ATROGENIC vascular injury is an unusual but well-recognized complication of lumbar disc surgery. It was first described in 1945 by Linton and White. Simple laceration of a major vessel may produce immediate hemorrhage or lead to formation of an arteriovenous fistula or pseudaneurysm, and mortality rates as high as 50% have been reported. The most common vascular injury is said to be a tear of the left common iliac artery. Other reported vascular injuries have included the right common iliac artery, the aorta, the median sacral artery, the inferior vena cava, iliac veins, branches of the iliac vessels, and bridging veins. We describe a patient who sustained an injury of the superior rectal artery, a branch of the inferior mesenteric artery, after undergoing an L5–S1 discectomy. We found no reported case of such an occurrence. The bleeding was successfully stopped by coil embolization and glue injection.

Case Report

History and Examination. This 34-year-old man presented with a 6-month history of low-back pain that radiated to the right lower leg. A straight-leg raising test was positive (60°) on the right side. A diagnosis of herniated right L5–S1 intervertebral disc was established by examination of findings on magnetic resonance imaging of the lumbar spine.

Operation. One day after admission, the patient underwent a right L5–S1 discectomy after induction of general anesthesia. During the procedure, no abnormal bleeding emanated from the disc space and there were no episodes of low blood pressure or tachycardia. In the recovery room, the patient experienced transient hypotension and tachycardia, which responded well to volume replacement. Three hours postoperatively, he complained of abdominal pain and dizziness. On physical examination his facial complexion appeared pallid and his abdomen was distended. At that time, his blood pressure was very low (80/55 mm Hg) and tachycardia was present (160 beats/minute).

Postoperative Management. Emergency therapy included fluid resuscitation and transfusion of 8 U of whole blood for stabilization. An abdominal CT scan revealed an extensive retroperitoneal hematoma (Fig. 1). Angiography of the abdomen demonstrated contrast extravasation from the superior rectal artery at the L5–S1 intervertebral disc (Fig. 2 left). A microcatheter was selectively inserted into the superior rectal artery, and embolization with microcoils (3 × 2.3 mm) was performed (Fig. 2 center). After this pro-

Superior rectal artery injury following lumbar disc surgery

Case report

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Abbreviation used in this paper: CT = computerized tomography.

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procedure, mild extravasation was still present. We added a glue injection to enhance hemostasis. Postembolization angiography revealed no active bleeding, and colorectosigmoid circulation was good (Fig. 2 right). The patient made a good recovery after this endovascular intervention and he was discharged from the hospital 3 weeks later.

Discussion

Vascular injuries are an uncommon complication following disc surgery. In recent reviews an incidence of less than 1% has been reported. Depending on the level of the segment, surgery-induced injury of the common iliac vein, common iliac artery, aorta, and inferior vena cava has occurred. The iliac vessels are injured more often than the aorta and the vena cava because disc surgery is more often performed at L4–5 and L5–S1. To our knowledge, we report the first case of injury to the superior rectal artery during L5–S1 discectomy. Because the superior rectal artery divides from the inferior mesenteric artery at the level of L-5 and descends to the pelvic space anteriorly along the left side of the lumbosacral spine, it is potentially vulnerable to injury during an L5–S1 discectomy, although this has not been reported. Surgeons should be aware of this artery in cases of retroperitoneal hemorrhage induced by a penetrating wound during L5–S1 discectomy.

Many factors have been reported to predispose to vascular or visceral injury during lumbar surgery, including anterior disc rupture, preexisting defects in the anterior anulus fibrosus and anterior longitudinal ligaments, body habitus, patient positioning, the use of various instruments, the position of the jaws of the rongeur during entry into the disc space, the use of different techniques, the use of a surgical microscope, previous intraabdominal surgery, surgery for recurrent disc herniation, and the experience of the surgeon. The authors of anatomical studies have shown that an instrument, particular a pituitary rongeur, should not be inserted more than 2.5 to 3 cm into a disc space in the lumbar region. In our case, a surgical microscope was used. It is possible that improper estimation of depth under the microscope may have resulted in the rongeur tip penetrating too deeply into the disc space, thus causing perforation of the anterior longitudinal ligament. Because laparotomy was not performed in this case, this hypothesis could not be proven.

Many authors recommend that when a vascular injury is suspected and blood transfusions do not restore the patient’s blood pressure, the necessary treatment is urgent operative repair. In our case, the profound hypotension was controlled with volume expansion and blood transfusions, and we chose to perform abdominal CT and angiography.

Fig. 1. Contrast-enhanced pelvic CT scan revealing a large retroperitoneal hematoma (arrows) with contrast medium extravasation (arrowheads) over the presacral region.

Fig. 2. Angiographic studies. Left: Selective inferior mesenteric artery angiogram revealing contrast medium extravasation (arrow) from superior rectal artery. Center: Superselective superior rectal artery angiogram in which a microcatheter is placed, demonstrating the exact bleeding point (arrow). Lower: After microcoil (arrows) and glue embolization, the inferior mesenteric artery angiogram was obtained. Complete occlusion of the bleeding point and preserved colorectosigmoid circulation can be seen.
raphy first, with the operating team standing by. We successfully stopped the active bleeding by coil embolization. We do not, however, recommend this mode of management unless the patient is in stable condition.

References


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