



Varicocele complicating an anterior lumbar interbody fusion: a case report

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Abstract: Anterior lumbar interbody fusion (ALIF) is performed for the surgical management of lumbar degenerative disc disease with excellent results, particularly for discogenic low back pain. Commonly reported complications associated with this approach include vessel injury, retrograde ejaculation, and ureteral and viscus organ injury. The development of a varicocele after ALIF has not been previously described in the literature. We report a case of varicocele in a 35-year-old patient who underwent ALIF via a left retroperitoneal approach. No intraoperative complications were identified. The postoperative course was uneventful. He was discharged from the hospital on the 5th postoperative day. Three months after surgery, he complained of discomfort and scrotal pain. Examination revealed a grade 3 varicocele according to the Dubin and Amelar classification. Scrotal Doppler US demonstrated dilatation of the veins of the pampiniform plexus. A lumbar CT scan revealed a bulky left spermatic vein closed to the ureter. The patient was treated with platelet anti-aggregation. He was seen at control intervals of 1, 3 and 5 months. Progress was seen as we had a regression of clinical signs. Varicocele appears as an uncommon complication of ALIF. After reviewing the literature, we describe the occurrence of a varicocele following ALIF, its pathophysiology, and its treatment options.

Keywords: Anterior lumbar interbody fusion (ALIF); complication; varicocele; case report

Submitted May 27, 2020. Accepted for publication Jan 29, 2021.

doi: 10.21037/jss-20-609

View this article at: <http://dx.doi.org/10.21037/jss-20-609>

Introduction

Anterior lumbar interbody fusion (ALIF) is a commonly performed procedure for lumbar degenerative disease with excellent results, particularly for discogenic low back pain (1-4). However, reported complications associated with ALIF include vessel injury, retrograde ejaculation, and ureteral and viscus organ injury (2,4,5). The development of a varicocele after ALIF has not been previously described in the literature. We report a case of varicocele as a complication of ALIF. We describe the occurrence of a varicocele following ALIF, its possible pathophysiology and treatment options. We present the following case in accordance with the CARE reporting checklist (available at <http://dx.doi.org/10.21037/jss-20-609>).

Case presentation

A 35-year-old patient who had been diagnosed with discogenic low back pain four years before and, operated twice on a L5S1 herniated disc, with excellent results, presented with lumbar pain six months later. Visual Analog Scale results showed a score of 8/10 for back pain, despite medical treatment. He also experienced right sciatica. Neurological examination was normal. MRI demonstrated a loss of disc height with Modic 2 endplate changes and a small recurrent L5S1 disc herniation (*Figure 1*). The patient underwent ALIF by a left retroperitoneal approach. No intraoperative complications were identified. The patient's preoperative symptoms improved after surgery and the postoperative course was uneventful. He was discharged

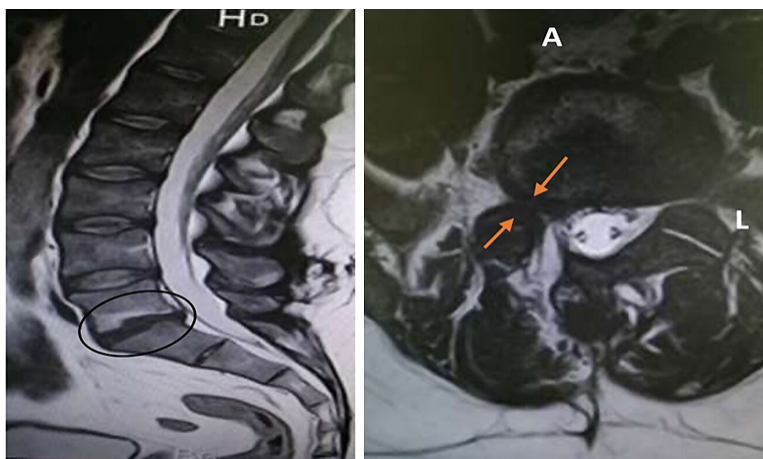


Figure 1 T2-weighted (left) sagittal and (right) axial MRI revealing loss of disc height with Modic endplate changes and L5S1 disc herniation.

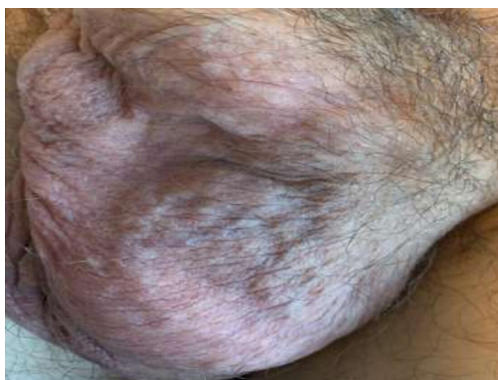


Figure 2 Image of the scrotum showing the varicocele without Valsalva's maneuver.



Figure 3 Scrotal Doppler US confirming varicocele.

from the hospital on the 5th postoperative day. Three months after surgery, the patient complained of discomfort and scrotal pain. The patient's medical history includes migraine headache as well as depression. Examination



Figure 4 Lumbar CT scan showing a bulky left spermatic vein.

revealed a grade 3 varicocele according to the Dubin and Amelar classification (6) (Figure 2). Scrotal Doppler US demonstrated dilatation of the veins of the pampiniform plexus (Figure 3). A lumbar CT scan revealed a bulky left spermatic vein closed to the ureter (Figure 4). The patient was treated with platelet anti-aggregation especially acetylsalicylic acid 160 mg per day, he was seen at control intervals of 1, 3 and 5 months. Progress was seen as we had a regression of the varicocele. No adverse event was identified.

The patient adhered to the treatment and was satisfied with the result.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient.

Discussion

Varicocele is defined as an abnormal dilatation of the veins of the pampiniform plexus in the spermatic cord, with an incidence of 15% in the general population (7). Varicocele is the consequence of genetic defects, including undifferentiated connective tissue dysplasia (UCTD) with hereditary insufficiency of the venous valves and weakness of the testicular vein walls (8). This vein originates from the two terminal venous branches of the pampiniform plexus in the internal iliac fossa just after their exit from the inguinal canal. Gonadic vessels run along the psoas muscle, cross forwards over the ureter and are covered by the right and left mesocolic fascia of Toldt and the posterior parietal peritoneum. After a long course, the right internal spermatic vein ends in the inferior vena cava with an acute angle at the L2 level. On the left, the internal spermatic vein vertically ascends and curves at right angles into the left renal vein (9,10). This explains why varicocele occurs predominantly on the left side (78% to 93% of cases) (7,11). After known genetic and hereditary factors (7,8,12), compression factors in both the spermatic veins and left renal vein appear to play a key role in the pathogenesis of varicocele (12-14).

During ALIF by the left retroperitoneal route, both the ureter and gonadal vessels must be separated from the external iliac vessels. This mechanical stress could explain thrombosis of the left gonadic vein and thus the varicocele post ALIF. Indeed, the peritoneum and left gonadal vessels are pushed to the right, whereas the external iliac vessels remain to the left. The use of retractors creates a corridor in which to operate and the right retractor may lead to compression of the left gonadic vessels. A careful separation of the gonadal vessels could prevent this complication.

The diagnosis of varicocele is essentially based on clinical evidence, in particular the finding of a tortuous dilatation of the pampiniform plexus veins that, increases during the Valsalva maneuver. It needs to be distinguished from an inguinal hernia or scrotal hemangioma, which at the beginning stage may clinically constitute a differential diagnosis. Several classifications have been developed based on clinical examination of which that, of Dubin and Amelar is by far the most cited in the literature. Their classification is as follows: grade 1: varicoceles are palpable only during the Valsalva maneuver; grade 2: varicoceles are palpable without the Valsalva maneuver; grade 3: varicoceles are visible and palpable without the Valsalva maneuver. The use of diagnostic imaging techniques, ranging from phlebography to spermatic-vein Doppler US, can be helpful (6).

Varicoceles can be treated surgically or by radiological embolization. Embolization of the spermatic vein was first described by Iaccarino *et al.* in 1980 (15). This technique requires selective catheterization of the spermatic vein by the femoral or internal jugular approach, followed by its occlusion with either a sclerosant or a solid embolization agent (6,16). The immediate success rate is approximately 95% (17). The long-term success rate is 90–95% of cases. Surgical treatment includes seven distinct techniques, some of which are no longer used. High ligation of the spermatic vein by the extraperitoneal route, at the level of the anterosuperior iliac spine, is currently the most widely used treatment of varicocele. Ligation by the inguinal or subinguinal route is preferred by some in cases of voluminous varicocele with dilatation of the cremasteric veins. Laparoscopy has not been proven to be superior to open surgery (6).

Varicocele appears as a rare complication of ALIF, this complication is due to the mechanical stress exerted on the left spermatic veins during this surgery. The specific treatment of varicocele post ALIF is not described in the literature. In our case, platelet anti-aggregation resulted in a regression of clinical signs. This finding should be subject to evaluate platelet anti aggregation in the treatment of varicocele.

Acknowledgments

Funding: None.

Footnote

Reporting Checklist: The authors have completed the CARE reporting checklist. Available at <http://dx.doi.org/10.21037/jss-20-609>

Peer Review File: Available at <http://dx.doi.org/10.21037/jss-20-609>

Conflicts of Interest: All authors have completed the ICMJE uniform disclosure form (available at <http://dx.doi.org/10.21037/jss-20-609>). The authors have no conflicts of interest to declare.

Ethical Statement: The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are

appropriately investigated and resolved. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee(s) and with the Helsinki Declaration (as revised in 2013). Written informed consent was obtained from the patient.

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Cite this article as: Okamon DJM, Chenin L, Bocco A, Drogba LK, Haidara A, Peltier J. Varicocele complicating an anterior lumbar interbody fusion: a case report. *J Spine Surg* 2021;7(1):114-117. doi: 10.21037/jss-20-609