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Case Report

Iatrogenic left common iliac artery and vein perforation during lumbar discectomy: A fatal case

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ABSTRACT

Iatrogenic vascular injury during lumbar disk surgery, although rare, is a serious complication, and when it does occur, can be sudden and life-threatening. The risk of injury to the pelvic vessels intra-operatively can be explained by the close proximity of the retroperitoneal vessels to the vertebral column therefore causing injury to the anterior longitudinal ligament, which can give access to the retroperitoneal space. If signs of circulatory instability are noted during lumbar disk surgery, early diagnosis of vascular injury and urgent transperitoneal surgery or emergency stenting can save the patient's life. Here, is presented the case of a 52-year-old man who underwent an elective lumbar discectomy for a rightward disk herniation in the L4–L5 intervertebral space and died 12 h after the operation for a hemorrhagic shock due to a severe intra-abdominal hemorrhage following iatrogenic left common iliac artery and vein perforation during lumbar discectomy.

1. Introduction

Iatrogenic vascular injury during lumbar disk surgery, although rare, is a serious complication, and when it does occur, can be sudden and life-threatening [1]. In fact, iatrogenic vascular injury during lumbar discectomy ranges from about 0.01 to 0.1%. The risk of injury to the pelvic vessels intra-operatively can be explained by the close proximity of the retroperitoneal vessels to the vertebral column therefore causing injury to the anterior longitudinal ligament, which can give access to the retroperitoneal space [2,3].

If signs of circulatory instability are noted during lumbar disk surgery, early diagnosis of vascular injury and urgent transperitoneal surgery or emergency stenting can save the patient's life [2].

Here, is presented the case of a 52-year-old man who underwent an elective lumbar discectomy for a rightward disk herniation in the L4–L5 intervertebral space and died 12 h after the operation for iatrogenic left common iliac artery and vein perforation.

2. The case

A 52-year-old overweight man underwent an elective lumbar discectomy for a rightward disk herniation in the L4–L5 intervertebral space. An hour after surgery his blood pressure was 130/80 mmHg, HR: 90 bpm and SaO_2 98%. Two hours later the patient had a hypotensive episode associated to chest pain and decreased oxygen saturation. The ECG did not show any acute cardiac pathologies and the most important hematochemical parameters were in the normal range (Hb 15.1 g/dL).

Three hours after the operation, following a new hypotensive episode and hemoglobin decrease (12 g/dL), the patient was transferred for an emergency angioCT, which revealed a large retroperitoneal hematoma resulting from the injury to the left common iliac artery (Fig. 1A–C).

Urgent laparotomy was performed; a large retroperitoneal hematoma was found and evacuated. A 10 mm tear of the left common iliac artery was identified. There was another tear in the left common iliac vein, in confluence with the vena cava, which was sutured with Prolene 4-0 and the hemostasis was completed with the use of metal clips. For the general worsening condition of the patient, the surgeons opted for an arterial ligation of the injuries, leaving the surgical revascularization of the lower left limb to a later date.

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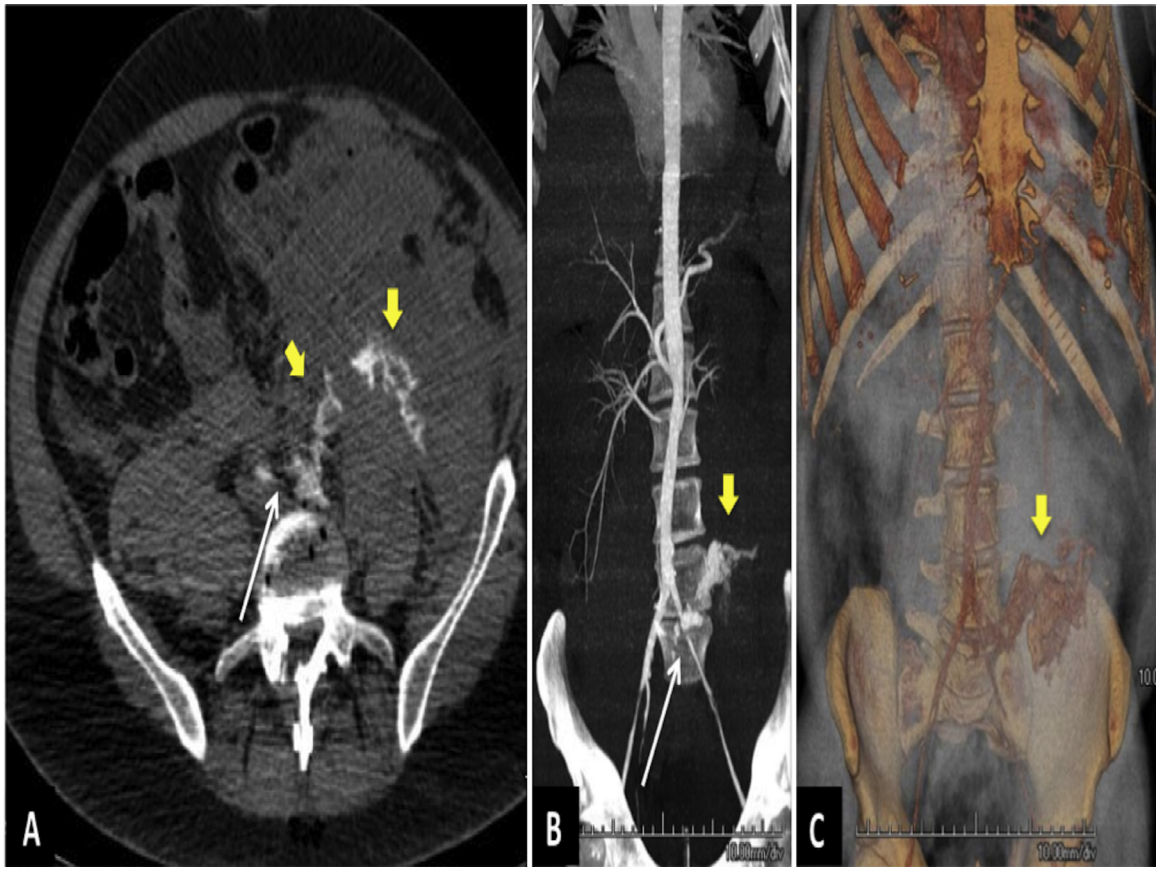

Fig. 1. Computed tomographic angiography shows the presence of an arterial leak (yellow arrows), represented by the leakage of the contrast media at the level of the left common iliac artery (white arrow). Panel A: axial view; Panel B: coronal maximum intensity projection view; Panel C: coronal multiplanar reconstruction. In panels A and B images were obtained in an arterial phase, while in Panel C the image was obtained in a venous phase. In Panel C, in comparison with panels A and B an increased amount of contrast can be observed spurring out of the vessel (yellow arrow).

Two hours after the end of laparotomy, the patient's condition became even more critical and despite resuscitation attempts, he died shortly after.

The medico-legal autopsy was performed around 36 h later.

The **external examination** showed a xifo-pubic surgical incision of 37 cm in length sutured with 28 non-absorbable sutures and on lumbar region there was a surgical incision of 5 cm in length with 4 non-absorbable sutures. No other injuries were identified.

The **internal examination** revealed a moderate brain edema. Within the right pleural cavity there was approximately 350 mL of straw-colored fluid, whereas in the left pleural cavity there was 400 mL. The lungs were congested and oedematous. The heart weighed 420 g and there was no congenital abnormality or disease.

In the abdominal cavity there was a copious hematoma (1650 mL) and numerous, large blood clots in the pelvic cavity. A large retroperitoneal hematoma in the left perinephric space was found.

The abdominal aorta and the right iliac artery were intact, while the common left iliac artery appeared interrupted in two segments; this artery had been divided – proximal and distal one – and ligated with blue thread, surgically, in an attempt to achieve haemostasis (Fig. 2A and 3A, C and D). The left common iliac vein, in confluence with the vena cava was sutured with Prolene 4-0 and there were some metal clips (Fig. 2B and 3B). At the level of L4–L5 vertebrae, there was a laceration of the anterior longitudinal ligament and of the annulus fibrosus (Fig. 2C).

The stomach was empty and its mucosa was pale. The spleen appeared smaller than normal, pale, and the capsule was wrinkled.

Taking into account the autoptical findings the cause of death was attributed to a hemorrhagic shock due to a severe intra-abdominal hemorrhage following iatrogenic left common iliac artery and vein perforation during lumbar discectomy.

3. Discussion and conclusions

In the case here presented, during lumbar discectomy a double complication occurred with the perforation of the left common iliac artery and vein, which caused a severe intra-abdominal hemorrhage and shortly after the death of the patient.

Iatrogenic vascular injury during lumbar disk surgery is a rare but life-threatening complication [1,4]. Even though it may represents a potentially catastrophic event, the majority of surgeons who operate on patients with herniated lumbar disk disease do not expect perforation of the ventral disk space with consequential vascular injury [5–7]. Injuries of the aorta or the inferior vena cava are mainly associated with L3–L4 space surgery, whereas L4–L5 and L5–S1 space surgery are predominantly associated with iliac vessel injuries. Injuries to L4 lumbar artery, internal iliac vessels, median sacral, the inferior mesenteric and the superior rectal artery have also been reported [1]. During disk removal, the pituitary rongeur may slip through the anterior longitudinal ligament and enter the retroperitoneal space of the abdominal cavity, where vascular injury may occur after a deep bite of the rongeur [6,8,9].

Different approaches can be performed for vascular injury, including ligation of arteries and veins, closure of fistulas, arterial bypass, and patch plasty. Other treatments such as endovascular