Eur Spine J
DOI 10.1007/s00586-016-4446-z

GRAND ROUNDS

Management of an unusual sciatica

Anouar Bourghli[1] · Ahmed Chaballout[1] · Ibrahim Obeid[2] · Louis Boissiere[2] · Jean-Marc Vital[2] · Ghassan Khoury[1]

Received: 3 December 2015 / Revised: 7 February 2016 / Accepted: 7 February 2016

Abstract

Purpose Extraforaminal entrapment of the L5 nerve root is uncommon, and its management can sometimes be very challenging.
Methods We present the case of a 57-year-old female, complaining of a sciatica in her left leg, for 3 years, with no response to any kind of conservative treatment. MRI and CT scan revealed the presence of a large L5S1 strictly lateral osteophyte compressing the left L5 root in its extraforaminal path.
Results The patient underwent a left anterior retroperitoneal approach with assistance from a vascular surgeon given the very close relation between the osteophyte and the left common iliac vein, lying just on top of it, osteophyte was removed in one piece with the use of an osteotome after retraction of the vessels. The patient progressively recovered from her left sciatic pain with a satisfactory clinical result at 1 year.
Conclusion Literature is sparse on the treatment of extraforaminal entrapment of the L5 nerve root; the current case shows a successful treatment strategy with the use of an anterior approach for direct vision of the lesion and good control of the vessels.

Keywords L5 root · Extraforaminal entrapment · L5S1 osteophyte · Retroperitoneal approach

Case presentation

A 57-year-old female has been complaining of mild low back pain with mainly a radicular pain in her left leg in the L5 territory, for almost 3 years. She has always been treated conservatively with oral medications and physiotherapy sessions, with no response. Physical examination revealed typical left L5 sciatica, with numbness felt in the same territory, no weakness was noted, straight leg raising test was positive at 70° and the reflexes were normal. Her old MRI could not be found; so new investigations were done. Standard lumbar X-ray was unremarkable, but MRI of the lumbar spine revealed a large L5S1 strictly lateral disc extrusion compressing the left L5 root in its extraforaminal path, CT scan confirmed the osteophytic nature of the lesion. After exhaustion of nonoperative therapies including medications, physical therapy and injections, the patient underwent an anterior left retroperitoneal approach with the assistance of a vascular surgeon, the osteophyte was removed in one piece with the

✉ Anouar Bourghli
anouar.bourghli@gmail.com

[1] Orthopedic and Spinal Surgery Department, Kingdom Hospital, P.O. Box 84400, Riyadh 11671, Saudi Arabia

[2] Orthopedic Spinal Surgery Unit 1, Bordeaux Pellegrin Hospital, Bordeaux, France

Published online: 03 March 2016

use of an osteotome, no fusion of the L5S1 level was performed.

Diagnostic imaging section

Anteroposterior and lateral X-rays showed slight narrowing of the L5S1 disc space with increased sclerosis along the enplates (Fig. 1a, b). MRI showed L5S1 discopathy with a large lateral disc extrusion clearly compressing the exiting left L5 nerve root (Fig. 2a–c). CT scan with 3D reconstruction of the lumbosacral junction revealed a large left L5S1 osteophyte, measuring in the anteroposterior plane 1.8 cm at its base and in the mediolateral plane 1.1 cm (Fig. 3a–c), this was completed by a CT angiography that showed the close relationship between the osteophyte and the left common iliac vein lying on top of it just after the union of the left external and internal iliac veins (Fig. 4a, b).

Historical review, epidemiology, diagnosis, pathology and differential diagnosis

Extraforaminal entrapment of the L5 nerve root is a rare cause of sciatic pain, and was first described by Danforth and Wilson [1]. It could be due to compression at the level of the lumbosacral ligament [2], between the L5 transverse process and the sacral ala, this is what Wiltse called "the far out syndrome" [3], or the compression could be coming from an osteophyte at the lateral margin of the L5S1 vertebral bodies [4, 5]. Preoperative diagnosis of this condition shows a typical L5 radiculopathy with frequently a positive straight leg raising test, weakness of the extensor hallucis longus muscle may be observed, with sensory disturbance in the L5 area. X-ray is usually unremarkable.

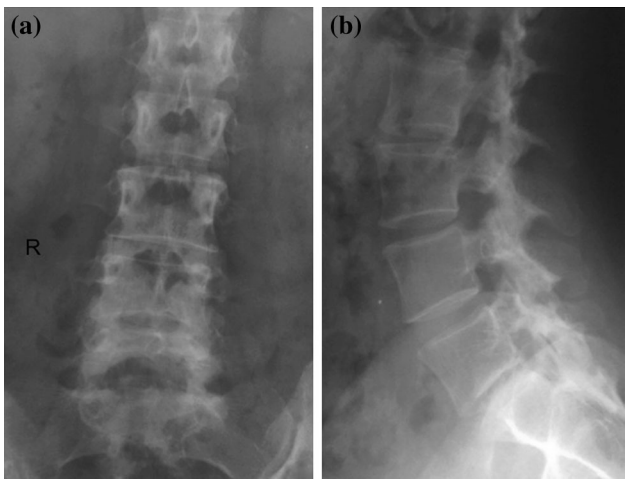

Fig. 1 X-rays showing slight narrowing of the L5S1 disc space with increased sclerosis along the enplates (**a**, **b**)

MRI reveals a lateral disc extrusion with compression of the L5 nerve root. CT scan confirms the osteophytic nature of the lesion [6]. Selective L5 radiculography demonstrates compression of L5 nerve root at the point of the osteophyte, and simultaneous nerve block may relieve the symptoms temporarily, making it the most reliable diagnostic modality [7]. It was not used in our case because there was no evidence of traditional spinal canal stenosis, the patient's complaint was for 3 years already, and the imaging was evident, however, it could have been used to gain further confirmation and accurate localization of the entrapment.

In case of mild to moderate symptoms, conservative management includes medications such as NSAIDs, physiotherapy, epidural steroid injection, or selective nerve root block; in case of severe radicular pain, resistant to the aforementioned treatments, surgery is indicated.

Rationale for treatment

Extraforaminal entrapment of the L5 nerve root at the lumbosacral junction is rare, and no optimal management options have yet been established. Exhaustion of nonoperative therapies such as medications, physical therapy and injections should be done before proceeding to any type of surgical intervention. Surgical management of such lesion can be done either by an anterior approach or a posterior approach. The anterior retroperitoneal approach, open or laparoscopic [4, 5], enables direct removal of the osteophyte; partial resection of the sacral ala can also complete this approach to widen the lumbosacral tunnel through which runs the L5 nerve root.

The posterior approach consists of an indirect decompression of the root (no removal of the osteophyte) [7, 8], with or without fusion. It can be done through a classical midline incision, or with the use of a Wiltse lateral approach, or with a minimal invasive far-lateral approach [9]; microendoscope, surgical microscope or loupe can help to optimize the visualization of the surgical field, which is located laterally and deeply at the lumbosacral junction. This approach consists in removing the inferior aspect of the proximal third of the L5 transverse process, the lateral edge of the L5S1 facet joint, and the superior-medial portion of the sacral ala.

In the case of our patient, given the size of the osteophyte, its strictly lateral location and the close relation to the vessels (left common iliac vein), an anterior left retroperitoneal approach was used. No fusion was done through the anterior approach, or a complementary posterior one, as the recurrence of symptoms is mainly attributable to foraminal stenosis, which was not present in our case, also the satisfactory height of the disc with

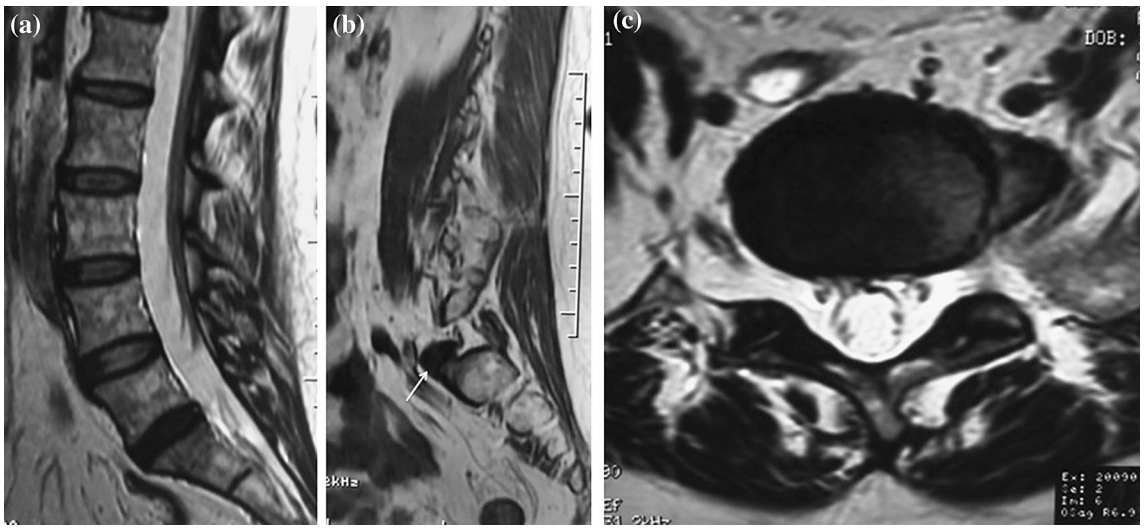

Fig. 2 MRI showing L5S1 discopathy (**a**) with a large lateral disc extrusion on the *left side* (**b** *white arrow*, **c**)

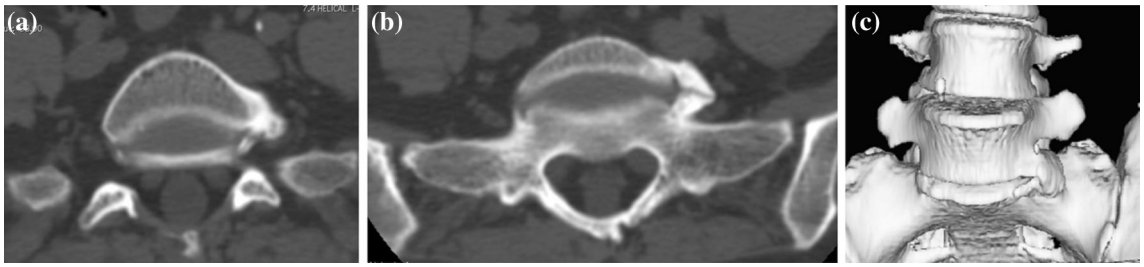

Fig. 3 CT scan with 3D reconstruction (**a–c**) of the lumbosacral junction confirming the large left L5S1 osteophyte

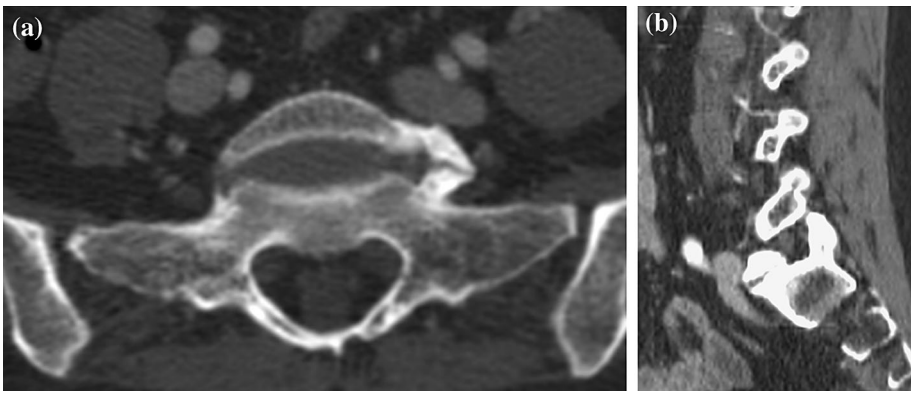

Fig. 4 CT angiography (**a**, **b**) showing the close relationship between the osteophyte and the left common iliac vein lying on *top* of it

normal mobility and mild back pain in an active patient was for us a contraindication for fusion.

Operative procedure

Under general anesthesia, with a patient in supine position, a left anterior retroperitoneal standard approach was done with assistance from a vascular surgeon. An oblique incision was done on the left side joining a point halfway between the anterior superior iliac spine and the umbilicus and a point halfway between the umbilicus and the pubic symphysis. The rectus abdominus muscle sheath was incised in line with the incision and the muscle was mobilized laterally. The underlying transversalis fascia was carefully incised to gain entry to the retroperitoneal space. The free peritoneum with its contents was then retracted medially. After identification

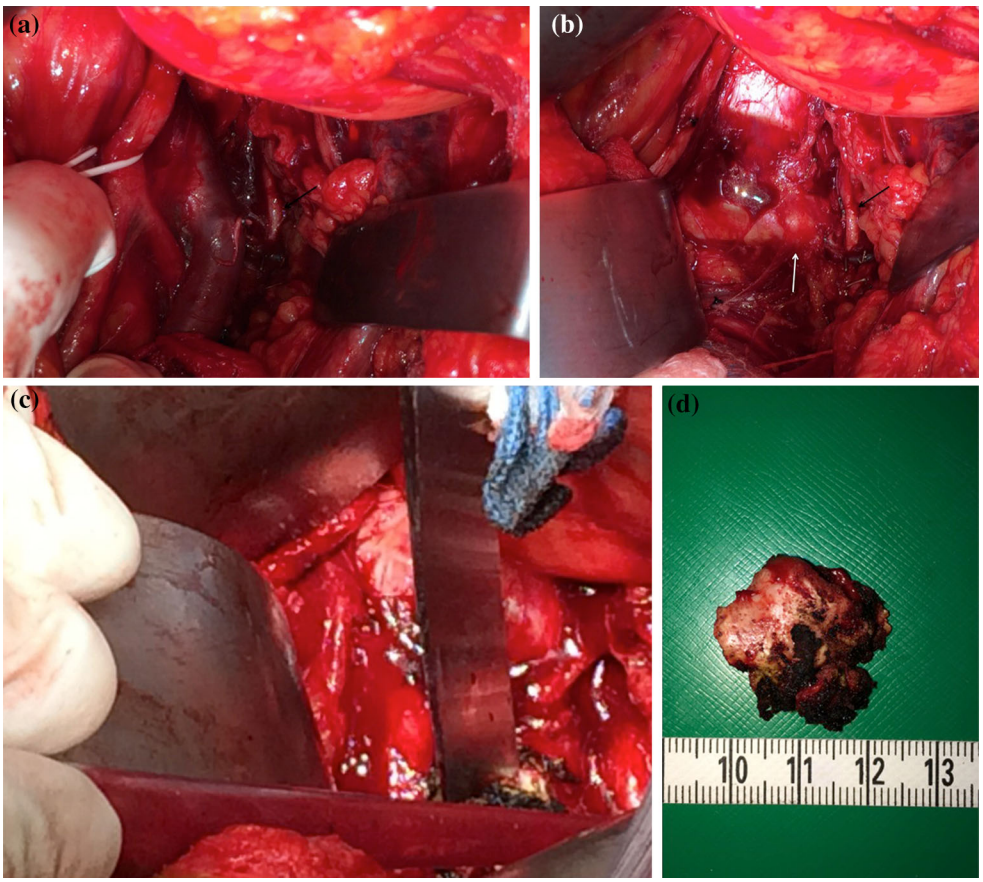

Fig. 5 Intra-operative images showing the identification of the left L5 nerve root (**a** *black arrow*) after retraction of the vessels. The osteophyte (**b** *white arrow*) and the nerve root (**b** *black arrow*) are clearly seen. The osteophyte is resected with the use of an osteotome (**c**). Osteophyte after resection in one piece (**d**)

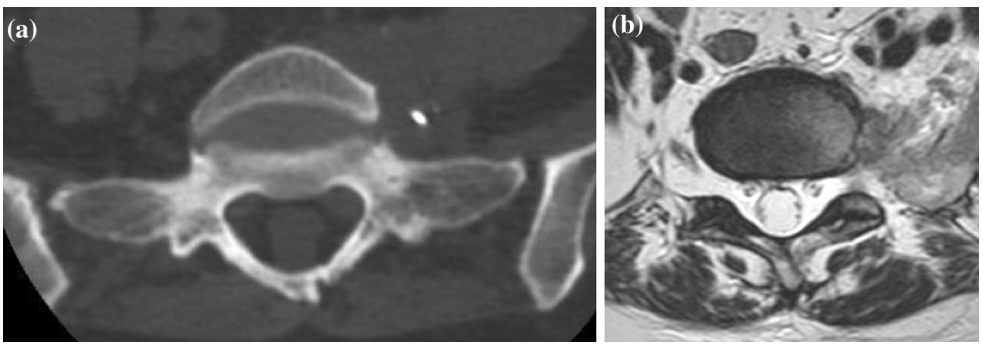

Fig. 6 Postoperative CT scan (**a**) and MRI (**b**) confirming the complete removal of the osteophyte

of the iliac vessels on the left side, the left common iliac artery was retracted medially, the left common iliac vein lying underneath it was then identified, left ilio-lumbar vein was seen and ligated, which enabled safe retraction of the left common iliac vein (Fig. 5a). The L5S1 intervertebral disc was identified with the osteophyte clearly visualized laterally; The L5 nerve root could be seen and was gently retracted laterally (Fig. 5b). Osteophyte was resected in one piece with the use of an osteotome and extracted with a pituitary rongeur (Fig. 5c, d). Bone wax was applied at the attachment point to control bleeding. Post-operatively, the course was uncomplicated, a single drain was removed the first day post-surgery and patient was authorized to walk.

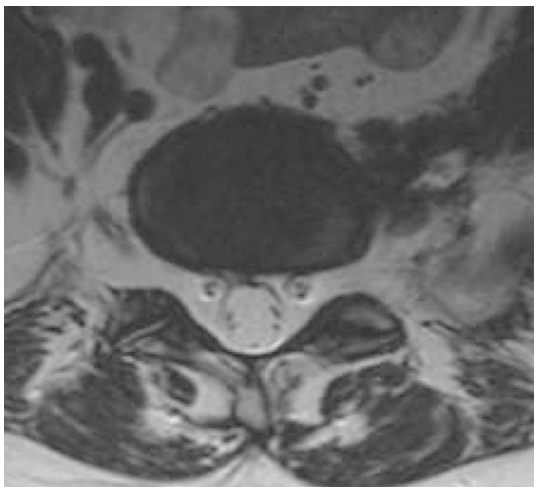

Fig. 7 1-year MRI showing a completely free left L5 nerve root

Clinical outcome

The patient was discharged on day 3, with progressive recovery of her left leg symptoms. Complete pain relief was obtained at 2 months postoperatively. A postoperative CT scan and MRI were performed and confirmed the complete removal of the osteophyte (Fig. 6a, b). At 1 year, the patient had no sciatica or gait disturbance and MRI confirmed a completely free left L5 nerve root (Fig. 7).

Compliance with ethical standards

Conflict of interest There are no conflicts of interest for this case report.

References

1. Danforth M, Wilson P (1925) Tha anatomy of the lumbosacral region in relation to sciatic pain. J Bone Joint Surg Am 7:109–160
2. Nathan H, Weizenbluth M, Halperin N (1982) The lumbosacral ligament (LSL), with special emphasis on the "lumbosacral tunnel" and the entrapment of the 5th lumbar nerve. Int Orthop 6:197–202
3. Wiltse LL, Guyer RD, Spencer CW, Glenn WV, Porter IS (1984) Alar transverse process impingement of the L5 spinal nerve: the far-out syndrome. Spine (Phila Pa 1976) 9:31–41
4. Matsumoto M, Chiba K, Nojiri K, Ishikawa M, Toyama Y, Nishikawa Y (2002) Extraforaminal entrapment of the fifth lumbar spinal nerve by osteophytes of the lumbosacral spine: anatomic study and a report of four cases. Spine (Phila Pa 1976) 27:E169–E173
5. Jones TL 2nd, Hisey MS (2012) L5 radiculopathy caused by L5 nerve root entrapment by an L5-S1 anterior osteophyte. Int J Spine Surg. 6:174–177
6. Moon KH, Jang JS, Lee SH, Lee SC, Lee HY (2010) The role of computed tomography in the presurgical diagnosis of foraminal entrapment of lumbosacral junction. J Korean Neurosurg Soc 47:1–6
7. Matsumoto M, Chiba K, Ishii K, Watanabe K, Nakamura M, Toyama Y (2006) Microendoscopic partial resection of the sacral ala to relieve extraforaminal entrapment of the L-5 spinal nerve at the lumbosacral tunnel. Technical note. J Neurosurg Spine 4:342–346
8. Matsumoto M, Watanabe K, Ishii K, Tsuji T, Takaishi H, Nakamura M et al (2010) Posterior decompression surgery for extraforaminal entrapment of the fifth lumbar spinal nerve at the lumbosacral junction. J Neurosurg Spine 12:72–81
9. Lee S, Kang JH, Srikantha U, Jang IT, Oh SH (2014) Extraforaminal compression of the L-5 nerve root at the lumbosacral junction: clinical analysis, decompression technique, and outcome. J Neurosurg Spine 20:371–379