh. The prevalence is reportedly varied between 5% and 36%, with a female-to-male ratio of 6:1.[1,2] Numerous treatment options exist, including lifestyle modification, physiotherapy, drugs (muscle relaxants, anti-inflammatory drugs, analgesics for neuropathic pain), acupuncture, dry needling, injection of corticosteroid, platelet-rich plasma, or botulinum toxin, and surgical release.[3] Nowadays, dry needling has been increasingly embraced as a potential treatment modality for musculoskeletal pain, including piriformis syndrome. Some studies reported the efficacy of dry needling in treating piriformis syndrome; however, most were performed based on landmark-guided techniques.[4,5] As ultrasound guidance allows real-time visualization, ultrasound-guided dry needling improves accuracy in treating piriformis syndrome.

A 69-year-old woman presented the clinic

with right gluteal pain for about 9 months. The pain was fluctuating, aggravated after prolonged sitting and getting up from a chair. It sometimes radiated to the posterior region of the right thigh. The pain intensity scale ranged from 5/10 to 7/10. She was previously treated with etoricoxib 90 mg OD, tramadol 50 mg TID, and physiotherapy with no complete relief of symptoms. She had no surgical history, trauma, fracture, autoimmune diseases, diabetes, or hip buttock infection previously. On physical examination, the body mass index was 25.5 kg/m^2. There was right gluteal tenderness on local palpation, mostly at around the greater sciatic notch area, and the pain was elicited by Pace, Beatty, and hip flexion-adduction-internal rotation (FAIR) maneuver tests. No abnormalities on sensory-motor test of lower extremities, and the Lasegue test was negative. After consent, ultrasound examination was carried out by placing a low-frequency (3-5 MHz) curvilinear transducer at the right gluteal region in a slightly oblique position. After determining the piriformis muscle (hypoechoic structure beneath the gluteus maximus muscle), a 0.3 x 75 mm needle was inserted using an in-plane technique from medial to lateral (**Figure 1** and **Figure 2**). Lift-thrust technique was performed, and twitch response in the piriformis muscle was elicited. After the second session of repeated treatment a week later, the patient reported a decrease in pain scale to 2/10.

Excessive contraction of the piriformis muscle, anatomical variations of the piriformis muscle, or the sciatic nerve might lead to piriformis syndrome. Currently, there are no gold standard therapies for piriformis syndrome, with various treatment options available.[3] Although dry needling is not as popular as substance injection, such as botulinum toxin, lidocaine, or steroid in piriformis syndrome therapy, it is not inferior to substance injection. It also has an advantage as no chemical substance is injected into the muscle, hence avoiding any potential adverse effects from the injected substance. Dry needling is proposed to alleviate pain through inactivation of myofascial trigger points, disruption of myofascial trigger points' taut band, and inhibition of pain transmission to dorsal horn cells in the spinal cord. Moreover, the twitch response, an involuntary contraction of muscle fibre during needling, is related to a decrease in tenderness and stiffness. Lower levels of substance P and calcitonin gene-related peptide after twitch response underlie the pain relief mechanism.[6,7] Ultrasound imaging provides a real-time, optimal visualization of the structure, especially during any invasive procedure inside the deep structure. Compared with other guidance modalities such as fluoroscopy, CT, or MRI, the ultrasound has some advantages, such as being radiation-free, more affordable, and greater portable. Thus, ultrasound-guided dry needling might serve as a safe, cost-effective treatment modality in piriformis syndrome.

CONFLICT OF INTEREST

The authors have no conflicts of interest to disclose.

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