

Urgent Duodenectomy in a Patient with Aortoenteric Fistula

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Abstract

Background: Duodenal surgery is highly complex, especially in emergency settings such as aortoenteric fistula (AEF). AEF is a rare but life-threatening complication of aortic grafts. When duodenal defects are extensive, partial duodenectomy with pancreatic preservation may offer a safe alternative to primary repair.

Case Presentation: A 57-year-old man had multiple comorbidities and a prior aortobifemoral bypass. He presented with abdominal pain, weight loss, and recurrent gastrointestinal bleeding. Initial studies were inconclusive. CT-angiography later showed a pseudoaneurysm at the proximal graft anastomosis, requiring endovascular repair with aortic endoprostheses and a “kissing-stent.” Persistent anemia led to repeat imaging, which revealed contrast extravasation and a large D2–D3 duodenal perforation with graft exposure, consistent with secondary AEF. The patient underwent urgent D3–D4 duodenectomy with pancreatic preservation, duodenojejunostomy, explantation of the infected prosthesis, aortic repair, and creation of an axillobifemoral bypass. Following a reoperation for postoperative bleeding, he made a full recovery without further complications, demonstrating successful surgical and clinical resolution of this complex case.

Partial D3–D4 duodenectomy is a reliable and effective option. It gives surgeons confidence in managing extensive duodenal defects associated with AEF.

Conclusion: Surgeons should become familiar with partial D3–D4 duodenectomy. It offers a definitive solution for complex duodenal lesions and reinforces expertise in challenging cases.

Keywords: aortoenteric fistula, duodenectomy, pancreatic preservation, aortic graft infection, D3-D4 duodenal resection

Introduction

Duodenal surgery presents a significant technical challenge. This is due to its anatomical relationship with the pancreas and its association with high morbidity and mortality. In 1995, Chung *et al.* [1] described total duodenectomy with

pancreatic preservation. This enabled the treatment of certain duodenal diseases.

Other partial duodenectomies with pancreatic preservation have been reported for tumors in the D3-D4 duodenal portions. These cases showed favorable outcomes. [2-5] Although urgent duodenectomies are rare, they can be valuable in specific emergency scenarios.[5]

Clinical Case

A 57-year-old man with a medical history of arterial hypertension, diabetes mellitus, chronic kidney disease, and alcoholic liver cirrhosis presented as an active drinker and former smoker. Seven years prior, he underwent bilateral aortofemoral bypass surgery.

Presenting symptoms included weight loss, generalized abdominal pain, and greenish depositions. Laboratory findings were notable for hyponatremia and pancytopenia.

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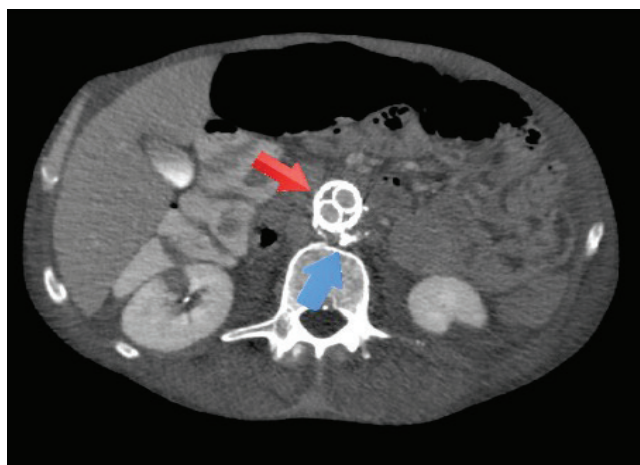
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Gastroscopy showed no abnormalities.

Colonoscopy revealed melena remnants but no identifiable lesions. CT-angiography demonstrated free perihepatic, perisplenic, and pelvic fluid, periportal and mesenteric edema, and an intact aortic prosthesis without leakage.

Despite supportive measures, he deteriorated. Hemoglobin dropped to 3.8g/dL. Repeat CT angiography showed a pseudoaneurysm at the aortic prosthesis proximal anastomosis without active bleeding. Further imaging confirmed leakage, leading to endovascular repair with



Red arrow → Kissing-stent / Blue arrow → Leakage to the duodenum.

Figure 1: Contrast-enhanced abdominal CT image showing contrast leakage from the abdominal aorta into the duodenum.

two aortic endoprostheses using the “kissing-balloon” technique. Persistent leakage on arteriography was resolved with a “kissing-stent.”

The patient experienced recurrent episodes of anemia. Computed tomography angiography identified active hemorrhage in the second part of the duodenum and a sealed perforation in the third segment, as illustrated in Figure 1.

Endoscopic evaluation demonstrated a substantial duodenal perforation with exposure of the aortic prosthesis. The surgical team performed a D3–D4 duodenectomy, constructed a duodenojejunostomy, explanted the prosthesis, closed the aortic arteriotomy, and established an axillobifemoral bypass, as depicted in Figure 2 A-B/3.

A subsequent surgical intervention was required to control hemorrhage from the axillobifemoral bypass (Clavien-Dindo-IIIb). Following this procedure, the patient recovered and was discharged without further complications.

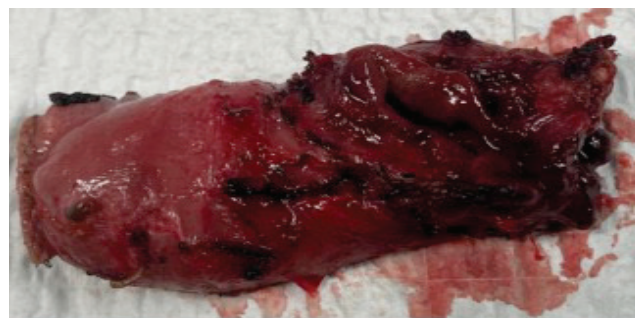


Figure 3: Surgical specimen resected during the procedure, showing a segment of the duodenum.

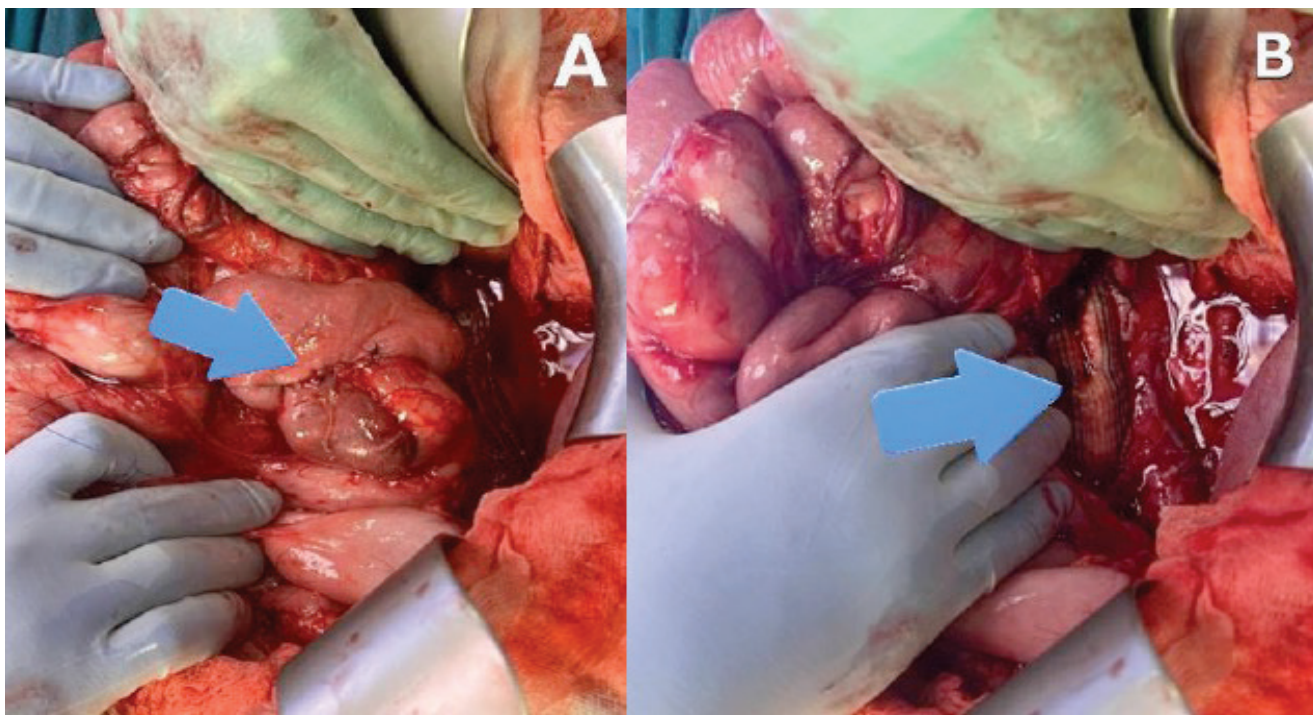


Figure 2: Intraoperative view showing the duodenojejunostomy in image A and the prosthesis in image B.

Discussion

Aortoenteric fistula (AEF) often begins with a subtle sentinel bleed, underscoring the importance of early recognition to prevent life-threatening hemorrhage and significantly enhance patient survival.

Aortoenteric fistula should be considered in all patients with aortic prostheses, since graft-induced erosion of the duodenal wall can lead to fistula formation [3].

Diagnosis relies on CT imaging and endoscopy, which often reveals duodenal perforation.[3] Surgical treatment involves replacing the usually infected prosthesis. Repair of the duodenal defect is also necessary.

While primary suture is preferred, it may not be feasible in significant defects or poorly vascularized tissue. In such cases, alternative options include duodenal exclusion, cephalic duodeno-pancreatectomy, or partial D3–D4 duodenectomy with pancreatic preservation.

Partial D3–D4 duodenectomy is indicated when direct closure of the duodenal defect cannot be achieved [3-5].

The primary advantages of this technique are the creation of an anastomosis in healthy, well-vascularized tissue and its placement away from the high-risk AEF region. Additionally, this method serves as a critical salvage option if initial repair is unsuccessful.

Conclusion

Surgeons should become familiar with partial D3–D4 duodenectomy. It offers a definitive solution for complex duodenal lesions and reinforces expertise in challenging cases.

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