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Review Article

A Close Endoscopic view of an Aorto-Enteric Fistula

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Abstract:

Aorto-enteric fistula (AEF) is a rare but potentially life-threatening condition, defined as an abnormal connection between the aorta and the gastrointestinal tract. It is most often caused by the compression of an abdominal aortic aneurysm (AAA) against gastrointestinal walls or the erosion of an aortic prosthetic graft into the surrounding enteric structures. Patients generally present with massive bleeding leading to hemodynamic instability and, therefore, this condition is usually diagnosed by means of radiological imaging techniques (namely angio-CT). Conversely, we present a case of a 69-year-old man admitted for severe iron deficiency anemia (IDA) and recurrent episodes of self-limited rectal bleeding, in which we diagnosed an aorta-enteric fistula during enteroscopy. Fortunately, no signs of ongoing bleeding were seen during the endoscopi examination. An urgent angio-CT was performed to confirm the diagnosis and the patient was then handled by Vascular Surgery Department for further management.

Key words: *aorto-enteric fistula, small bowel bleeding, iron deficiency anemia, small bowel enteroscopy, video capsule endoscopy.*

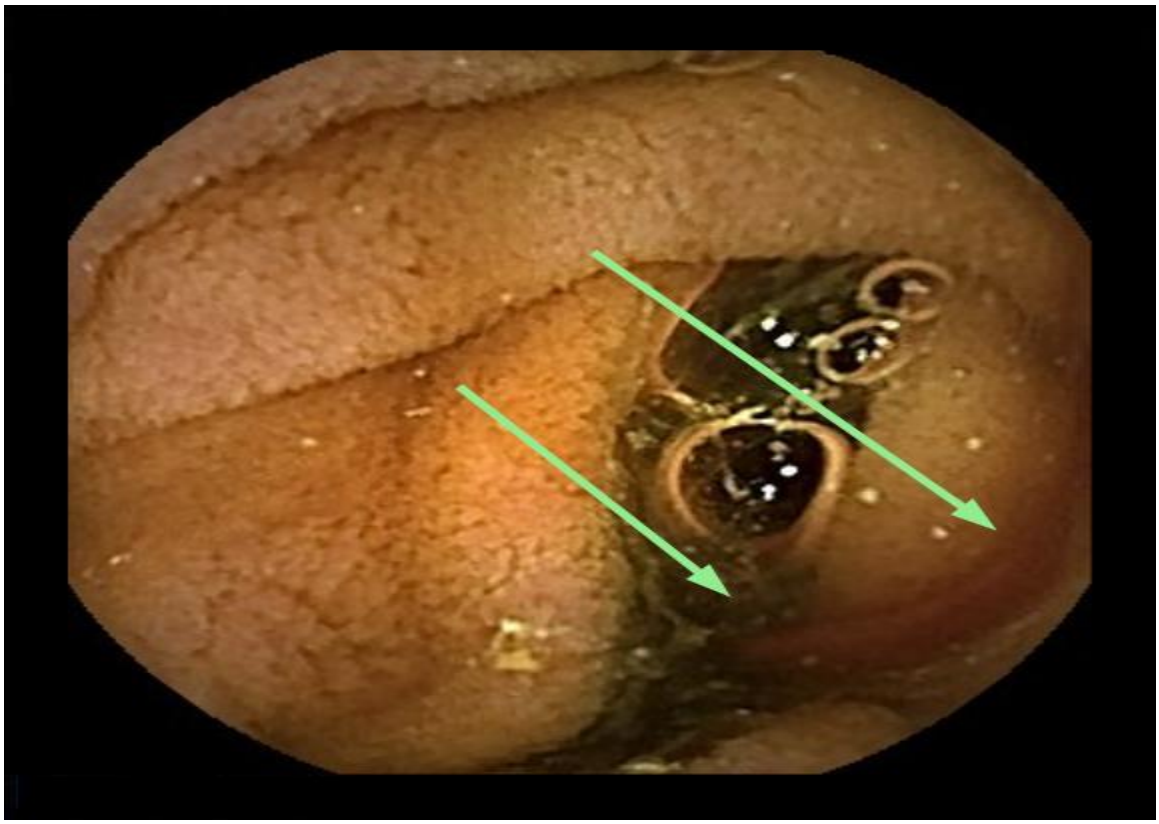
Abbreviations: Aorto-enteric fistula (AEF), abdominal aortic aneurysm (AAA), angio-computed tomography (angio-CT), iron deficiency anemia (IDA), video capsule endoscopy (VCE), device assisted enteroscopy (DAE).

Introduction

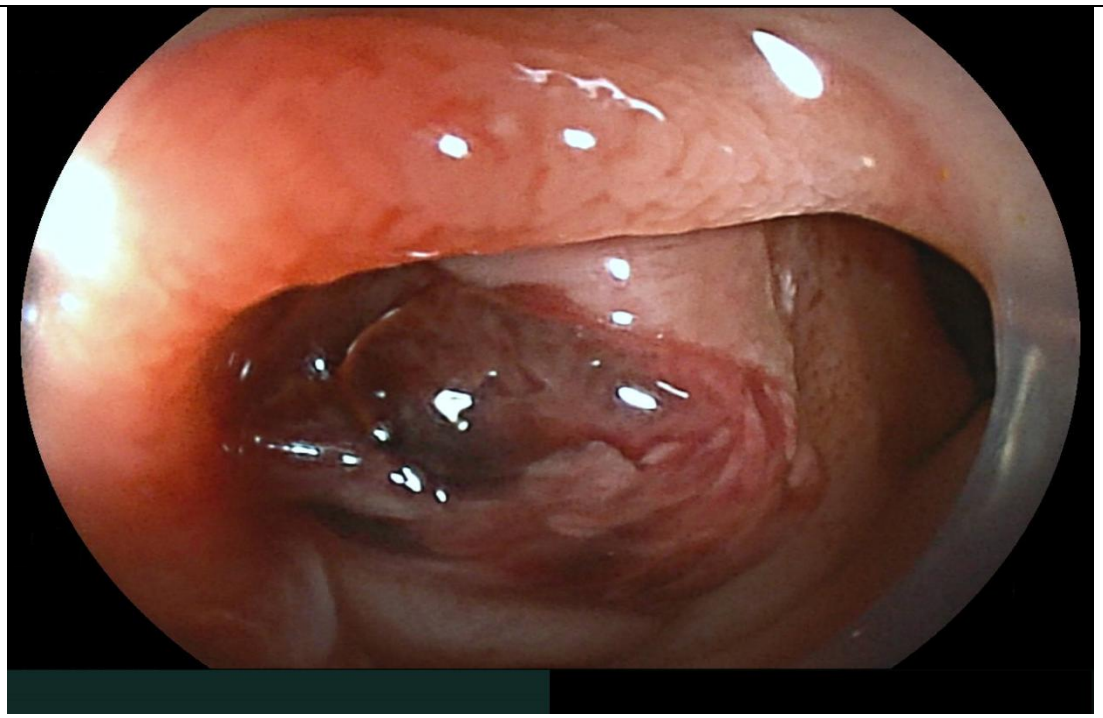
A 69-year-old man with a 18 months history of suspected small bowel bleeding was admitted for asthenia and recent episodes of self-limiting rectal bleeding. The patient had a past history of complicated aorto-uni-iliac prosthesis placement for abdominal aortic aneurysm, but a recent angio-computed tomography (angio-CT) excluded endoleak. A bidirectional endoscopy was performed in previous months, not identifying any source of bleeding.

Case Report

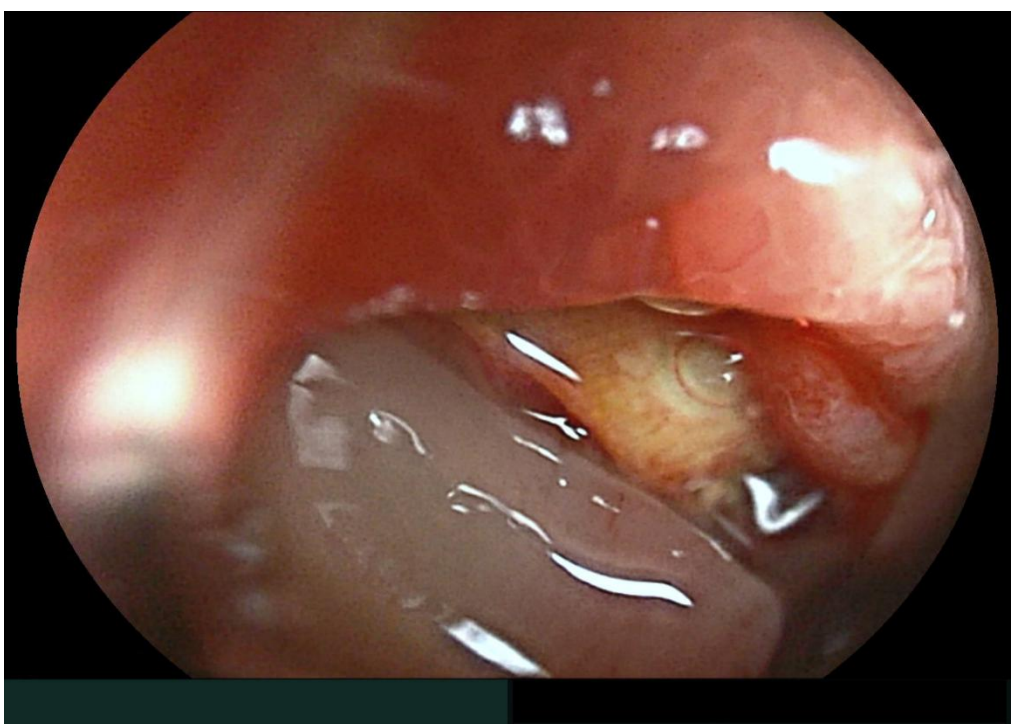
The patient was admitted with a severe IDA, confirmed by laboratory tests (Hb 4.3 g/dL, MCV 76 fl, ferritine 3 ng/ml), with no blood traces at rectal examination. Hemodynamical stability was maintained during all hospitalization; six blood transfusions was overall infused. Taking into account the previous investigations, a video capsule endoscopy (VCE) was performed showing minimal traces of red blood in the proximal small bowel lumen, without obvious mucosal lesions (Figure A). We decided to further investigate the small bowel with a per-oral device assisted enteroscopy (DAE), with identified a bulging with an adherent clot (Figure B) in the distal duodenum. The clot was gently washed with no signs of ongoing bleeding; its removal exposed a deep ulceration containing a yellowish structure behind (Figure C). An urgent angio-CT confirming the aorto-duodenal fistula (Fig. D) was performed and the patient was transferred to Vascular Surgery Department for surgical treatment.



A. Video capsule endoscopy: traces of red blood (green arrows) in the duodenal lumen without obvious mucosal lesions.



B. Per-oral device assisted enteroscopy: mucosal bulging with adherent clot.



C. Per-oral device assisted enteroscopy: deep ulceration with a yellowish mesh tubular structure (endovascular prosthesis wall) at the bottom.

D. Angio-CT: aorto-duodenal fistula (white arrow).

Discussion

Aorto-enteric fistula (AEF) is a rare but potentially life-threatening condition. Massive bleeding with hemodynamic instability is the most common presentation and therefore it is usually diagnosed by means of radiological imaging techniques (namely angio-CT). Conversely, in the present case, the patient presented with iron deficiency anemia and enteroscopy allowed to obtain the final diagnosis.

Taking into account the negative bidirectional endoscopies at time of admission, a VCE was performed, showing minimal traces of red blood in the proximal small bowel lumen. This finding, without evidence of obvious mucosal lesion, might be regarded as a minor non-relevant finding. However, bleeding from AEF typically occurs in two steps: a minor initial “herald” bleeding followed by a major bleeding event. Furthermore, in the proximal small bowel, VCE can depict bleeding signs but might miss even large lesions, because of its fast progression. Therefore, when even minor stigmata of recent bleeding (i.e. fresh blood in the lumen) are observed, further investigations, like per-oral enteroscopy, are mandatory. In addition, in such a case, all the efforts to minimize mucosal trauma (to prevent false positive findings) and to maximize small bowel surface inspection (to avoid false negative examinations) should be done. Therefore, this patient underwent per-oral DAE with CO2 insufflation and with a soft hood at the tip of the endoscope. These technical tricks allowed to carefully evaluate the small bowel mucosa and to safely inspect the ulcer base and

to gently mobilize the clot, identifying the prosthesis wall (the yellowish mesh tubular structure showed in Figure B).

Although the direct visualization of an aortic prosthesis through ulcerated small bowel wall is something that no endoscopist would ever want to see in his own practice, in our opinion it is fundamental to know how an aorto-enteric fistula endoscopically looks like, to quickly recognize it when performing GI endoscopy in patients with aortic prosthesis.

After endoscopy, since no signs of ongoing bleeding were seen and the patient remained hemodinamically stable, an urgent angio-CT confirming the aorta-duodenal fistula was performed.

The management of aorto-enteric fistula is extremely tricky; the aortic repair could occur by open surgery or end-vascular approach depending on AEF clinical presentation, patient comorbidities and aorta anatomy. Therefore the patient was transferred to Vascular Surgery Department, where he underwent a complete graft excision followed by a bilateral axillo-femoral bypass.