

# Endovascular Repair of Iatrogenic Iliac Injuries

Successful endovascular exclusion of an iliac artery pseudoaneurysm and ilio-iliac arteriovenous fistula sustained during laparoscopic hysterectomy.

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**A**ortoiliac artery aneurysm, penetrating trauma, and lumbar disc surgery can be associated with acquired ilio-iliac arteriovenous (AV) fistula. Symptoms consistent with congestive heart failure and venous hypertension should heighten one's suspicion for this complication. This article describes a case of successful endovascular exclusion of an ilio-iliac AV fistula that was discovered more than a decade after the patient underwent a laparoscopic hysterectomy.

## CASE REPORT

A 43-year-old woman presented to an outside hospital with complaints of right lower quadrant abdominal pain

and progressive lower extremity swelling. Thirteen years previously, she had undergone a laparoscopic hysterectomy for endometriosis and uterine adenomyosis that was complicated by injury to the iliac vessels. These injuries were repaired following open surgical conversion, and the patient had been asymptomatic until the time of presentation. Her past medical history was otherwise remarkable for migraines and a laparoscopic cholecystectomy.

On presentation, the patient's vital signs were normal. Her physical examination was notable for right lower quadrant abdominal pain, a pulsatile mass with associated bruit in her right groin, and bilateral lower extremity swelling (right more than left).



Figure 1. Axial cut from a computed tomographic angiogram (CTA) showing a pseudoaneurysm of the right common iliac artery as well as the fistulous communication between the right common iliac artery and left iliac vein. Note the intense contrast filling of the vena cava.



Figure 2. Aortogram demonstrating early filling of the vena cava. The double density of the right common iliac artery pseudoaneurysm is also visualized.



Figure 3. Postoperative CT scan showing the aortic stent graft in place with successful exclusion of the fistula.

CTA showed a 1.5-cm pseudoaneurysm arising from the anterior surface of the proximal right common iliac artery, with early intense contrast filling of an enlarged inferior vena cava (Figure 1).

The patient was transferred to our institution. Because of the proximal nature of the AV fistula, as well as the pseudoaneurysm, bifurcated stent graft repair was performed. Initial arteriography showed the pseudoaneurysm, as well as early filling of the vena cava (Figure 2). The patient underwent successful repair of the fistula with a bifurcated aortic stent graft. She was discharged home on postoperative day 2 after an uneventful course. At 1-month follow-up, she was without complaints, and her lower extremity swelling had resolved. A postoperative CT scan confirmed a lack of communication between the arterial and venous systems with the return of the caval diameter to a normal size (Figure 3). At 1-year follow-up, there was continued exclusion of the fistula, with resolution of the right common iliac artery pseudoaneurysm (Figure 4).

## DISCUSSION

Ilio-iliac AV fistulas have been described in patients with preexisting aortoiliac aneurysms<sup>1</sup> following penetrating trauma<sup>2,3</sup> or lumbar disc surgery.<sup>4-6</sup> Although rare, the presence of signs of congestive heart failure with venous hypertension in conjunction with physical findings of an abdominal bruit should raise one's suspicion of the diagnosis. Contrast-enhanced imaging via CT or magnetic resonance imaging can confirm the diagnosis with the presence of early filling of the venous system. Low-flow fistulas located in the groin may resolve spontaneously; however, larger AV fistulas located in the pelvis often require intervention.

Although traditionally approached via open repair in the past, this is often associated with considerable morbidity and mortality rates due to the challenging nature of the exposure and presence of massively dilated collaterals, with one institutional review reporting a morbidity and mortality rate of 5% to 10%.<sup>7</sup> In an effort to reduce the morbidity and



Figure 4. CT scan at 1-year follow-up.

mortality rates associated with surgical therapy, endovascular techniques have been employed, with multiple successful case reports published.<sup>2,3,5,6</sup> Repair using septal occluders<sup>8</sup> or covered aortic or iliac stents have been described.

Our patient was found to have a right common iliac artery pseudoaneurysm and a fistulous connection between the right common iliac artery and left iliac vein. Her history of laparoscopic pelvic surgery with open conversion would have made surgical therapy hazardous. Exclusion of the ilio-iliac AV fistula was successful via bifurcated aortic stent graft repair. Although the long-term results of such techniques for the treatment of pelvic AV fistulas are not yet known, multiple case reports, as well as small patient series, have demonstrated a high technical success rate with good short- and midterm results. ■

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