

Caudal Epidural Steroid Injection in the Treatment of Piriformis Syndrome: A Case Report

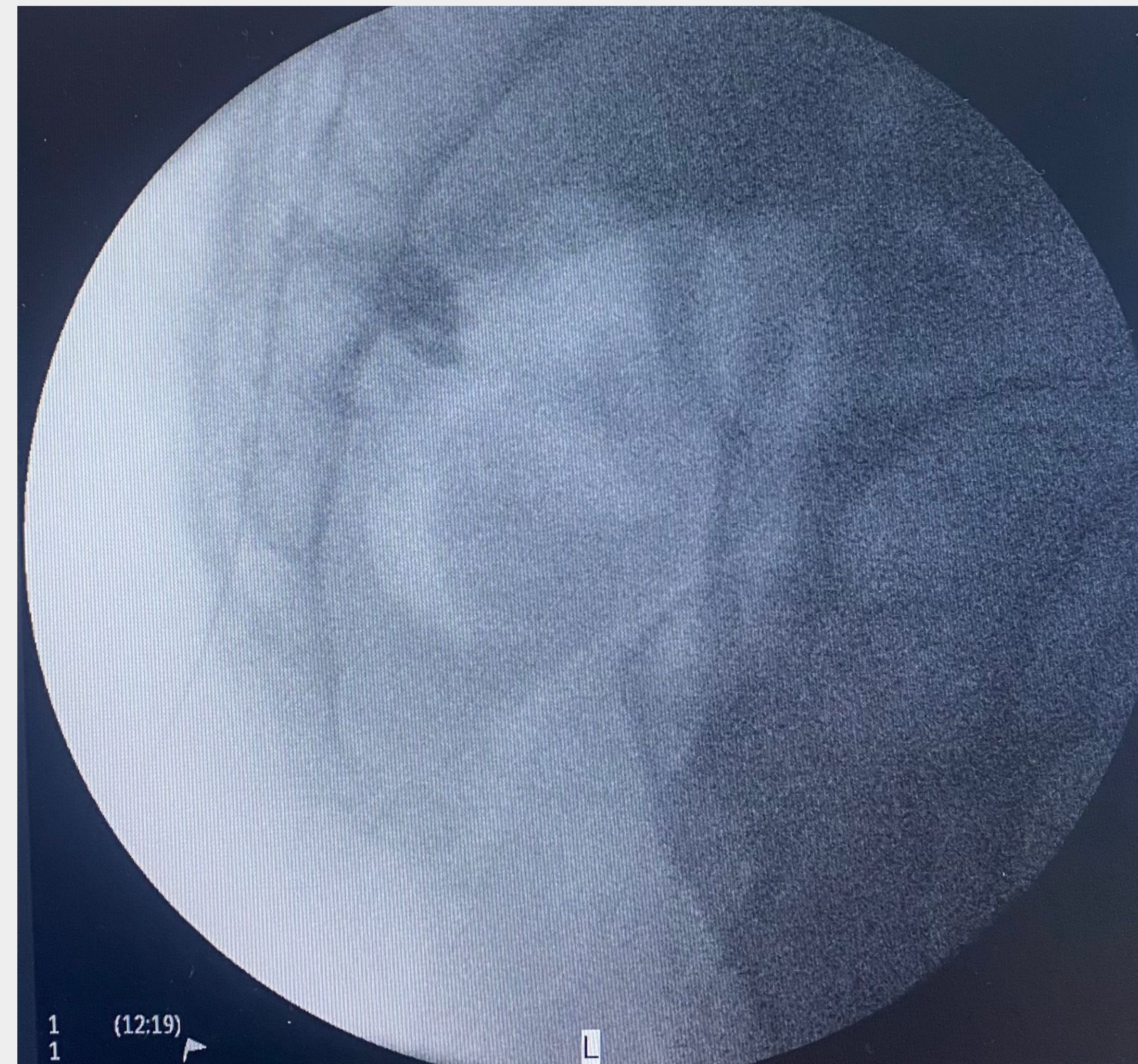
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Introduction

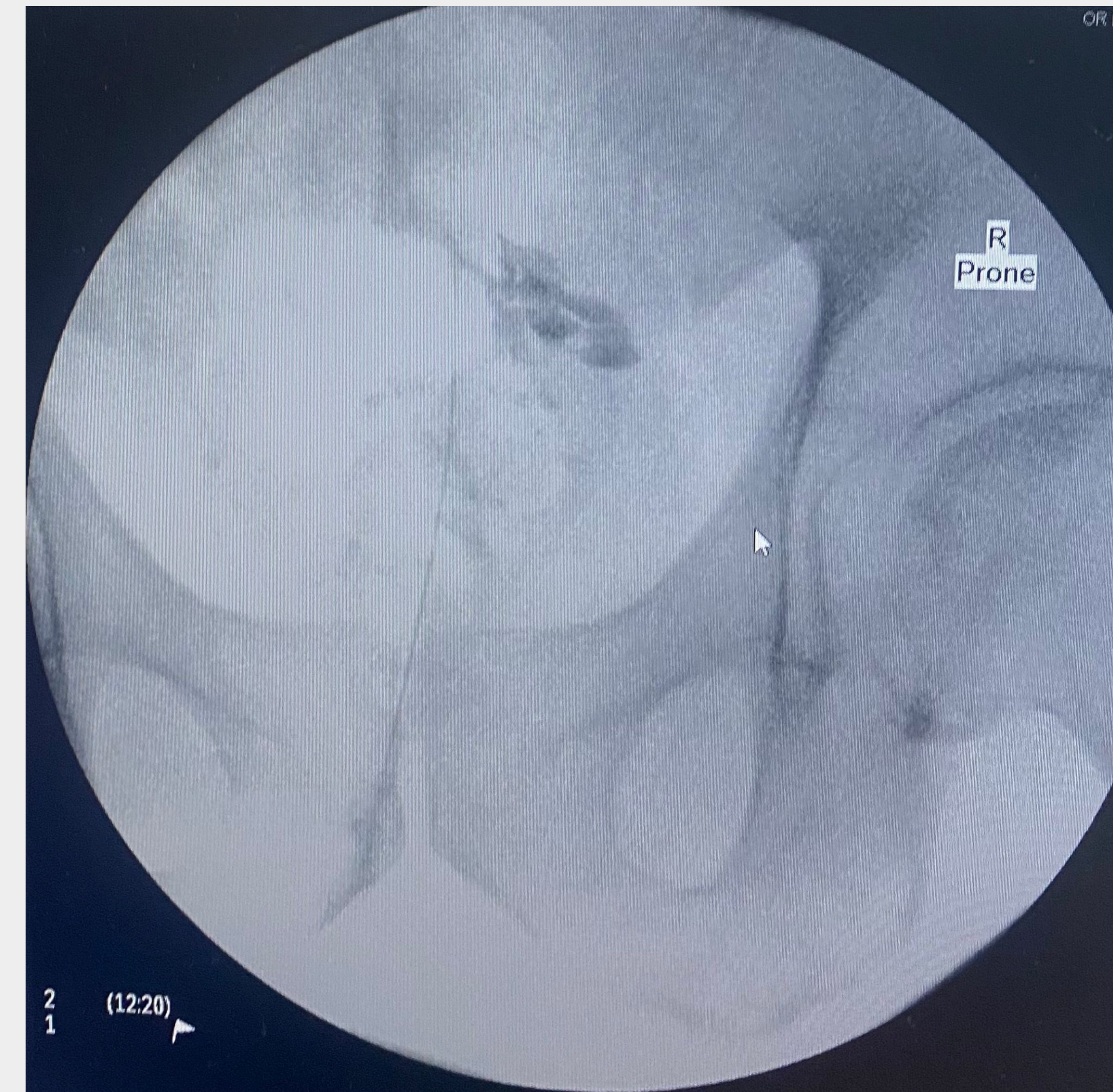
Piriformis syndrome is an underdiagnosed condition that occurs when the sciatic nerve gets compressed by the piriformis muscle leading to chronic pain in the buttock and hip area. Piriformis syndrome accounts for approximately 0.3% to 6% of all cases of low back pain and/or sciatica and predominantly affects middle-aged patients, with a reported ratio of male to female patients being affected being 1:6 (1,2). Diagnosing piriformis syndrome can be complicated and involves excluding other possible conditions such as facet arthropathy, herniated nucleus pulposus, lumbar muscle strain, and spinal-stenosis(4). Additionally, there are posterior gluteal myofascial pain syndromes that resemble piriformis syndrome. The pain may extend down the back of the thigh, and in some cases, it may also affect the lower leg, specifically at the dermatomes L5 or S1. The diagnosis relies mainly on clinical evaluation (4).

Case Presentation

Patient is a 74 year old male with a past medical history of osteoarthritis and right inguinal hernia repair who presents with right hip pain that radiates to his right buttocks, down the back of the leg into the calf which has progressively gotten worse in the last 2-3 months. Patient states that the sharp and shooting pain started without any inciting event, is worse with ambulation and better with opioids. On physical exam, patient had 4/5 strength bilaterally, sensation intact bilaterally, 2+ reflexes bilaterally, and straight leg pain positive on the right. Hip X-Ray shows no acute fracture, dislocation, mild bilateral arthrosis. MRI of the lumbar spine showed multilevel degenerative changes with mild to moderate canal and foraminal narrowing at L4/L5. Patient failed conservative treatment and underwent an ultrasound guided right piriformis steroid injection. Patient reported resolution of symptoms for only 6 days. Patient underwent a transforaminal injection 3 months later with pain relief from a 9/10 to a 6/10. Patient underwent a caudal epidural and reported relief of symptoms for a month now.



Images 1,2 demonstrates a caudal epidural steroid injection (C-ESI) in the treatment of piriformis syndrome. C-ESI is performed to the base of the spine, where the caudal canal is located which blocks the nerves that innervate the piriformis.



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References



Discussion

The treatment of piriformis syndrome is generally non-surgical and focused on relieving pain and reducing inflammation. Conservative treatment includes physical therapy, heat and ice therapy, medications and corticosteroid injection. Epidural injections are performed in the lumbar-spine utilizing 3 different approaches: caudal, interlaminar, and transforaminal. The interlaminar approach provides medication between the laminae of adjacent vertebrae, targeting the epidural space. It is used to deliver medication to reduce inflammation and alleviate pain related to nerve compression or irritation in the spinal canal. The transforaminal approach injection is delivered near the opening where the spinal nerve exits the vertebral column which allows for a more precise targeting of a specific nerve root making it useful for conditions like herniated discs or nerve root inflammation causing sciatica or radicular pain. Caudal epidural is performed at the base of the spine, where the caudal canal is located blocking the nerves that innervate the piriformis(4). It is typically used to deliver medication into the epidural space to reduce inflammation and relieve pain in the lower back and legs. It is commonly used for conditions like lumbar disc herniation or spinal stenosis. Various factors can impact the effectiveness of ESIs such as duration of the disease, unemployment, smoking, specific patient symptoms,. The likelihood of radicular pain increases with age, and older patients often face less favorable outcomes (4). Patients with a significant disease load and associated psychological conditions like depression may also experience poorer results.

This study provides the reader with a clinical framework to better understand and treat the complex, and often misunderstood, diagnosis of piriformis syndrome. Piriformis syndrome is a solely clinical diagnosis that often eludes the practitioner and goes underdiagnosed. Piriformis syndrome is a pain syndrome and for those it affects, causes persistent pain and limits daily activity and work capacity.

Conclusions

Most experts believe that TF-ESI offers a more target-specific steroid delivery to the dorsal root ganglion and is therefore superior to C-ESI (5). However, this case demonstrates that the patient had more significant pain relief with the C-ESI. C-ESI requires a high-volume injection to ensure that the epidural space is filled and that the drug is delivered to each vertebral level. By contrast, TF-ESI requires only a small volume and allows for the medication to be administered directly to the dorsal root ganglion.