

## SHORT REPORT

# Staged Endovascular Stent-grafting and Surgical Treatment of a Secondary Aortoduodenal Fistula

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*Secondary aortoenteric fistula is a dramatic, rather infrequent late complication occurring mostly after abdominal aortic surgery. Currently, graft excision and in situ bypass is considered the treatment of choice, but it is associated with significant mortality and morbidity. Herein, we describe the case of a secondary aortoduodenal fistula treated by staged endovascular stent-grafting and surgical closure of the fistula. Forty days after stent-grafting, Tc-99m-HMPAO labelled leukocyte scanning failed to identify leukocyte infiltration of the graft and there were no clinical signs of infection. At 8-month follow up, the patient was asymptomatic.*

*Keywords: Secondary aorto-duodenal fistula; Endovascular; Stent-graft; Prosthesis infection.*

### Introduction

Secondary aortoduodenal fistula is a dramatic, but rather infrequent late complication of abdominal aortic surgery. When left untreated, it is invariably fatal and operative treatment is associated with high mortality and morbidity. Staged extra-anatomic bypass grafting followed by aortic graft excision; graft excision and *in situ* bypass with allograft; antibiotic impregnated prosthesis; silver-coated prosthesis or autogenous vein are current surgical treatment options.

Recently, there have been a few reports of the successful treatment of secondary aortoenteric fistulas with endovascular stent-grafting.<sup>1–4</sup> Late failures due to recurrent infection have been described.<sup>5,6</sup> Herein, we describe a case of secondary aortoduodenal fistula treated by staged endovascular stent-grafting and surgical closure of the fistula.

### Case Report

A 58-year-old man was admitted because of hematemesis and melena. Nine years previously, he had undergone aortobifemoral bypass surgery for aortoiliac occlusive disease. Two years previously he was admitted to our Institution because of fever and pain in the right inguinal region. On that occasion an abdominal ultrasound examination was negative and the patient was treated conservatively with oral antibiotics. Four weeks prior to admission, he was admitted in a foreign hospital because of gastrointestinal bleeding. At upper gastrointestinal endoscopy, a gastric ulcer was found and at colonoscopy diverticulae and polyps were also found. On arrival, the patient did not complain of abdominal symptoms and systolic pressure was 90–100 mmHg. Hemoglobin concentration was 92 g/L, C-reactive protein 8 mg/L and leukocyte count 14.700/dL. The day after haemoglobin concentration decreased to 83 g/L and red blood cells were transfused. At upper gastrointestinal endoscopy, an ulcer of the third portion of the duodenum was observed, and computed tomography showed in the posterior wall of the same portion of the duodenum, in close contact with

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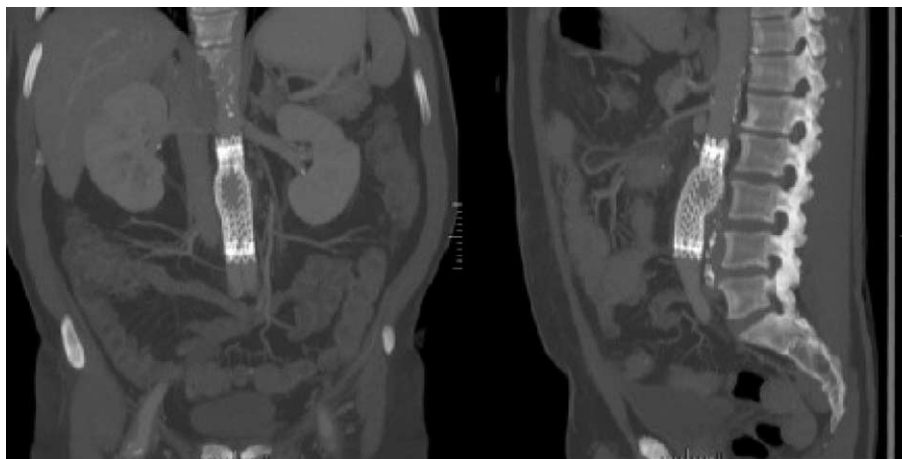


Fig. 1. Computed tomography scans showing the Gore TAG stent-graft in place 12 days after surgical closure of the aortoduodenal fistula.

the abdominal aorta, a 0.9 cm thickened area and on its left side an air collection of  $1.8 \times 0.8 \times 1.1$  cm. Seven days after admission, a Gore TAG  $2.6 \times 10$  cm stent-graft (W. L. Gore and Associates, Inc., Flagstaff, Arizona, USA) was successfully deployed into the proximal aortic anastomosis segment (Fig. 1). The day after, at laparotomy, the duodenal perforation was found, its margins resected, and the resulted defect sutured in two layers. An anastomotic dehiscence completely sealed by the stent-graft was found and sutured with polypropylene stitches. Omentum was sutured in place. A jejunal feeding tube was inserted into the jejunum 40 cm from the duodenal suture. No macroscopic signs of infection were detected in the fistula area, but on bacterial culture of surgical specimens *Enterobacter cloacae* grew. Postoperatively, piperacillin-tazobactam, vancomycin and fluconazole were administered. Thirteen days after laparotomy, a computed tomography scan showed a small fluid collection in front of the third part of the duodenum, and no signs of perigraft endoleak was observed. C-reactive protein increased up to 259 mg/L and slowly decreased toward normal levels. Recovery was uneventful and the patient was discharged on the 20th postoperative day and received ciprofloxacin 750 mg p.o. twice a day for 3 weeks. Forty days after stent-grafting a Tc-99m-HMPAO labelled leukocyte scan did not show any sign of leukocyte collection. At 3-month follow up, the patient was asymptomatic and computed tomographic angiography showed a well-positioned stent-graft without either fluid collection or any other signs of intra-abdominal infection. Eight months after surgery the patient was asymptomatic.

## Discussion

The present report confirms that endovascular stent-grafting can be safely employed in the management of aortoenteric fistulas. However, it remains unclear whether this treatment represents a definitive procedure for this condition. We believe that lack of treatment of the fistula, i.e. surgical closure of the duodenal defect, could leave the patient exposed to the risk of recurrent infection as has been reported previously.<sup>1,6</sup> In conclusion, staged endovascular and surgical treatment of secondary aortoduodenal fistula when no signs of graft infection exist, is a safe and valuable treatment method. Long-term follow-up will prove whether this is a durable procedure.

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