Case Report

Arterio–enteric fistula between iliac artery and cecum as an endograft complication

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Abstract

Endovascular treatment of aneurysms and pseudoaneurysms is more frequently employed in emergent situations since it is less invasive and has lower morbidity. Although it has excellent immediate results in regard to patency and sealing of the aneurysm, long-term follow-up is advised due to the risk of endoleak or graft migration. Arterio-enteric fistulas are less commonly encountered complications following endovascular procedures mostly between aorta and duodenum. Here, we present a late arterio-enteric fistula in the cecum following an endovascular repair of a pseudoaneurysm in iliac position accompanied with arterio-ureteral fistula. The patient was successfully treated by surgical approach.

Introduction

Endovascular treatment of aneurysms and pseudoaneurysms is more frequently employed in emergent situations since it is less invasive and has lower morbidity. Although it has excellent immediate results in regard to patency and sealing of the aneurysm, long-term follow-up is advised due to the risk of endoleak or graft migration. Arterio-enteric fistulas are less commonly encountered complications following endovascular procedures mostly between aorta and duodenum [1-4]. Here, we present a late arterio-enteric fistula in the cecum following an endovascular repair of a pseudoaneurysm in iliac position accompanied with arterio-ureteral fistula.

Case Report

A 54-year-old male admitted to the emergency department for recurrent episodes of gross hematuria during the past week and melena that day. Two years previously, he had been treated abroad for a retroperitoneal tumor involving the right kidney. Nephroureterectomy and partial resection of the right external iliac artery were performed, and arterial continuity was restored with polytetrafluoroethylene (PTFE) graft interposition. Less than a month, from the intervention, the patient had gross hematuria and readmitted to the same hospital. A pseudoaneurysm of the graft and its communication with the right ureteral stump creating an arterio-urinary fistula were diagnosed. Endovascular treatment had been performed with endograft positioned at the leaking anastomosis, and the fistula was sealed.

On admission at our hospital, the vital parameters were stable. There were no pathological findings on physical abdominal examination. Posterior tibial and dorsalis pedis pulses were absent on the right foot while normal on the left. The ankle-brachial pressure index was 0.6 on the right and 1.1 on the left. The laboratory examinations showed mild anemia, leukocytosis, and renal function impairment (serum creatinine 2.4 mg/dL). Fiberoptic endoscopy ruled out an upper gastrointestinal hemorrhage. Ultrasound examination showed gross clots in the urinary bladder. The patient was hospitalized for further work up. Intravenous fluids, a broad spectrum antibiotic and omeprazole were given.

The patient remained 7 days in the emergency department with persistent gross hematuria, and he developed repeated episodes of rectal bleeding. His red blood cell count, hemoglobin, and hematocrit levels deteriorated, respectively, to $1.95 \times 10^6$, 5.9 g/dL and 15.3% during
the week although 12 units blood were transfused. After 1 week, the patient was transferred to the surgical intensive care unit due to hemodynamic instability. Here, the vascular surgeon was consulted, and based on the patient’s past medical history, a recurrent arterio-enteric and/or urinary fistula was suspected. Computerized tomography scan angiography (Figure 1) revealed a right iliac pseudoaneurysm and endograft dislodgement, but no active communication between the artery and intestine or genitourinary system. Cystoscopy demonstrated bladder clots, but there was no active bleeding point.

Surgery was planned for pseudoaneurysm isolation and visceral exploration. A median laparotomy was performed, and retroperitoneal hematoma was found in the right iliac fossa with adherence to the cecum. The right common iliac artery was ligated. The common femoral arteries were exposed on both sides through upper femoral incisions. The distal right external iliac artery was ligated to prevent back bleeding to the pseudoaneurysm, and an extra-anatomic femoral-femoral crossover bypass with a reinforced PTFE was performed to insure right leg perfusion. After bypass incisions were closed, the pseudoaneurysm was opened. Its content and the previously detached PTFE graft and endograft were removed (Figures 2 and 3). The left internal iliac artery origin was occluded by a thrombus. When the thrombus was removed, the vascular backflow was generous. It was appropriately sutured to stop bleeding. The cecum was then mobilized, and it revealed erosion and perforation on its posterior wall (Figures 4 and 5). The cecum and the distal right colon were resected and an ileum – ascending colon anastomosis was performed to insure bowel continuity. Drains were left in place, and the abdomen was closed.

There was no gross or microscopic hematuria in the following days. The patient was treated with double antibiotic therapy for 1 week and low molecular weight heparin for 2 weeks. Enteric feeding and oral aspirin (100 mg/day) were
commenced on the 5th postoperative day. At discharge, the crossover bypass functioned well, and distal perfusion to the lower extremities was unchanged.

Discussion

To our knowledge, there is no other reported case of cecal perforation from an endograft in iliac position. Cecum is not a usual site of the fistulization even after arterial surgical interventions. We found only three reports of similar secondary arterio-enteric fistula after surgery: One in cecum and the other two in appendix [1-3].

Apart from the unusual position of the fistulization, there are two topics worth of discussion: Early diagnosis and the efficacy of endovascular treatment for such anastomotic complications.

This patient’s past medical history was very suggestive of such a complication because his first postsurgical complication had the same presentation. However, a week passed before an appropriate diagnosis was made. This case emphasizes that a careful medical history can orient the physician for unusual causes of gastro-intestinal or urinary tract bleeding. Occlusion of the graft and visceral hemorrhage should have led surgeons to a complication of previous vascular procedure.

Endovascular sealing of anastomotic leaks is very attractive because it is rapid, less invasive, and has shown very good results. In our case, the pseudoaneurysm developed in proximity to the internal iliac artery. In such cases, internal iliac artery embolization has been strongly recommended to prevent endoleak, enlargement of pseudoaneurysm, and endograft migration [4]. Such was not done in this patient.

The existence of a fistula between anastomotic pseudo-aneurysm and the remaining ureter could also have played a role in further development of the pathology since contamination from urinary tract cannot be ruled out. Graft infection can lead to a further anastomosis breakdown with graft-endograft unit dislodgement, the latter being the cause of cecum perforation. Although the pseudoaneurysm was sealed, and the urinary fistula was closed, this does not exclude the possible inoculated infection. In many instances, pseudoaneurysms can become contaminated without clinical signs of infection [5]. Endograft or stent infection is also possible, and there are reported cases of this being the cause of arterio-enteric fistulas although generally referred to abdominal aorta and duodenum [6]. Fludeoxyglucose-positron emission tomography scan has shown good sensibility and specificity for graft infection and could have been helpful before endovascular treatment was decided.

The coexistence of an early anastomotic leakage, a possible infected site and the proximity to an opened internal iliac artery may have influenced the failure of the endovascular treatment in this patient. Infection should be suspected anytime an enteric or urinary fistula exists, and surgery for such complications seems a better choice.

References