Endovascular Treatment of a Ruptured Lumbar Artery Aneurysm: Case Report and Review of the Literature

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Lumbar artery aneurysms are uncommon lesions that usually present as pseudoaneurysms secondary to vessel injury. Despite their small size and retroperitoneal location, these lesions are potentially lethal once they rupture. This report describes a ruptured lumbar artery aneurysm which was successfully treated in a minimally invasive fashion. The diagnosis was suggested by computed tomography scan and confirmed with angiography. Successful treatment consisted of placing intravascular metallic coils into the lumbar artery. The literature contains only seven previous reports of ruptured lumbar artery aneurysms and these were managed either operatively or via an endovascular approach. Based upon the outcome of all reported cases, we believe that coil embolization of lumbar artery aneurysms following diagnostic angiography is an appropriate and effective mean of treating these lesions. (Ann Vasc Surg 1998;12:379-383.)

INTRODUCTION

Lumbar artery aneurysms are rare lesions with potentially life threatening consequences. They are difficult to access anatomically and formidable to manage operatively. Transcatheter coil embolization of traumatic arterial injuries or ruptured aneurysms of medium sized arteries are well-established techniques with demonstrated efficacy that appear ideally suited to manage complicated lumbar artery aneurysms. This report describes the management of a patient with a ruptured lumbar artery aneurysm and reviews the literature relevant to this uncommon lesion.

CASE REPORT

An 81-year-old man presented with generalized weakness and a syncopal episode. His past was significant for angina pectoris, hypertension, and chronic renal insufficiency with a baseline creatinine of 4.5 mg/dl. Upon presentation, his blood pressure was 120/70 mmHg and his abdomen was soft and nontender. His hematocrit was 26%. The patient was hospitalized and during his work-up he experienced sudden severe pain in the right flank and buttok followed by loss of consciousness 5 days after admission. His blood pressure fell to 90/60 mmHg and his abdomen was tensely distended. His condition stabilized with the rapid infusion of 1 liter of crystalloid solution and 2 units of packed red blood cells.

A ruptured aortic aneurysm was suspected but because no aneurysm could be felt and the patient did not have a known abdominal aortic aneurysm, an urgent dynamic computed tomography (CT) scan was obtained. This demonstrated a large right-sided retroperitoneal hematoma with constant extravasation at the level of the four lumbar vertebra (Fig. 1). An emergency aortogram via the right common femoral artery was performed (Fig. 2). The fourth lumbar artery appeared prominent (diameter 2 mm) and connected with a dumbbell-shaped area of contrast extravasation lateral to the fourth lumbar vertebra (Fig. 3A). Two ascending branches of the fifth lumbar artery which were smaller in diameter (1.5 mm) were also found to be in continuity with the distal portion of the contrast extravasation. The right fourth lumbar artery

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was selectively catheterized using a 0.035" Cragg wire (Medi-tech/Boston Scientific, Watertown, MA) and a Cobra catheter (Medi-tech/Boston Scientific, Watertown, MA). Nine straight 1.5 cm long Hilal microcoils (Cook, Inc., Bloomington, IN) were delivered into the artery proximal to the aneurysm. A postembolization aortic injection confirmed total exclusion of the aneurysm (Fig. 3B). Because the aneurysm was no longer visualized and because of the patient’s renal insufficiency, the decision was made not to treat the fifth lumbar artery branches.

The patient did well for 16 days when he complained about recurrent abdominal pain. A dynamic CT scan demonstrated a recurrent retroperitoneal hematoma with mixed contrast density suggestive of acute and chronic bleeding.

A repeat arteriogram did not demonstrate any extravasation from the previously embolized right fourth lumbar artery, however, the right fifth lumbar artery was now noted to be enlarged. Selective catheterization demonstrated two branches of the fifth lumbar artery, which were again communicating with the previous noted area of contrast extravasation. Ten straight 1.5 cm long Hilal microcoils were delivered into these branches and a postembolization study confirmed their occlusion. The patient recovered after the embolization procedure and his hematocrit was stable. Unfortunately, he died 2 months later secondary to an intracerebral bleed without any signs of recurrent problems associated with the lumbar embolization.

**DISCUSSION**

Only seven cases of lumbar artery aneurysms have been reported previously in the literature (Table 1).

![Fig. 1. Contrast enhanced CT scan reveals the hematoma within the psoas muscle and the bleeding aneurysm (star) at the expected position of the lumbar artery. The hematoma (arrows) contains contrast extravasation.](image1)

![Fig. 2. Abdominal aortogram demonstrating an aneurysm (arrow) originating from the right fourth lumbar artery. The fifth lumbar artery is visualized with two branches (arrowhead) connected to the ruptured aneurysm.](image2)

While the etiology of these lesions was not known, most were considered to be false aneurysms occurring after an episode of vascular trauma. Lumbar artery aneurysms have been described following stab wounds to the lumbar region and after forceful retraction in patients undergoing renal transplantation or gastrectomy.

One case report attributed ruptured bilateral lumbar aneurysms to the vascular manifestations of von Recklinghausen’s disease in which spontaneous aneurysm formation is known to occur. In our patient, the etiology remains obscure. A history of trauma to the lumbar region was not present and the physical examination and angiograms were not suggestive of an underlying vascular disorder.

Precontrast CT scans typically demonstrate a homogenous high-density collection that is consistent with a hematoma. A bolus injection of contrast can opacify the aneurysm at the expected position of a lumbar artery and in our case demonstrated active bleeding by contrast extravasation. Abdominal aortogram and selective angiograms of the involved