ELSEVIER

Case Report

Endograft Infection and Treatment with Preservation of the Endograft: Early Results in 3 Cases

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We present 3 cases of stent graft infection in patients who were treated with preservation of the endograft. In the first patient, the contamination of the endograft was the consequence of a bleeding aortoenteric fistula, whereas in the second patient, the endograft was implanted into a ruptured contaminated aortic aneurysm because of the patient's hemodynamic instability. In the third patient, the presence of a consistent type Ia endoleak after a chimney graft procedure followed by secondary interventions led to an infection of the stent graft. In each case, a laparotomy was performed with debridement, followed by appropriate antibiotic therapy. The first patient suffered a fatal pulmonary embolism. The other 2 patients are alive 4 and 24 months after the diagnosis of endograft infection. In unstable patients or those with severe comorbidities who cannot tolerate endograft excision and aortic reconstruction, surgical debridement followed by appropriate antibiotic therapy can be a temporary or bridging solution.

Endograft infection after endovascular abdominal aortic aneurysm repair (EVAR) is an underrecognized and underreported event. The incidence of endograft infection ranges between 0.2% and 3%.[1–4] Although rare, it is a life-threatening disease and may have devastating consequences. Despite significant progress in perioperative care and antimicrobial therapy, mortality and morbidity rates remain high. Mortality rates range from 25% to 100%.[1,2]

Stent graft infection after endovascular aortic procedures may present as a low-grade infection associated with abdominal or back pain or as systemic sepsis when more virulent microbes are implicated. Direct communication between the endograft and the intestine results in the formation of an aortoenteric fistula (AEF). Endovascular aortic stent graft infections have been shown to present roughly one-third as chronic sepsis, one-third as severe acute sepsis, and one-third as AEFs.[1–5]

The primary treatment objective in such cases is to remove the infected stent graft and to reestablish the vascular continuity with an extraanatomic bypass or in situ graft replacement.[1–6] However, endograft excision is associated with high mortality and morbidity rates, especially when undertaken in unstable septic patients with severe comorbidities.[1,2] The option to preserve the endograft and treat the infection both locally and systematically may be appealing. This approach provides the opportunity to avoid an extensive aortic reconstruction and an extraanatomic bypass. Moreover, it can be used as a bridge therapy until excision of

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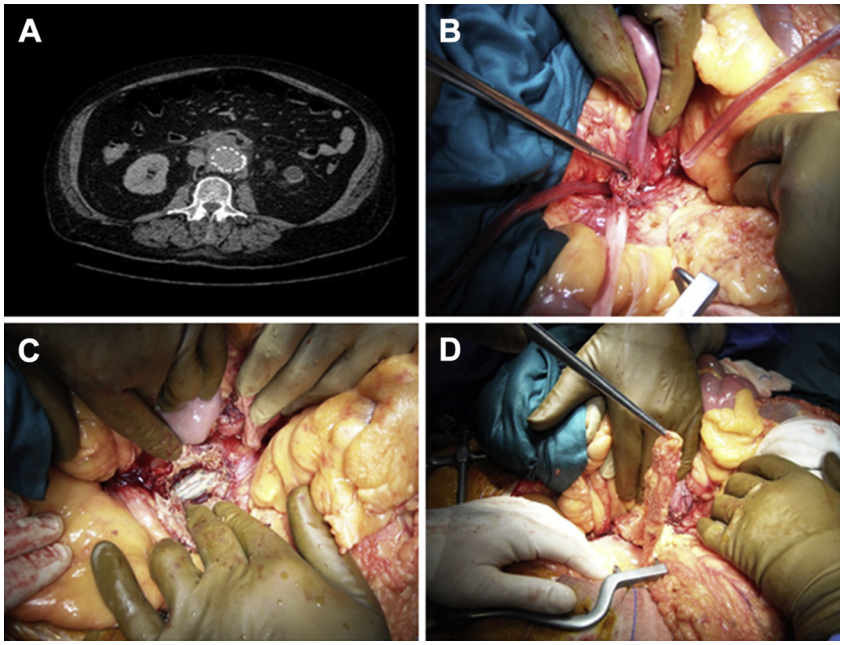

Fig. 1. (**A**) A CTA showed gas in the perigraft tissue, adherent duodenum to the proximal graft. (**B**) A dense inflammatory ''frozen'' mass was found around the involved part of the duodenum and the aortic sac. The duodenum was detached from the aortic wall and the deficit of the bowel wall was repaired primarily (**C**), the aneurysmatic sac was opened, the endograft was exposed, and debridement of the area with antibiotics irrigation and omentoplasty was performed (**D**).

the infected stent graft is performed in a more stable clinical condition.

The aim of this article is to present the outcomes of 3 patients with endograft infections who were treated with preservation of the endograft in our Department of Vascular Surgery at Attikon Hospital, Athens, Greece, between March 2009 and March 2013.

CASE REPORTS

Case 1

A 75-year-old male smoker was admitted for treatment of gastrointestinal (GI) hemorrhaging. His medical history included chronic obstructive disease. Five years before his admission, he had an EVAR for a 5.5-cm asymptomatic abdominal aortic aneurysm (AAA). The initial procedure was uncomplicated, and he had not undergone any secondary procedures during follow-up.

On admission, he was febrile (38.7°C) and hemodynamically stable. Laboratory tests revealed the presence of anemia (hematocrit 32.4%) and impaired renal function (serum creatinine 2.2 mg/dL and urea 109 mg/dL). The remaining tests were within normal values. Emergency computed tomography angiography (CTA) showed presence of gas in the perigraft tissue and adherent duodenum to the proximal part of the stent graft (Fig. 1A). An upper GI endoscopy raised the suspicion of a secondary AEF with an ''ulcer'' lesion in the fourth portion of duodenum. Patient was started on intravenous antibiotic treatment with piperacillin/tazobactam. Blood cultures detected infection with *Klebsiella pneumoniae*, sensitive in piperacillin/tazobactam. In the next day, the patient became unstable because of severe GI hemorrhaging and was operated emergently. An explorative laparotomy was performed. A dense inflammatory ''frozen'' mass was found around the involved part of the duodenum and the aortic sac. Because of the difficulties involving surgical preparation of the aortic sac and the risk of damage to adjacent organs, the initial plan for aortic reconstruction was abandoned. The duodenum was detached from the aortic wall and the deficit in the bowel wall was primarily repaired (Fig. 1B). The aneurysmal sac was opened, the endograft was exposed, and debridement of the area, local irrigation with antibiotics (piperacillin/tazobactam and garamycin according to antibiogram), and omentoplasty were performed (Fig. 1C, D). Patient's clinical status ameliorated, arterial blood gas values were improved, and arterial acidosis was corrected, and he became hemodynamically stable. However, on postoperative day 2, the patient suffered a fatal pulmonary embolism.

Case 2

An 82-year-old man was transferred to our department from another hospital because of acute abdominal pain, fever up to 38.5°C, and symptoms of incomplete intestinal