

Abdominal aortic pseudoaneurysm as a complication of lumbar disc surgery

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ABSTRACT

Background: Iatrogenic vascular injury during lumbar discectomy is a rare but serious and life threatening complication. The pituitary rongeur is the usual cause of injury during the disc surgery. A deep bite can injure the major vessels, especially the abdominal aorta or the common iliac arteries.

Case Presentation: We present a 33-year-old female patient with complaints of continuous abdominal pain and difficulty in walking. Her complaints began a couple of days before her admittance to our clinic. In the medical history, the patient had undergone a lumbar discectomy operation due to L4–L5 disc hernia 4 months ago. Her follow-up physical examinations were uneventfully in the first and third month of the lumbar disc surgery. The patient had no any chronic diseases in her medical history. Computed tomographical angiography revealed a 57 × 42 mm pseudoaneurysm formation from the abdominal aorta arising closely from the abdominal aortic bifurcation level. A primary repair for the posterior abdominal aortic defect and a patchplasty for the aortotomy was performed.

Conclusion: Clinician should suspect of vascular complications in terms of ongoing complaints, such as abdominal pain or a pulsatile mass in the abdominal region after lumbar disc surgery. In such cases, the clinical evaluation and imaging procedures must be done carefully.

Keywords: Surgery complications, disc surgery, pseudoaneurysm, treatment.

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Background

Iatrogenic vascular injury during lumbar discectomy is a serious and life-threatening complication [1,2]. This rare situation is due to close anatomic relation between lumbar vertebrae and major abdominal vasculature [1,3]. The clinical symptoms may vary according to the type and place of lesion. In acute onset, due to bleeding, blood pressure decreases, and the patient confronts a hypovolemic shock. Chronic delayed onset of symptoms may occur due to formation of an arteriovenous fistula or pseudoaneurysm (PA) [4].

We present a 33-year-old female patient with abdominal aortic PA, in which the patient diagnosed 4 months after lumbar disc surgery.

Case Presentation

A 33-year-old female patient admitted to neurosurgery clinic of another hospital with complaints of low back pain. She was diagnosed as lumbar disc hernia at L4–L5 level and had lumbar disc surgery 4 months ago. She was discharged uneventfully. During her follow up, her complaints of back pain increased but a few days before her admittance to our clinic, she had new complaints like abdominal pain and difficulty in walking. The patient was referred to our outpatient clinic.

On her admission, she had pain on the abdomen, especially at the umbilical zone and difficulty in walking.

On her physical examination, she had a pulsatile palpable abdominal mass right about the umbilicus. Her blood pressure was 110/60 mm-Hg and heart rate was 96 beats/minute. On complete blood count, her hemoglobin level was 10.8 mg/dl and biochemical markers were in normalized ranges. Computed tomographical angiography (CTA) revealed a 57 × 42 mm PA formation in the abdominal aorta arising closely from the aortic bifurcation level (Figure 1). The level of vascular injury usually correlates with the level of lumbar disc hernia operation. L4–L5 level is the most common site for discectomy, vascular injuries are, especially, observed at left common iliac artery and left common iliac vein. In this case unusually, the PA was originating from the abdominal aorta and the origin was very close to the abdominal aortic bifurcation.

The patient was operated under general anesthesia. We preferred a transperitoneal approach since the PA was close to the aortic bifurcation. We explored and controlled the abdominal aorta and bilateral iliac arteries with vascular slings. After 5,000 units of heparin administration intravenously, we placed vascular clamps on abdominal aorta and bilaterally common iliac arteries. After complete resection of the PA, we performed a longitudinal 4 cm long aortotomy starting from just before the aortic bifurcation level to the left common iliac artery. There was a

properly limited approximately 0.5 cm in diameter defect on the posterior wall of the abdominal aorta (Figure 2).

We primarily repaired the defect with 4/0 polypropylene suture. We closed the aortotomy incision with a polytetrafluoroethylene patch in order not to narrow the aortic lumen. After completing the patchplasty, we removed the vascular clamps. Then, hemostasis was provided and the layers were closed with standard techniques. The patient was followed up in the intensive care unit for 24 hours postoperatively. The patient was discharged from hospital at her sixth postoperative day uneventfully. At her first month control, she did not have any complaints and the arterial vasculature was completely normal on her control CTA (Figure 3).



Figure 1. Computed tomographic angiography view of the abdominal aortic pseudoaneurysm.

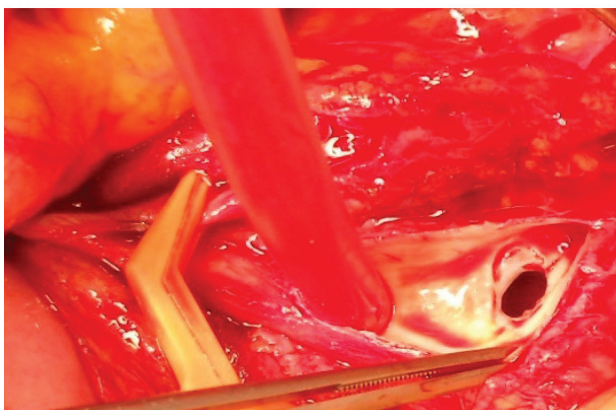


Figure 2. Operative view of the defect in the abdominal aorta.

Discussion

Vascular injury during lumbar disc surgery is a rare but a life threatening complication. The incidence of vascular complications is increased at the L4–L5 level in the literature [5,6]. In the acute period, symptoms of hypovolemia may appear during the operation due to massive bleeding and emergency vascular intervention is usually required. But if it is asymptomatic, it can present with a PA or an arterio-venous fistula [4]. PA of the abdominal aorta is often diagnosed lately. At presentation, patients may have abdominal or back pain, or they may have a palpable abdominal mass which may be pulsatile [7]. Diagnosis is usually confirmed by a CTA. The level of vascular injury usually correlates with the level of lumbar disc hernia operation. L4–L5 level is the most common site for discectomy, vascular injuries are, especially, observed at left common iliac artery and left common iliac vein [8]. In this patient, conventional laminectomy was performed from L4 to L5 level, but unusually, the PA was originating from the abdominal aorta and the origin was very close to the abdominal aortic bifurcation. The pituitary rongeur is the usual cause of injury during disc surgery [9]. During disc removal, the rongeur may slip through the anterior longitudinal ligament and enter the retroperitoneal space of the abdominal cavity. A deep bite can injure the major vessels [4].

In our case, the patient was diagnosed nearly 4 months after the lumbar disc surgery. Vascular injury may not be immediately recognized at the time of surgery, since healthy and young patients may not exhibit clinical signs until a large volume of blood has been lost or collected retroperitoneally. The prone operative position may confer a degree of vascular compression during surgery, and may temporarily tamponade vascular tears. Therefore, a high index

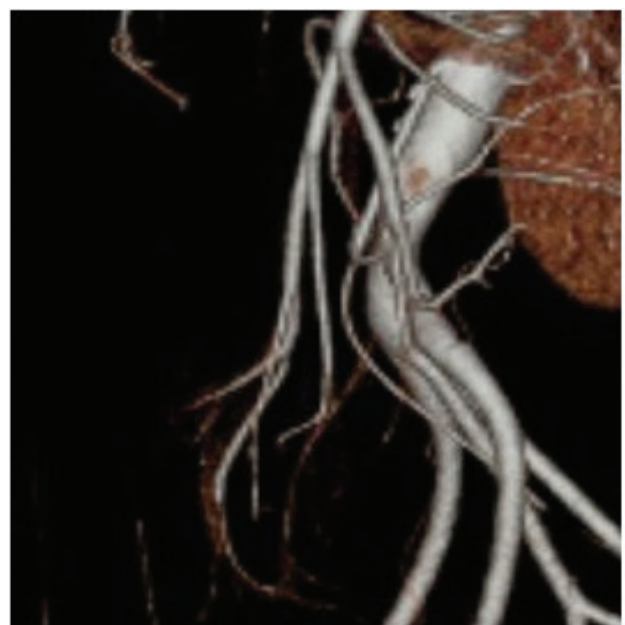


Figure 3. Postoperative control computed tomographic angiography.

of suspicion is necessary in the postoperative period [1]. Even though the surgeon is completely sure that there was no complication by the time of surgery, simply an abdominal doppler ultrasound may be performed before the patient was discharged.

The treatment options for abdominal aortic PA are primary repair, graft interposition, or endovascular interventions [1]. We preferred primary repair of the defect and polytetrafluoroethylene patchplasty in order not to narrow the aortic lumen. The main reason that we couldn't perform endovascular procedure was the reimbursement problem with the patient's social security, which hindered expansive endovascular procedures. Also, a retroperitoneal approach should be preferred in such cases. Control of the hemorrhage and exploration of the vessels from a retroperitoneal approach can also be better [1]. Because of the location of the PA, we preferred the transperitoneal approach.

Conclusion

Iatrogenic abdominal aortic injury following lumbar disc operation is a rare, but life threatening complication. It is usually diagnosed during the operation, but it also may be asymptomatic in the postoperative follow up. Clinical suspicion of vascular complications in terms of ongoing complaints after lumbar disc surgery is very important. In terms of suspicion, an abdominal aortic doppler ultrasound can be performed first. CTA shows the lesion for definitive vascular treatment. Surgical treatment and endovascular treatment should be used in such cases. This iatrogenic vascular complication can be managed safely via transperitoneal approach.

List of Abbreviations

CTA	Computed tomographic angiography
L	Lumbar
PA	Pseudoaneurysm

Consent for publication

Informed consent was taken from the patient.

Ethical approval

Institutional ethical approval has been taken for the study from the local ethics committee.

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Summary of the case

1	Patient (gender,age)	Female, 33 year
2	Final diagnosis	Abdominal aortic injury during lumbar discectomy
3	Symptoms	Abdominal pain,difficulty in walking
4	Medications	Surgery and follow up
5	Clinical procedure	Repairing the abdominal aortic defect primarily
6	Specialty	Cardiovascular surgery