

# CT-Guided Corticosteroid Injection as a Therapeutic Management for the Piriformis Syndrome: Case Report

## Piriformis Sendromuna Tedavi Yaklaşımında BT Eşliğinde Kortikosteroid Enjeksiyonu: Olgu Sunumu

### ABSTRACT

The piriformis syndrome is a rare entrapment neuropathy in which the sciatic nerve is compromised by the piriformis muscle or other local structures. It is an important cause of buttock pain that may often be accompanied by sciatica. The pain is usually increased by muscular contraction, palpation or prolonged sitting. The diagnosis relies on the clinical presentation and the electromyography (EMG) findings. Other causes of symptoms should be excluded by careful examination and detailed neuroradiological studies of the lumbosacral spine, sacro-iliac and hip joints. A case of this syndrome seen in a 36-year-old man who recovered by CT-guided corticosteroid injection is reported.

**KEY WORDS:** Piriformis syndrome, CT-guided corticosteroid injection, Sciatica, Pain

### ÖZ

Piriformis sendromu, siyatik sinirin piriformis kası veya diğer lokal yapılar tarafından baskıya uğramasıyla oluşan nadir görülen bir tuzak nöropatisidir. Sıkça siyatik olarak adlandırılan kalça ağrısının önemli bir nedenidir. Ağrı genellikle kas kasılması, palpasyon veya uzun süre oturmayla artar. Klinik prezentasyon ve elektromyografiyle (EMG) tanısı konur. Dikkatli muayene ve detaylı lumbosakral omurga, sakroiliak ve kalça eklemi nöroradyolojik çalışmalarınıyla semptomların diğer nedenleri ekarte edilmelidir. Bu sendromun oluştuğu ve BT eşliğinde kortikosteroid enjeksiyonuyla iyileşen 36 yaşında erkek bir olgu sunuldu.

**ANAHTAR SÖZCÜKLER:** Piriformis sendromu, BT eşliğinde kortikosteroid enjeksiyonu, Siyatik, Ağrı

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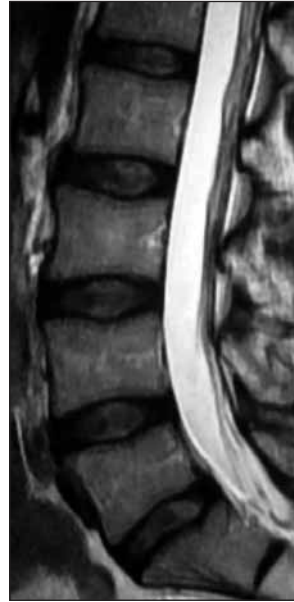
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## INTRODUCTION

The piriformis syndrome (PS) is an uncommon and often under-diagnosed cause of buttock and leg pain (8). Hallin previously reported that the piriformis syndrome is responsible for 6–8% of low back pain conditions associated with sciatica (4). The piriformis syndrome is primarily caused by fall injury, but other causes such as pyomyositis, dystonia musculorum deformans, and fibrosis after deep injections are possible (5). The mainstay of treatment is conservative management with physical therapy, anti-inflammatory medications, muscle relaxants, and correction of biomechanical abnormalities. However, in resistant cases, a piriformis injection of anesthetic and/or corticosteroids may be considered. Because of its small size, proximity to neurovascular structures, and deep location, the piriformis muscle is often injected with the use of computed tomography (CT), magnetic resonance imaging (MRI), ultrasound (US), fluoroscopy, electrical stimulators, or EMG (3). We report here a case of piriformis muscle syndrome originating from preceding fall injury, presenting as a sciatic problem with neurological deficit and its treatment and management with CT-guided corticosteroid injection.

## CASE REPORT

The patient's consent was obtained for this article. A 36-year-old male patient presented with a left sciatica and low back pain. The past medical history was remarkable for trauma to this region 10 years ago. Physical examination revealed extended paravertebral muscle spasm. Neurological examination revealed pain localized to the left sciatic notch, left positive Laseague's sign and Friedberg's sign. EMG findings were normal in repeated examinations. X-ray studies of the lumbosacral spine, sacro-iliac and hip joints were normal as well. The lumbar MRI was normal (Figure 1). PS was suspected on the basis of clinical examinations. We therefore excluded other causes of sciatic pain. MRI sequences of the hip were obtained before treatment to evaluate the extension of muscle. The MRI examination did not demonstrate any signal change in the ipsilateral piriformis muscle (Figure 2). The patient had a positive lidocaine test. We therefore performed corticosteroid injection into the left piriformis muscle under CT guidance (Figure 3A,B, C). The patient was satisfied with the post-procedure period and his neurological examination was

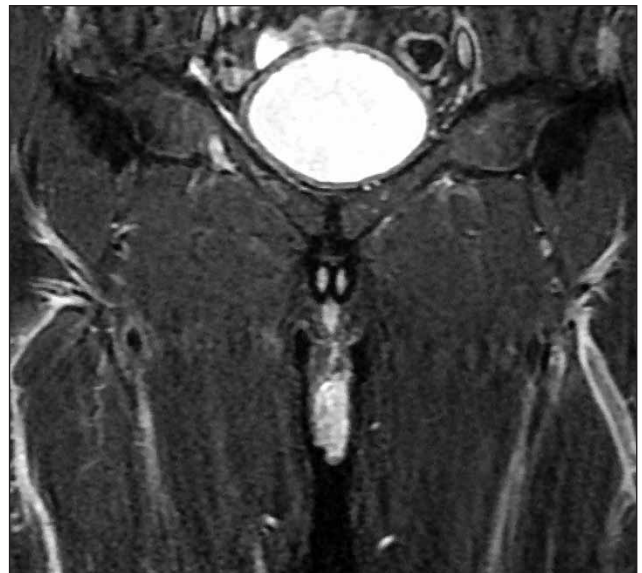


*Figure 1: On T2-weighted sagittal image, there was no disc pathology.*

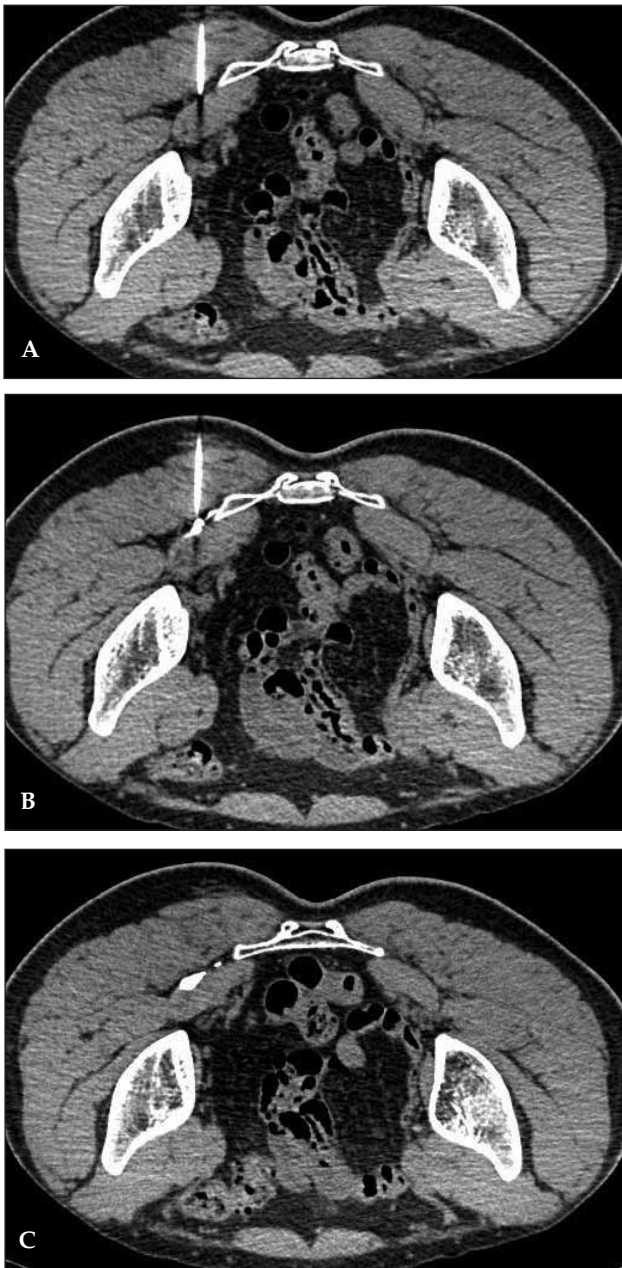
normal. There was no repetition of pain due to PS during clinical follow-up.

## METHOD

The patient was placed in a prone position, cleaned, and draped. The method of locating the sciatic nerve, piriformis muscle and application of the needle as suggested by other authors were used in this case (2,3,4). The procedure was performed under CT guidance with a slice thickness of 1 mm under the multislice CT machine (Siemens Somatom Sensation 64, Germany). We preferred a 20-gauge, 9 cm insulated needle that was inserted perpendicular to the piriformis muscle. The gluteus maximus, piriformis muscles and other local structures were visualized. The needle was promoted until CT visualization showed it traversing the gluteus maximus and piercing the piriformis muscle. At this moment, the patient was asked if he was having any buttock pain that corresponded to his usual pain. After a favorable response from the patient, half milliliter of contrast agent [optiray 350/50 ml



*Figure 2: On T2-weighted coronal image, the signal intensities of both piriformis muscles were normal.*



**Figure 3:** The procedure performed under CT guidance with a slice thickness of 1 mm.

(A) The needle was inserted through piriformis muscle under CT guidance, (B) the small amount of contrast agent was injected to confirm the position of the needle and (C) the spread of the contrast agent through the fat plane around the piriformis muscle was clearly demonstrated.

(Covidien, Istanbul)] was injected and its spread into the belly of the piriformis muscle was seen via CT. Correct needle placement was confirmed with CT, after which the injectate containing the drugs [depomedrol 40 mg/1flacon (Eczacibasi, Luleburgaz) and marcaine-spinal heavy amp 1ml

(Astra-Zeneca, Istanbul)] were administered and the procedure completed.

## DISCUSSION

Sciatica without evidence of lumbosacral root compression is often attributed to the piriformis syndrome (6). It is logical that the piriformis muscle can play an important role in the production of sciatic associated with intraspinal lesions. Tension on the sciatic nerve, which passes in close approximation to the piriformis muscle anteriorly, can be relieved by division of the piriformis muscle (7). The pain is usually increased by muscular contraction, palpation or prolonged sitting (2).

In general practice, the so-called posttraumatic piriformis muscle syndrome is common (5). The syndrome may occur because of extreme flexion of the hips and prolonged pressure while in the sitting position, leading to piriformis muscle trauma, resultant spasm, and sciatic compression (1). In our case, the patient had suffered local trauma to this region 10 years ago. The clinical findings of sciatic neuropathy, external rotation of the ipsilateral foot in the position of comfort, and a therapeutic response to local anesthetic injection into the piriformis muscle are diagnostic of the syndrome (1). True neurological deficit is rare. Aside from a positive Laseague's sign, Friedberg's (pain on passive, forced internal rotation of hip) and Pace's (pain and weakness on resistance to active abduction and internal rotation of hip) signs may also be elicited (4). Neurological examination of the current case suggested the piriformis syndrome due to the clinical signs.

The diagnosis relies on the clinical presentation and the electromyography (EMG) findings. Other causes of symptoms should be excluded by clinical examinations and detailed neuroradiological studies of this region (9). Nerve conduction studies should be performed to aid in the differentiation between a common peroneal and sciatic neuropathy (1). In our case, the patient underwent two EMG's, but they did not demonstrate any abnormality. In the current literature, Lewis et al suggested that magnetic resonance neurography often identifies an abnormal increased signal in the proximal sciatic nerve in patients with extraspinal sciatica and allows more accurate diagnosis of sciatic nerve entrapment in suspected cases (6). We only performed hip MRI, but there was no signal change in the left piriformis muscle.

The right treatment can be started following a thorough investigation into the cause of symptoms (5). Through the years, there have been attempts to find safe and effective ways of managing this condition, whether through conservative treatment or with the use of interventional procedures (4). We therefore performed CT-guided corticosteroid injection after demonstrating the contrast agent spreading into the belly of the piriformis muscle which improved visualization of piriformis muscle and surrounding muscles, and allowed for an accurate confirmation of pain in the piriformis muscle. The result was satisfactory for future procedures.

In conclusion, the piriformis syndrome is a reason of buttock pain and each case requires correspondingly detailed clinical, neuroradiological and neurophysiological examinations. Effective treatments for this syndrome include CT-guided corticosteroid injection that should be performed as an alternative treatment option. Furthermore, CT-guided corticosteroid injection is an advanced technique that appears to yield reliable local therapeutic effects without the risk of imprecise injection.

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