

Ultrasound-Guided Injection of the Piriformis Muscle

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This feature is a unique combination of text (voice) and video that more clearly presents and explains procedures in musculoskeletal medicine. These videos will be available on the journal's Website. We hope that this new feature will change and enhance the learning experience.

Walter R. Frontera, MD, PhD, Editor-in-Chief



Video Gallery: To view the online video of these procedures, use your smartphone camera QR Reader App to scan and capture this QR Code or visit www.AJPMR.com to locate this digital video content.

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ANATOMY AND BRIEF DESCRIPTION OF PIRIFORMIS SYNDROME

The piriformis muscle lies deep in the gluteus maximus.¹ Originating from the anterior aspect of the sacrum and inserting into the upper border of the greater trochanter, its contraction causes an abduction and lateral rotation of the thigh. Piriformis syndrome is considered by many clinicians as a condition in which the said muscle physically irritates the sciatic nerve because of muscle strain, overuse, or anatomic anomaly.¹ Persons with this syndrome often present with ipsilateral numbness, tingling, and pain in the buttocks, thigh, and leg, resembling features of sciatica.¹ Approximately 6%–8% of low back pain can be attributed to the piriformis syndrome,² which remains a diagnosis of exclusion, after other etiologies such as spinal nerve root compression have been ruled out.³ Stretching and massage

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therapy have been shown to reduce the sciatica-like symptoms caused by piriformis syndrome.¹ Clinicians who are comfortable with interventional procedures have also conducted piriformis injections for diagnostic and therapeutic purposes.³ This may be helpful when the pain is localized in the buttocks region and if piriformis muscle strain, spasm, or inflammation were considered as likely causes.

When examining the piriformis muscle using ultrasound, the patient should first assume the prone position.¹ Placing a pillow or towels between the bed and the patient's inguinal area can help increase the pelvic tilt. This allows better visualization of the piriformis muscle via ultrasound. A curvilinear transducer is placed in a transverse orientation to first identify the sacral cornuae and is then moved toward the greater trochanter until the lateral edge of the sacrum is observed. The transducer is moved further laterally until the greater trochanter and ilium are both observed (Fig. 1). The piriformis muscle will appear as a hyperechoic band lying between the lateral edge of the sacrum and the greater trochanter and deep in the gluteus maximus muscle. The sciatic nerve appears as an oval-shaped hypoechoic structure lying deep in the piriformis muscle (Fig. 2).

ULTRASOUND-GUIDED PIRIFORMIS MUSCLE INJECTION

Clinicians have reported successful applications of electrophysiologic technique, fluoroscopy, computed tomography,

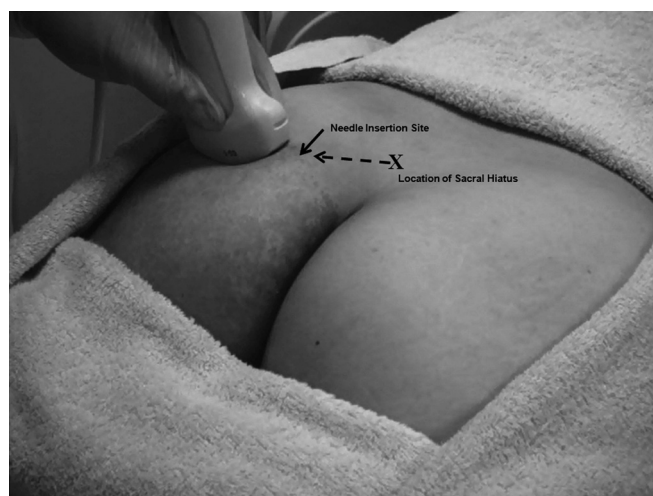


FIGURE 1 Positioning a patient for ultrasound-guided examination and injection of the piriformis muscle. The patient assumes the prone body position during ultrasound-guided examination. A curvilinear transducer is preferred. The sacral hiatus "X" is identified first; afterward, the transducer is moved in a lateral direction (dotted arrow) towards the greater trochanter. The piriformis muscle is located between the lateral border the sacrum and the greater trochanter.

and magnetic resonance imaging to improve the accuracy of needle placement into the piriformis muscle.⁴ During the past few years, musculoskeletal ultrasound has shown promise as a visual guidance tool for piriformis muscle injections.⁴ The 21- or 23-gauge long needles are typically recommended for injection purposes. The 21-gauge needle is preferred by the current authors because it is more rigid (compared with the 23-gauge needle); therefore, excessive bending of the needle is less likely to occur during the procedure. The medial-to-lateral approach is recommended when performing the ultrasound-guided piriformis muscle injection (Figs. 1 and 3).⁴ While reading the previously described summary of text and figures, the readers are encouraged to view the attached video for a demonstration of this procedure.

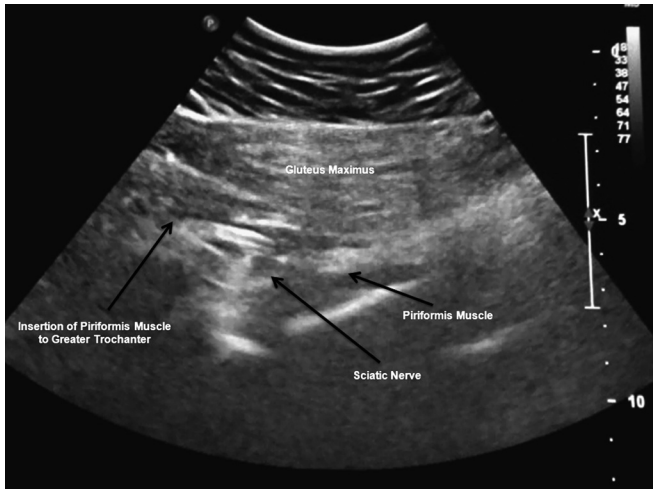


FIGURE 2 *Ultrasound image of the piriformis muscle. The piriformis muscle appears as a hyperechoic band deep in the gluteus maximus muscle. The sciatic nerve appears as an oval-shaped structure deep in the piriformis muscle.*

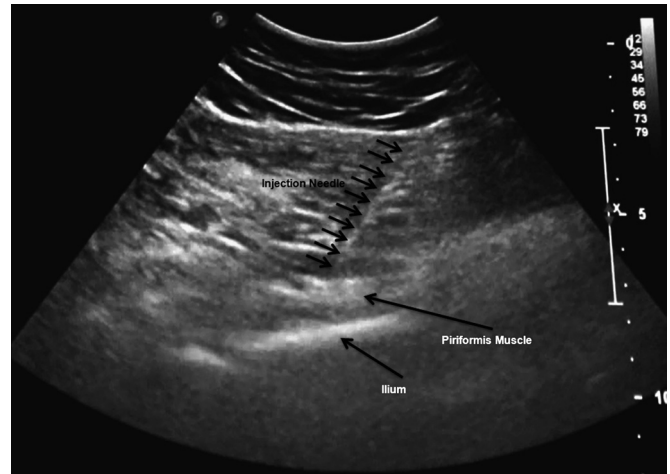


FIGURE 3 *Ultrasound-guided injection of the left piriformis muscle performed in a medial-to-lateral approach. Short solid arrows indicate the injection needle.*

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