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CASE REPORT

Life-Threatening Iliac Artery Injury During Lumbar Discectomy: Successful Management with Massive Transfusion

ABSTRACT

Major vascular injury during lumbar discectomy is a rare but potentially fatal complication, with an incidence of 0.01–0.05%. We present a 49-year-old female with systemic lupus erythematosus who developed hemorrhagic shock due to a common iliac artery injury during single-level lumbar discectomy. The patient experienced sudden hypotension and tachycardia intraoperatively. Emergency laparotomy revealed a 6500 mL blood loss; massive transfusion protocol was initiated, and the artery was repaired with a Dacron graft. A total of 11 units of red blood cells, 2 units of platelets, 6 units of cryoprecipitate, and 6 units of plasma were transfused. The patient stabilized postoperatively and was discharged without neurological deficit on day 12. This case highlights the importance of early recognition, rapid multidisciplinary intervention, and massive transfusion in the management of major vascular injuries during lumbar discectomy to improve patient outcomes.

Keywords: vascular injury, iliac artery, lumbar discectomy

Introduction

Lumbar discectomy via a posterior approach is a common neurosurgical procedure. Although rare, life-threatening iatrogenic vascular injuries may occur, particularly if not recognized early [1,2]. The reported incidence of vascular injury during lumbar discectomy ranges from 0.01% to 0.05% [3]. These injuries may involve the aorta, inferior vena cava or iliac vessels, and can result in arteriovenous fistulas (AVFs), pseudoaneurysms or deep vein thrombosis (DVT). Reported mortality rates range from 15% to 65% [1,3-5]. We report a case of right common iliac artery injury during single-level lumbar discectomy that was successfully managed through prompt diagnosis, implementation of a massive transfusion protocol and open surgical repair.

Case Presentation

A 49-year-old female with systemic lupus erythematosus receiving chronic corticosteroid therapy (ASA II) was scheduled for a single-level lumbar discectomy under spinal anesthesia. Perioperative stress-dose corticosteroids were administered. During surgical hemostasis, at approximately 60 minutes after incision, the patient developed sudden hypotension, agitation and tachycardia. A major vascular injury was suspected, and the surgical site was closed immediately. The patient was repositioned to the supine position.

After endotracheal intubation, an emergency laparotomy revealed an injury to the right common iliac artery. Cardiovascular surgeons were consulted immediately. Central venous catheterization and invasive arterial blood pressure monitoring were established. A continuous noradrenaline infusion was started because of persistent hemodynamic instability.

Arterial blood gas analysis showed hemoglobin 3.5 g/dL, hematocrit 10%, ionized calcium 0.68 mmol/L, total calcium 6.18 mg/dL, lactate 6.84 mmol/L and pH 7.15. The estimated blood loss was calculated from the suction canister volume after subtracting irrigation fluids, together with the number and saturation of surgical sponges and

Belkıs Yılmaz[1]
Ayşegül Danacı[2]
Menşure Kaya[3]

[1]*Asisstant doctor in Anesthesiology, Department of Anesthesiology, Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Ankara, Türkiye*
[2]*Specialist in Anesthesiology, Department of Anesthesiology, Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Ankara, Türkiye*
Professor doctor in Anesthesiology, [3]*Department of Anesthesiology, Dr. Abdurrahman Yurtaslan Ankara Oncology Training and Research Hospital, Ankara, Türkiye*

Corresponding author:
Belkis Yılmaz
✉**dr.azizsener@hotmail.com**

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laparotomy pads, and was approximately 6500 mL. A massive transfusion protocol was therefore initiated.

In total, the patient received 11 units of packed red blood cells, 6 units of fresh frozen plasma, 6 units of cryoprecipitate and 2 units of apheresis platelets over a period of 4 hours, corresponding to an average transfusion rate of approximately 1625 mL/h. Vascular repair was performed using a Dacron graft. Following repair, the patient's hemodynamic status stabilized, and noradrenaline was gradually weaned off. The total surgical time was 5.5 hours. She was transferred intubated to the intensive care unit (ICU). She was extubated 5 hours postoperatively. Arterial doppler ultrasound performed on postoperative days 2 and 7 revealed normal blood flow in both lower extremities. The patient remained hemodynamically stable and was discharged on postoperative day 12 without neurological deficits and with aspirin therapy. Postoperative computed tomography images demonstrated the repaired right common iliac artery. (Figure 1 and Figure 2).

Discussion

Although infrequent, major vascular injuries during lumbar discectomy are associated with considerable morbidity and mortality [1,4]. The aorta and iliac vessels lie directly anterior to the intervertebral disc space, particularly at the L4–L5 and L5–S1 levels, where the anterior longitudinal ligament is relatively thin [2]. Inadvertent penetration of this ligament during disc removal may result in catastrophic bleeding. Iatrogenic vascular injury typically presents with sudden hypotension, tachycardia or unexpected blood loss, as in our case. However, the diagnosis may be delayed when bleeding is retroperitoneal or the initial injury is limited. Several reports describe patients who developed symptoms hours or even days after the procedure, manifesting as abdominal distension, limb swelling, arteriovenous fistula or pseudoaneurysm formation [4–7]. Early intraoperative recognition, as occurred in our patient, is critical for survival. Rapid closure of the posterior incision, prompt repositioning of the patient and immediate emergency laparotomy provided timely exposure and repair of the injured iliac artery. The massive transfusion protocol, guided by real-time arterial blood gas analysis, was crucial for restoring circulating volume and preventing coagulopathy, acidosis and hypothermia, and met commonly used definitions of massive transfusion (≥10 units of packed red blood cells within 24 hours). Treatment options for these injuries include both open and endovascular techniques. Open surgical repair remains the gold standard in the presence of massive hemorrhage and hemodynamic instability [4]. Endovascular approaches are preferable in hemodynamically stable patients or in delayed presentations. Preventive strategies include preoperative imaging to delineate vascular anatomy and identify possible anomalies, particularly in revision surgeries or in high-risk patients. Careful surgical technique, familiarity with anatomical landmarks and readiness for emergency intervention are essential to minimize risk and improve patient safety [8-10].

In conclusion, early clinical suspicion, rapid diagnosis, activation of a massive transfusion protocol and coordinated multidisciplinary management were key to the favorable outcome in this case. Preoperative anatomical awareness and preparation for rare but potentially catastrophic vascular complications should be integral components of surgical planning for lumbar discectomy.

Limitations:

A limitation of this report is the lack of intraoperative imaging documentation before vascular repair; however, postoperative CT angiography confirmed graft patency.

Conflict of Interest Statement:

The authors declare no conflict of interest.

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Presentation:

This case has not been presented at any meeting.

Figures

Figure 1

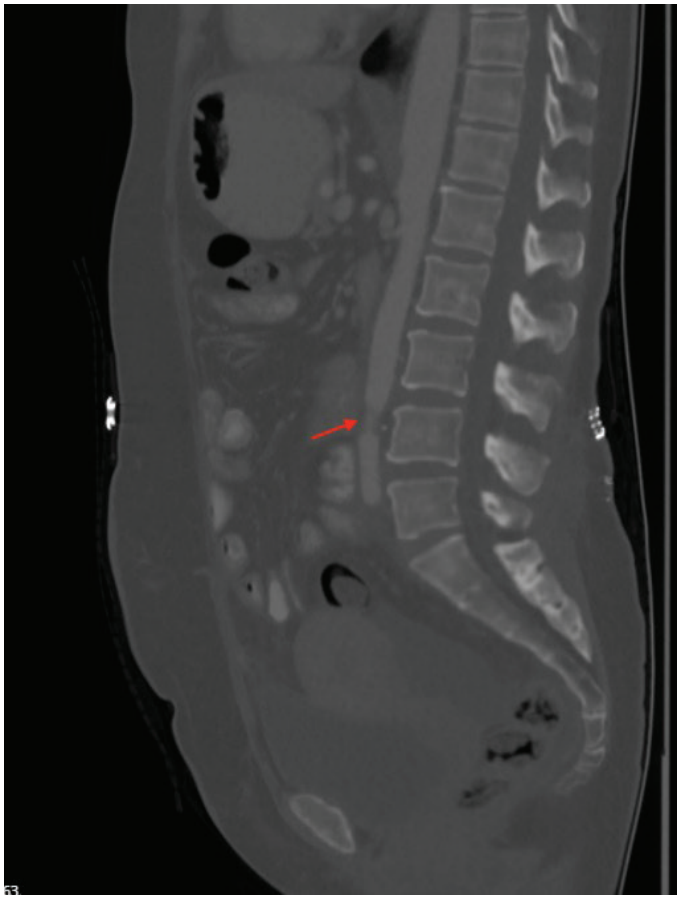
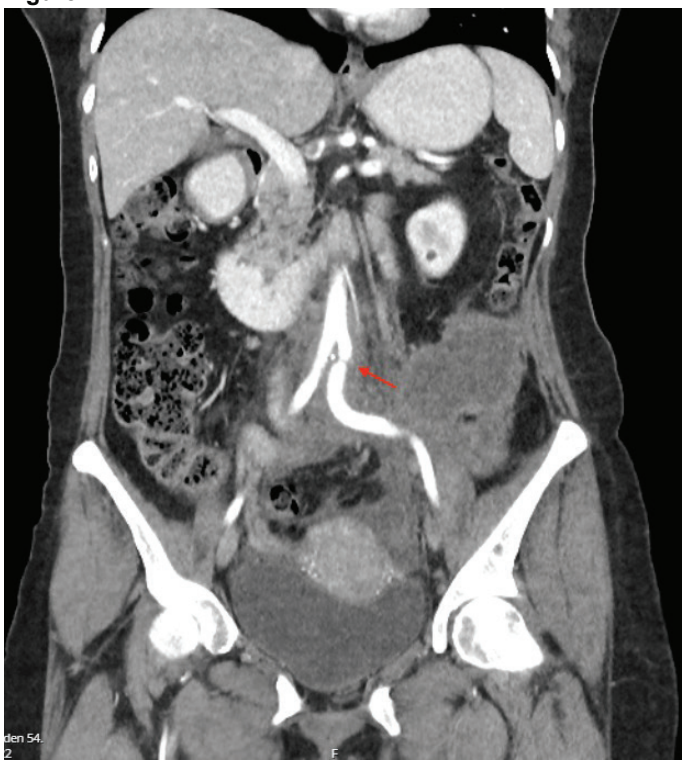


Figure 2



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