A 54-year-old man complained of right buttock pain that had persisted for 2 weeks and worsened when walking at a fast pace or climbing stairs. He did not experience pain radiating to the ipsilateral leg and denied any sports injury or trauma to his buttocks. Treatment with nonsteroidal anti-inflammatory drugs and physical modalities (e.g., ultrasound diathermy and transcutaneous electrical nerve stimulation) did not alleviate his symptoms. With a suspected diagnosis of piriformis syndrome, the patient was referred to the Department of Physical Medicine and Rehabilitation for an ultrasound-guided injection.

During ultrasound examination of the right gluteal region, the piriformis muscle and tendon were found to have normal echotexture and size. Sonopalpation did not elicit pain, and the patient reported that the pain seemed to originate in a region caudal to the great sciatic notch. The ultrasound transducer was then moved toward the ischial tuberosity. Compared to the asymptomatic side (Fig. 1A), swelling and loss of the fibrillary pattern over the medial aspect of the quadratus femoris muscle were detected on the symptomatic side (Fig. 1B). Power Doppler imaging revealed a normal medial femoral circumflex artery between the quadratus femoris and obturator externus (OE) muscles without increased intramuscular vascularity (Fig. 2A). Because the...
patient experienced buttock pain during internal/external hip rotation, ischiofemoral impingement syndrome (IFS) was highly likely the underlying cause. Using an in-plane approach, ultrasound-guided injection of the affected quadratus femoris muscle was performed using a mixture of 5 mL 50% dextrose and 5 mL 1% lidocaine (Fig. 2B). Two weeks after the injection, the patient reported complete pain relief.

IFS results from narrowing of the space between the ischial tuberosity and trochanter, leading to irritation of the quadratus femoris muscle [1]. Patients typically present with posterior buttock pain and the clinical scenario cannot be distinguished from that of deep gluteal and hamstring syndromes. IFS is associated with several biomechanical factors including femoral anteversion with a compensatory toe-in posture during ambulation [2]. Physical findings may include tenderness near the ischial tuberosity and a positive long-stride walking test [3]. Magnetic resonance imaging (MRI) is often necessary to confirm the diagnosis, as it can reveal edema, fatty infiltration, and increased thickness of the quadratus femoris muscle [4].

Ultrasonography can be useful for visualizing deep gluteal muscles, including the quadratus femoris [5]. However, because a large portion of the quadratus femoris muscle is hidden by the acoustic shadow of the ischial tuberosity, not every patient with IFS exhibits pathological sonographic findings. However, internal femoral rotation improves visualization of the muscle's medial aspect [6]. Ultrasound-guided injection of the fascial plane between the quadratus femoris and the OE muscles can facilitate the diagnosis and treatment of IFS by allowing more injectate to infiltrate the deep portion of the quadratus femoris. It is important that power Doppler imaging is used during injection to prevent collateral injury to the medial femoral circumflex artery that typically courses inside the target fascial space. In cases where patients do not respond to ultrasound-guided interventions or experience recurrent pain shortly after injection, it is advisable to promptly schedule an MRI to exclude the possibility of a more serious condition such as sarcoma of the pelvic cavity.

**Learning points**

- Ischiofemoral impingement syndrome is caused by narrowing of the space between the ischial tuberosity and trochanter, leading to posterior buttock pain.
- Magnetic resonance imaging is the gold standard for diagnosis, whereas ultrasonography can help visualize the deep gluteal muscles.
- Ultrasound-guided injection between the quadratus femoris and obturator internus is useful in treatment but requires power Doppler imaging to prevent collateral vascular injury.

**Notes**

**Ethical statements**

In the authors’ institutions, approval from the institutional review board is not required for the case report. Written patient consent was obtained for the publication of this report.
Conflicts of interest
Wei-Ting Wu and Ke-Vin Chang have been editorial board members of the *Journal of Yeungnam Medical Science* since 2021. They were not involved in the review process of this manuscript. There are no other conflicts of interest to declare.

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