Case Report

Non-Resolving Sciatica Due to Sacroiliac Joint Osteophyte Compressing the Sciatic Nerve in a Young Patient: A Case Report and Literature Review

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Keywords

Sacroiliac · Osteophyte · Sciatica · Low back pain

Abstract

Sciatica is a common syndrome mostly affecting adults. It has a wide range of etiologies, classified into intra- and extra-spinal, with intra-spinal being the most common, usually due to lumbar disc herniation causing nerve root compression. Sacroiliac (SI) joint pathologies are a known cause of extra-spinal sciatica syndrome, following multiple possible mechanisms. We report a case of a 33-year-old female patient who presented for non-resolving sciatica symptoms, found to have an inferior SI joint osteophyte compressing the sciatic nerve, who underwent surgical excision due to failure of conservative measures. All causes of sciatica related pain should be subjected to further investigations if not attributed clinically and radiologically to intra-spinal etiologies. SI joint imaging play an important role in the diagnosis of SI joint related sciatica, with the gold standard being an intra-articular anesthetic injection, to monitor for symptom relief in order to confirm the diagnosis, and choose the optimal treatment modality.

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Introduction

Pain in the lower back radiating in the distribution of the sciatic nerve is defined as sciatica. Many intra- and extra-spinal etiologies have been described in the literature [1]. Documented causes of extra-spinal causes of sciatica are gluteal or iliac arteries aneurysms, ischial tuberosity fracture, piriformis syndrome, tumors, anorectal abscesses, etc. [2]. In the

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beginning of the twentieth century, sacroiliac (SI) joint pathologies were considered to be an important cause of sciatica. However, interest in this etiology has faded when more focus on the lumbosacral spine was put in play [3]. In around 30% of clinically examined patients assumed to have a lumbar disc etiology of sciatica, no radiological or intraoperative signs of disc herniation was seen [4, 5], making the diagnosis uncertain with possible other etiology.

One of the causes of SI joint induced sciatica is sacroilitis, which could generate these symptoms through 2 mechanisms: (1) the release of inflammatory mediators (e.g., TNF-alpha) [6] affecting the adjacent neural structures, and (2) referred pain.

The SI joint communication with surrounding structures has been mapped using CT scan with contrast injections, showing that one-third of the subjects were found to have ventral extravasation to the lumbosacral plexus and posterior extravasation to the area of the L5 nerve root through the superior capsular recess [7]. The latter findings suggest direct anatomical link between the SI joint and the surrounding neural tissue producing radicular pain. The most reported treatment modality for such SI joint pathologies are diagnostic injection of local anesthetics; if pain is relieved by at least 50%, this is followed by radiofrequency denervation of the SI joint [3].

Osteophyte formation at the SI joint is another rarely reported pathology causing sciatica due to compression of the sciatic nerve, most commonly caused due to the weight load transmission from the axial skeleton to the lower limbs, at the level of the proximal aspect of the SI joint [2]. The latter mostly happens in the presence of an anteroinferior SI joint osteophyte.

Case Presentation

This is a 33-year-old woman, mother of 3, with a height of 160 cm and a weight of 60 kg, with no past medical or surgical history. She presented to the clinic with low back pain radiating to the left lower limb. She reports her pain as being chronic, burning in nature, radiating to the posterolateral aspect of the ipsilateral thigh down to the calf and plantar aspect of the foot. Pain was associated with left foot numbness and parasthesia, which has become severe enough to prevent her from performing her day-to-day activities. The patient has already taken a trial of non-steroidal anti-inflammatory drugs, physical therapy sessions, and 3 epidural steroid infiltrations at the site of her lower back pain as well as a piriformis fossa infiltration for possible piriformis syndrome, with no subsequent improvement or relief. Physical exam showed a positive straight leg raise test at 40° with no sensory or motor deficits with normal deep tendon reflexes. Symptoms were reproduced with tenderness to deep palpation over left sciatic notch. Anteroposterior and lateral lumbosacral spine radiographs were done and showed a remarkably large spur at the lower edge of the left SI joint (Fig. 1). Lumbar spine MRI confirmed the presence and location of the osteophyte and revealed a compressed left sciatic nerve adjacent to the large spur.

Subsequently, and after failure of conservative treatment modalities, surgical management was opted and patient was admitted for sciatic nerve release and SI joint arthrodesis. An anterior approach was taken with dissection of the retroperitoneum to reach the SI joint. The left femoral cutaneous nerve was identified before the dissection of the transversus muscle. The inferior rim of the SI joint comprising the protruding osteophyte was later excised using a burr from proximal to distal, protecting the sciatic nerve, leaving the upper two-third of the SI joint fixated by 2 plates, 4 screws each, and bone grafting (Fig. 2).

Follow-up 1 day and 5 days post-surgery with pelvis radiographs were done and were unremarkable except for normal post-surgical changes (Fig. 3). Patient was sent home day 3 post-op and started early mobilization by physical therapy, with gentle range of motion exercises, non-weight bearing for 4 weeks followed by progressive protective weight bearing

Fig. 1 Anteroposterior view of the pelvis shows a large spur at the lower edge of the SI joint. The lateral view shows no disc space narrowing. SI, sacroiliac.

until SI joint fusion. Overall, the surgery had no complications, with no recurrence of symptoms upon follow-up and return to previous normal daily activities.

Discussion

Around 40% of adults are affected by sciatica at some point, with possible intra- and extra-spinal etiologies. Most of these patients are diagnosed with degenerative lumbar spine disc disease, taking into consideration that up to 20% of asymptomatic patients show degenerative intervertebral discs on imaging [2]. The most common intra-spinal etiologies are disc herniation causing root compression, foraminal or lateral stenosis, spondylolytic changes, etc. Extra-spinal causes are uncommon and relatively more difficult to diagnose, requiring special imaging studies, leading to misdiagnosis, and inappropriate management [2]. Some of the extra-spinal causes of sciatica symptoms are arterial aneurysms, ischial tuberosity avulsion fracture, piriformis syndrome, etc. Cadaveric studies for SI joint osteophytosis have been done, with poor clinical correlations. The latter was found to be more prevalent on the right side and in males due to the function and strain on the SI joint. Subsequently, the joint undergoes more stress forces in males due the weight transmission from axial to lower limbs, along with higher levels of activity in males, causing osteophytosis in the superior aspect of the joint. Whereas in females, the SI joint is more flexible and mobile for facilitation of parturition, causing osteophytosis at the inferior aspect of the joint [8] (Fig. 4).

Fig. 2 Multiplanar, multisequential MR examination of the lumbar spine showing no evidence of disc herniation. However, a large spur at the lower edge of the left SI joint is seen on the coronal STIR views of the pelvis, compressing the sciatic nerve. SI, sacroiliac.

Fig. 3 AP view of the pelvis post-surgery. Two plates and screws are seen fixing the left sacroiliac joint following arthrodesis with bone graft. Note the sclerosis in the inferior aspect of the right SI joint. SI, sacroiliac.

The usual radiating pain patterns of SI joint pathologies are attributed to many factors. First, it can be the result of referred pain from the SI joint, along the SI joint nerve supply, mainly branches of L5–S4 spinal nerves [9]. Second, the pain may be due to the close relationship between the L5 and S1 nerve roots with the ventral capsule of the SI joint (2 of 1). Last but not least, this radiating pain could be due to direct sciatic nerve compression by inferior SI joint osteophytosis, such in the above described case.

Kumar et al. [2] reported 4 cases of sciatica due to SI joint osteophytosis; the first 2 cases were middle aged women presenting for non-resolving chronic radicular low back pain with inconclusive lumbar spine imaging, associated with tenderness over the sciatic notch on clinical exam. Further investigations revealed a large osteophyte at the inferior margin of the SI joint. SI joint infiltration of 1% xylocaine and 2 mL of 1% dexamethasone relieved the pain with no recurrence of symptoms. The other 2 cases reported were middle aged patients

Fig. 4 Posterior view of the pelvis indicating inferior aspect of SI joint osteophyte (red) impinging on the sciatic nerve. SI, sacroiliac.

presenting for chronic radiating buttock pain, with normal neurologic exam and sciatic notch tenderness. Imaging revealed an inferior compressive SI joint osteophyte. SI joint infiltration using anesthetic and steroids provided minimal relief with recurrence of symptoms. Decision for surgical excision was taken using the Moore's approach, with resolution of symptoms and radiculopathy on regular follow-ups.

We report a case of middle-age female patient who presented for non-resolving sciatica symptoms, who underwent multiple trials of conservative treatments followed by multiple infiltrations, with minimal improvement. Patient was found to have SI joint osteophytosis compressing the sciatic nerve, for which she underwent surgical excision with SI joint arthrodesis, to minimize recurrence rate, since patient was at child bearing age with future plans of pregnancy. An anterior surgical approach was adopted, in order to maintain the anatomy with less risk of gluteal artery damage, without disruption of gluteal muscles as opposed to the posterior approach, as well as optimal visualization of the SI joint osteophyte with direct decompression around the sciatic nerve. Clinical follow-up showed resolution of her symptoms without residual deficit, returning to her previous normal daily activities.

Conclusion

Sciatica is a common syndrome, generally attributed to nerve root compression of intra-spinal etiology, but in the absence of neurological signs, further investigations should be done. In many patients, sciatica may originate from the SI joint. Physical examination specific for the SI joint could be non-revealing and inefficient. Imaging studies help in diagnosis, ranging from plain radiographs to more advanced imaging modalities such as CT scan and MRI, with the gold standard diagnostic modality being an intra-articular blockade with local anesthetics, causing more than 50% symptom improvement. If the latter is not achieved, and after failure of all possible conservative measures, surgical excision is opted, followed by early mobilization and physical therapy.

Statement of Ethics

Approval and consent of the Ethics Committee has been received for the publication of this article. Full written consent has been given by the subject patient, no identifiers are included in this article relating to patient identity. Subjects (or their parents or guardians) have given their written informed consent to publish their case (including publication of images).

Conflict of Interest Statement

The authors declare no conflict of interest regarding the publication of this article.

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Availability of Data and Material

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Authors Contributions

D.A.: writing and reviewing the article along with the referencing. R.R.: Editing of article, radiological input, and explanation. R.A.: writing and editing the article. J.M.: writing and editing the article, with editing of the images and radiographs. J.S.: writing and reviewing the article along with the referencing. J.W.: Surgeon who did the surgical procedure, writing and finalizing the article.

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