

## CASE REPORT

Korean J Spine 8(3):229-231, 2011

# Common Iliac Vessel Injury after Lumbar Discectomy

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Injury of common iliac vein related to lumbar discectomy is a rare complication. We report a patient who sustained injury of common iliac vein during lumbar discectomy for extraforaminal lumbar herniated disc. In this case, she had hypovolemic shock due to massive bleeding, and underwent emergent interventional treatment and open laparotomy. Although the vascular injuries were successfully repaired, it could be a fatal complication. We report the clinical features and early management, emphasizing the need for rapid diagnosis, immediate intervention and treatment for favorable outcome.

**Key Words:** Vascular system injury • iatrogenic • Discectomy

## INTRODUCTION

Iatrogenic vascular injury during lumbar discectomy is a rare and serious complication and can be life-threatening when it occurs<sup>16-18)</sup>. The risk of intraoperative injury to the great vessels can be explained by the close proximity of the retroperitoneal vessels to the vertebral column, injury to the anterior longitudinal ligament giving access to the retroperitoneal space<sup>10)</sup>. If vascular injury related abrupt deterioration of vital signs was noticed during lumbar disc surgery, early diagnosis of vascular injury and urgent transperitoneal surgery or emergency stenting could save the patient<sup>9)</sup>. We present a case of injury to the iliac vessels following lumbar discectomy via paramedian approach, set in the context of the findings of a comprehensive review of the literature on vascular complications during lumbar discectomy.

## CASE REPORT

A 48-year-old woman who was diagnosed of hypovolemic shock arrived to our emergency room (ER) in stuporous mental state with systolic BP of 60's. In laboratory findings, serum hemoglobin and platelet were 2.8 g/dL and 45 K/ul, respectively.

• Received: June 14, 2011 • Revised: August 2, 2011

• Accepted: August 2, 2011

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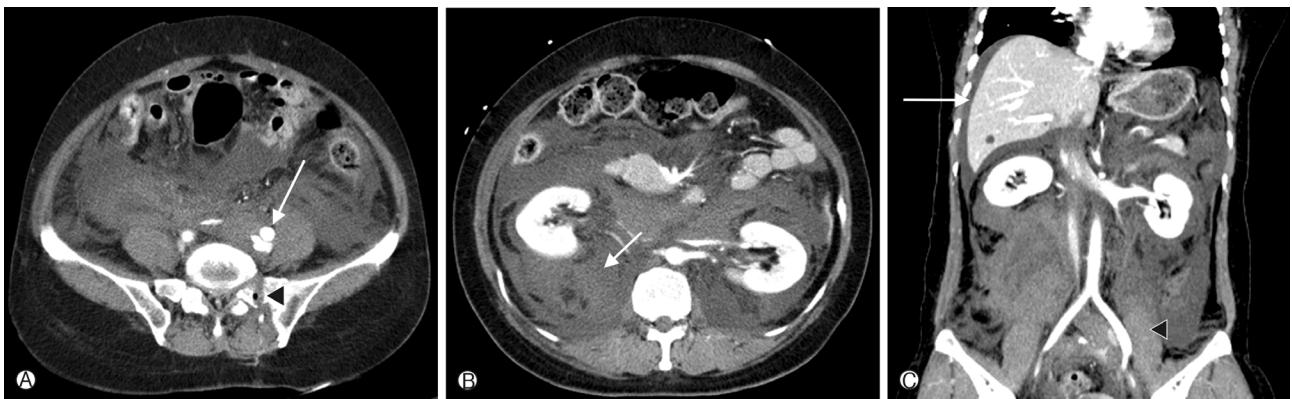
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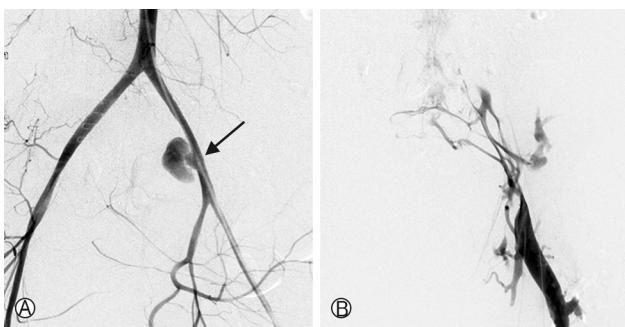
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Emergent transfusion and volume resuscitation was done. The day before, she had visited a regional spine clinic with left sciatica pain and had undergone an operation for extraforaminal herniated disc at L5-S1 via left paramedian approach. The operator informed us of her massive bleeding for 5 minutes during discectomy and then her systolic BP decreased about 90mmHg. Bipolar coagulator and gelfoams were used for hemostasis, and bleeding had stopped in 5 minutes. Post-operative laboratory results showed no particular abnormality. No additional laboratory exams or physical exams were performed because her vital signs were stable and there had been no obvious sign of active bleeding. Next morning, she was found unconscious with systolic blood pressure of 70's and her abdomen was very tense and distended. Therefore, she was transferred to our ER.

The abdominal CT scan revealed abnormality in common iliac vessels (suggesting left iliac artery was lacerated or had pseudoaneurysm) and huge intra-abdominal hematoma compressing the bowel and elevating diaphragm. We could suspect from CT findings that the intraabdominal pressure must have been high (Fig. 1. etc). Emergent angiography was done for accurate evaluation of injured vessels, and it showed a pseudoaneurysm in left common iliac artery and engorgement of venous plexus around left iliac vein (Fig. 2). Immediate stent insertion was performed on left common iliac artery. Exploratory laparotomy was performed because the patency of iliac vein could not be checked. The retroperitoneal hematoma evacuation was not enough to alleviate the increased abdominal pressure, and the peritoneum couldn't undergo primary closure. After laparotomy, she developed severe post-operative pneumonia. But it took over 2 months' time for her discharge and she had to undergo consistent rehabilitative treat-



**Fig. 1. Abdominal CT scan.** (A) arrow: Left iliac artery with pseudoaneurysm, arrowhead: operative approach site., (B) arrow: Right Kidney was elevated by retroperitoneal hematoma., (C) arrow: Elevated diaphragm due to intraabdominal hematoma, arrowhead: suspected pseudoaneurysm of iliac artery)



**Fig. 2.** Angiography of common iliac vessel showed a pseudoaneurysm in left common iliac artery and engorgement of venous plexus around left iliac vein. Left iliac vein was not visualized because huge intra-abdominal hematoma compressed it. (A) Arteriogram (arrow: pseudoaneurysm), (B) Venogram

ment along with a second surgery for abdominal closure meanwhile. After discharge, she required constant hospitalization at another clinic for her wound care for a month.

## DISCUSSION

Lumbar discectomy had many kind of complication such as subdural hematoma, intestine injury, iatrogenic vascular injury<sup>6</sup>. Intraoperative injury of the great vessels, is the most serious complication of lumbar discectomy and can be fatal<sup>10,19</sup>. Vascular injury during lumbar disc surgery was reported as early as 1945<sup>7</sup>. In 1958, a survey among spine surgeons across the United States conducted by DeSaussure, found 106 cases of vascular injury associated with lumbar discectomy. Interestingly, it seems the incidence may not have decreased significantly over the last 50 years<sup>14</sup>. The pituitary rongeur is the usual cause of injury during disc surgery<sup>15</sup>. During disc removal, the ron-

geur may slip through the anterior longitudinal ligament and enter the retroperitoneal space of the abdominal cavity. Most of the reported instances occurred during an operation either at the L4-L5 level or at the L5-S1 level<sup>10,19</sup>. At this level, the inferior vena cava interposes between the disc and the right or both common iliac arteries<sup>2</sup>. Risk factors for such injury include previous disc operations, intra-abdominal interventions, defects of the fibrous annulus or the anterior longitudinal ligament<sup>4,8</sup>, vertebral anomalies and aggressive exploration<sup>10</sup> with deep intrusion of the pituitary rongeur, in the presence of advanced disc disease. In this case, an aggressive exploration of the disc may have led to this complication.

To date, the established treatment of vascular injury complicating lumbar discectomy is a surgery<sup>11,12,13-15</sup>. Surgical exploration of the injured vessel is not easy, because most inadvertent injuries of great vessels occur during posterior approach, direct repair necessitates turning the patient over and exploration through an anterior approach<sup>1</sup>.

Selective arterial embolization and endovascular intervention can control lacerated vessels and provide a quick and effective treatment for life-threatening complications, which is the reason for its renowned popularity lately. Endovascular repair is simple, quick and straightforward. In this case, the vital signs of patient were early recovered and effectively from the shock by endovascular treatment of the lacerated arteries. But there was still persistent bleeding and lots of hematoma increasing abdominal pressure, in turn inducing bowel ischemia that urgent decompressive surgery was needed. Our case also had injury of the posterior side that primary repair was difficult, and anterior approach laparotomy was chosen to effectively repair the injury and rid of massive amount of abdominal hematoma. The primary repair was successful but left leg (o)edema consequently occurred due to venous return compromise following severe injury and compression. Without

the laparotomy, bowel ischemia may have progressed to peritonitis and the patient could have lost her life. Although bowel ischemia was regressed, she developed left lower motor weakness that required rehabilitative therapy during hospitalization, and she complains of leg pain up until now.

Complication rates of microdiscectomy are very low in experienced hands<sup>5)</sup>. However, the surgeon should be aware of several signs of possible vascular complications in lumbar discectomy. These include intraoperative hypotension or bleeding, abdominal distention, leg edema and circulatory insufficiency<sup>3)</sup>. Auscultation of the abdomen before discharge should be done as well. The Shevlin's test, which is about the state of the annulus and anterior spinal ligament during discectomy, can be used for diagnosis indirectly. Firstly, irrigation saline is filled in disc space after discectomy, if the saline escapes rapidly through the disc space, the annulus and anterior spinal ligament have been perforated, thereby increasing the risk of vascular injury.

The treatment of vascular injury should not be delayed due to lack of the physician's caution. The result was disastrous, which negatively affected the patient's outcome, post-operative hospitalization period, and need for rehabilitative period, which all emphasize importance of early diagnosis and proper treatment.

## CONCLUSION

In conclusion, it is important to diagnose vascular complications during lumbar disc surgery. When there is a high index of suspicion even though the patient is stable, early diagnosis and early surgical intervention done can decrease morbidity and mortality. Both the surgeon and anesthesiologist should be aware of the possibility of this event, its features and management.

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