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## CLINICAL NOTE

# Aortoenteric fistula due to a vascular prosthesis as the cause of gastrointestinal bleeding

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None

Aortoenteric fistulas are very rare, but because of the urgent and sometimes life-threatening nature of this complication, its possibility should be taken into consideration, especially if patients have undergone vascular surgery. In such situations, aortoenteric fistula should be included in the differential diagnosis for gastrointestinal bleeding. We report the case of a man who came to the emergency department with hematemesis and rectal bleeding. Diagnosis and treatment are analyzed. [Emergencias 2010;22:44-46]

**Key words:** Aortic-enteric fistula. Gastrointestinal bleeding. Computed tomography angiography.

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## Introduction

An aorto-enteric fistula is a communication between the aorta and a segment of the digestive tract. Anatomically, the portion of the digestive tract most often affected by AEF is the duodenum<sup>1,2</sup>, but it can be found at any other location. Diagnosis is difficult, based on clinical symptoms, history, and complementary examinations where computed tomography (CT) scan has shown high specificity and sensitivity.

AEF must be suspected together with the other most frequent causes of gastrointestinal bleeding, especially in patients with an aortic prosthesis or a history of vascular surgery. Emergency exploratory laparotomy for the location and closure of the fistula is the treatment of choice, although this treatment has been associated with high mortality.

We present a case of aorto-enteric fistula in a patient with an aortic prosthesis.

## Case report

A 73-year old man consulted the emergency department (ED) after a 3-hour period of gener-

al malaise, lower back pain, an episode of blood-streaked vomiting and rectorrhagia. One week before, he had consulted for back pain; anti-inflammatory treatment had improved the symptoms. Personal history of interest included longstanding hypertension, hypercholesterolemia, chronic renal failure treated with hemodialysis and ruptured aortic aneurysm 15 years before, treated with bifemoral bypass graft, and re-intervention for postoperative retroperitoneal hematoma. Subsequent annual monitoring with CT showed a 4 cm juxtarenal dilation of the aorta, which had been stable during recent years.

On arrival at the ED, the patient was clinically stable, with a blood pressure of 130/70 mmHg and temperature of 36 °C. On chest auscultation, cardiopulmonary rhythm was 70 bpm without murmurs, and he was eupneic with breath sounds. Abdominal examination was also unremarkable, except for asymmetric femoral pulses which the patient reported as normal ever since the intervention. A nasogastric tube revealed active bleeding with red blood, and rectal examination showed rectorrhagia. Emergency endoscopy showed a small benign-looking gastric ulcer (Forrest Ib).

**Tabla 1.** Differential diagnosis of upper gastrointestinal hemorrhage

Origin	Types	Remarks
Digestive tract	Peptic Ulcer	The most common cause of upper gastrointestinal bleeding; as the most important etiological factors of hemorrhage secondary to peptic ulcer we would highlight the intake of anti-inflammatory agents and chronic infection by <i>Helicobacter pylori</i> . This is usually secondary to episodes of nausea or vomiting, and usually self-limiting.
	Mallory-Weiss syndrome	
Hemato-Oncology	Esophagitis	
	Hiatus hernia	
	Hemophilia	
Vascular	Neoplasms	
	Angiodysplasia	
	Vascular ectasia	
	Aorto-enteric fistula	
	Vascular alterations	
Other	Arteriovenous malformations	
	Osler-Weber-Rendu disease	

Laboratory analysis showed urea of 187 mg/dl, creatinine 5.7 mg / dl, total hemoglobin 8.5 g/dl, hematocrit 25.8%, erythrocytes  $2.82 \times 10^6$ /mcl, while the other parameters, including coagulation, were normal.

Given the patient's history (bifemoral bypass graft and aortic dilatation), and the clinical symptoms (low back pain, anemia, rectal bleeding and hematemesis) not explaining the results of gastroscopy, abdominal CT angiography was performed which showed post-operative changes at the anastomosis of the original aorta and the prosthesis, and a 2 cm collection at the retroaortic level, with air bubbles and hypodense center suggestive of periaortic abscess. The passage of iodinated contrast was observed towards the third and fourth portion of the duodenum, related with aorto-enteric fistula, and there was also a type II3 leak with filling of the original distal aorta and the left internal and external iliac arteries and the right internal iliac artery.

Blood transfusion was initiated, and emergency surgery was performed with axillo-bifemoral bypass, aortic ligation with prosthesis removal and duodenal suture.

Postoperative evolution was favourable, with enteral nutrition for a week with good subsequent oral tolerance. The patient received specific antibiotic treatment for *Enterococcus faecium* and *Streptococcus viridans* (isolated in periprosthetic thrombus and exudate). The patient evolved favorably and was discharged a few days later.

## Discussion

Aorto-enteric fistulas are rare clinical entities<sup>4</sup>, with high morbidity (between 30 and 85%)<sup>1,5,6</sup>

since they are generally under-diagnosed and treatment is complex<sup>6</sup>. Today, the most common cause of aorto-enteric fistula is aortic vascular prosthesis complications estimated to occur in 0.5 to 2.4% of cases<sup>2</sup>.

In 1962 De Weese and Fry published the first classification of aorto-enteric fistulas, and introduced the concept of primary and secondary fistulas<sup>7</sup>. The fistula is considered secondary when there is a prior vascular surgery with vascular grafts, and primary when the aorto-enteric communication is the initial event. The latter are usually secondary to atherosclerosis, tumors or other causes of vesicular lithiasis<sup>2</sup>.

Aorto-enteric fistula can affect any portion of the digestive tract, although the portion most often affected is the duodenum, followed by the esophagus, the jejunum and less frequently the stomach<sup>2,8</sup>.

Secondary fistulas, as in the case of our patient, are more common than primary, and despite being difficult to diagnose, must always be considered in any patient with previous aortic surgery.

The presentation of this condition is very non-specific. In most patients it takes the form of melena, and less frequently hematemesis, hematochezia and rectal bleeding. Classically, a characteristic sign of aorto-enteric fistula is initial hemorrhaging, a self-limiting episode of bleeding that precedes massive bleeding, with time interval which varies from hours to months.

If the fistula is at the level of duodenum, melena is accompanied by hematemesis, and only rarely so in fistulas at the jejunum or ileum.

The differential diagnosis of upper gastrointestinal bleeding is summarized in Table 1.

Upper gastrointestinal endoscopy is a good diagnostic method for initial assessment of these

patients, although it is important to remember that other causes of bleeding are also possible (as in our case)<sup>8,9</sup>, which can lead to delay in the diagnosis.

Angiography is of little diagnostic value in an emergency department, and in most cases the hemodynamic status of the patient does not allow this procedure<sup>10</sup>. CT, however, has shown high sensitivity and specificity in the diagnosis of aortoenteric fistula<sup>3</sup>.

Exploratory laparotomy is used to identify three elements: fistulae, intestine and aorta. Usually, the fistula is found between the intestine and the proximal suture line of the prosthesis. Depending on the state of the intestine, suture or resection of the fistula is performed. Regarding the aorta, complete graft excision is recommended. Intravenous broad-spectrum antibiotic is also required until identification of the microorganisms involved.

## References

- 1 Grande JP, Ackermann DM, Edwards WD. Aortoenteric fistulas. A study of 28 autopsied cases spanning 25 years. *Arch Pathol Lab Med.* 1989;113:1271-5.
- 2 Antinori CH, Andreww CT, Santaspirit JS, Villanueva DT, de Leon ML, Cody WC, et al. The many faces of aortoenteric fistules. *Am Surg.* 1996;62:344-9.
- 3 Chernyak V, Rozenblit AM, Patlas M, Cynamon J, Ricci ZJ, Laks MP, et al. Type II Endoleak after Endoaortic Graf Implantation: diagnosis with Helical CT Arteriography. *Radiology.* 2006;240:885-92.
- 4 Bergqvist D, Björck M, Nyman R. Secondary aortoenteric fistula after endovascular aortic interventions: a systematic literature review. *J Vasc Interv Radiol.* 2008;19:163-5.
- 5 Wheeler WE, Hanks J, Raman VK. Primary aortoenteric fistulas. *Am Surg.* 1992;58:53-4.
- 6 Hollander JE, Quick G. Aorto-esophageal fistula: A comprehensive review of the literature. *Am J Med.* 1991;91:279-87.
- 7 De Weese MS, Fry WJ. Small bowel erosion following aortic resection. *JAMA.* 1979;241:1962.
- 8 Sevastos N, Rafailidis P, Kolokotronis K, Papadimitrion K, Papatheodoris GV. Primary aortojejunal fistula due to foreign body: a rare cause of gastrointestinal bleeding. *Eur J Gastroenterol Hepatol.* 2002;14:797-800.
- 9 Ibáñez L, Baeza C, Guzmán S, Llanos O. Tratamiento de la hemorragia digestiva alta de origen no variceal. Evaluación de 10 años de experiencia. *Rev Chil Cir.* 1998;50:370-8.
- 10 Busuttill SJ, Goldstone J. Diagnosis and management of aortoenteric fistulas. *Semin Vasc Surg.* 2001;14:302-11.

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## Fístula aorto-entérica secundaria a prótesis vascular como causa de hemorragia digestiva

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La fístula aorto-entérica es una entidad muy infrecuente, pero dada la situación urgente y en algunas ocasiones vital que supone su diagnóstico, es importante recordar su existencia, sobre todo en aquellos pacientes que han sido sometidos a una cirugía vascular previa. Por tanto, la hemos de tener en cuenta a la hora de hacer un diagnóstico diferencial con otras causas de hemorragia digestiva. Presentamos el caso de un paciente que acude a urgencias por hematemesis y rectorragia, y analizamos su diagnóstico y tratamiento. [*Emergencias* 2010;23:44-46]

**Palabras clave:** Fístula aorto-entérica. Hemorragia digestiva. AngioTAC.