

Secondary Aortoenteric Fistula on Aortofemoral Prosthesis: An Unusual Clinical Observation

Christ Labretesche Gracia Gakosso^{1*}, Mehadi Meradi¹, Stéphane Arblade¹, Safia Bergheuil¹

¹Medical Imaging Department of the François Quesnay Hospital of Mante La Jolie, France

DOI: [10.36347/sjmcr.2023.v11i01.002](https://doi.org/10.36347/sjmcr.2023.v11i01.002)

| Received: 23.11.2022 | Accepted: 01.01.2023 | Published: 05.01.2023

*Corresponding author: Christ Labretesche Gracia Gakosso

Medical Imaging Department of the François Quesnay Hospital of Mante La Jolie, France

Abstract

Case Report

Secondary aorto-digestive fistulas are a rare but extremely serious complication of aortic prostheses. As the symptoms, if any, are often not very specific, the diagnosis is often difficult and must always be based on a whole series of justifications including medical imaging. Early diagnosis is essential and this fistula should be the first option considered in a patient with an abdominal aortic prosthesis who presents rectal bleeding or melaena (even to a small degree), sepsis and/or abdominal pain. The CT scan is the examination of choice, the criteria providing evidence of a fistula being the presence of gaseous images in a peri and intraprosthetic fluid collection, the thickening and / or retraction of the intestinal walls on contact, the existence of a false aneurysm, and finally, very rarely, the extravasation of contrast medium in the intestinal lumen. In this clinical case, we present a patient with fistulized aortofemoral prosthesis in the fourth portion of the duodenum highlighted on CT and confirmed intraoperatively.

Keywords: Aorto-digestive fistula, aortic prosthesis, imaging.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Secondary aorto-digestive fistulas (ADF) can occur several months after the placement of an abdominal aortic prosthesis. The most frequent localization is the 3rd or 4th duodenum. Abdominal CT scan plays an important role and should be performed with special attention to the distal portion of the duodenum, for the diagnosis of this pathology. The authors report a clinical observation of ADF, to attract the attention of practitioners; on diagnostic difficulties in front of a clinical picture of acute abdominal pain not relieved by usual analgesics, in a patient with an aortic prosthesis.

CLINICAL OBSERVATION

A 67-year-old man was operated in 2019 for a very tight stenosis of two primary iliac arteries, superior mesenteric celio-meenteric arteries, associated with partial thrombosis of the subrenal aorta, treated by the placement of a GELSOFT 16/8 type aorto-bi femoral prosthesis. He was admitted 3 weeks ago for a necrotizing acute pancreatic classified stage E of

Balthazar on CT (Figure 1), he presented to the emergency room of the hospital of Mantes la Jolie, for epigastric pain of sudden installation resistant to the usual analgesics associated with melenas. The clinical examination objectified a general preserved condition, an epigastralgia caused by palpation radiating to the entire abdomen associated with tachycardia. The biological assessment objectified four years later, in the emergency department of the Hospital Center of Mantes la Jolie for diffuse abdominal pain associated with an infectious syndrome. The biological assessment a hyperleukocytosis at 16.4 g/L. The fibrinogen level was 3.20 g/L. Hemostasis was normal. An abdominopelvic CT scan was performed and highlighted the presence of air bubbles within the bifemoral aorto prosthesis at the height of the emergence of the superior mesenteric artery and arriving at intimate contact with the posterior wall of the fourth duodenum. A surgical indication was placed and evidenced a fistula between the prosthesis of the superior mesenteric artery and the third portion of the duodenum. The evolution was favorable postoperative with prosthetic replacement.

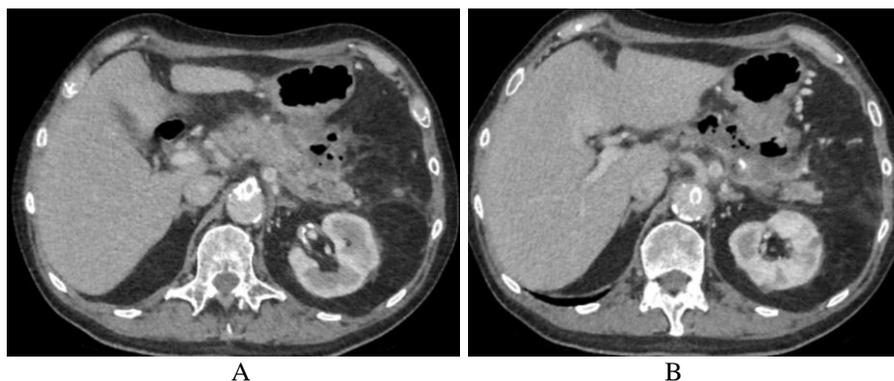


Figure 1 (a and b): Acute necrotizing pancreatitis stage E of Balthazar with infiltration and fluid collection peripancreatic area bubble seat arriving at intimate contact with the aortofemoral prosthesis above the emergence of the celiac trunk artery

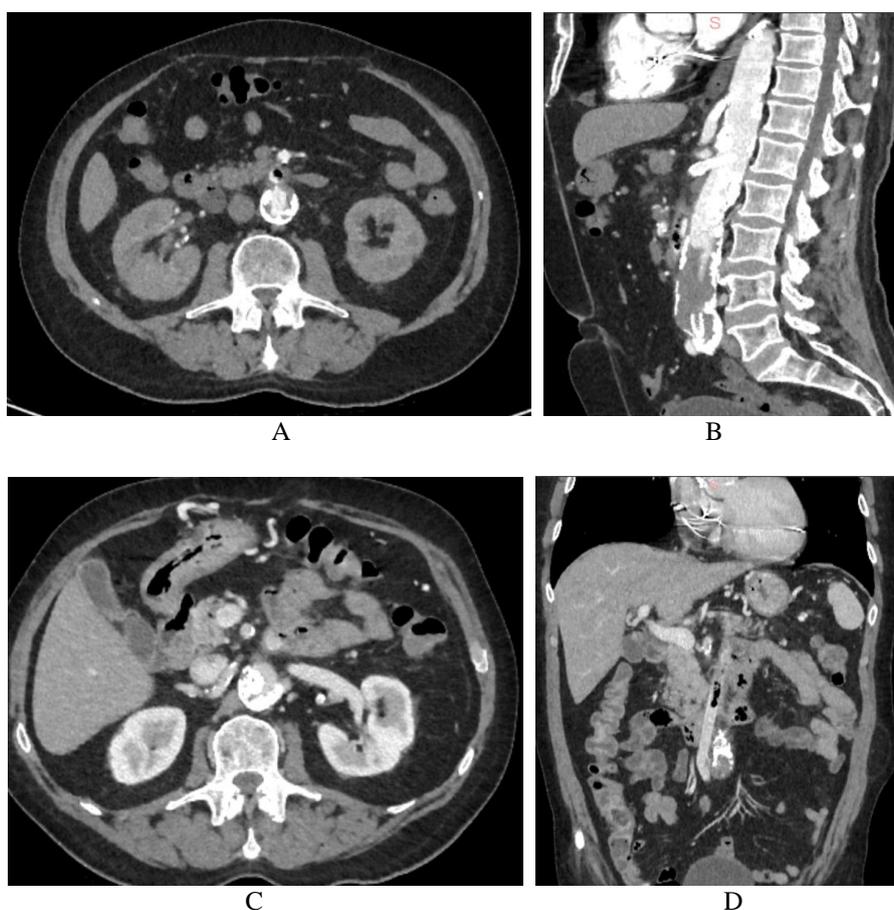


Figure 2: Presence of endoprosthetic aortofemoral air bubble which remains permeable to arterial phase after injection of contrast (a and b) and arriving at contact with the posterior wall of fourth portion of the duodenum at portal phase after contrast (c and d).

DISCUSSION

Secondary aorto-digestive fistulas (ADF) are a rare but extremely serious complication of aortic prostheses. The case described illustrates the rare complications of a secondary aortoduodenal fistula on aortic prosthesis [1]. It was in 1953 that Brock described the first case of aorto-digestive fistula secondary to an aortic prosthesis [1, 2]. Their frequency is estimated between 0.4 and 5% of patients who have benefited from the placement of a subrenal aortic

prosthesis [3]. The pathophysiology of aorto-digestive fistulas remains unclear to date. The authors incriminate both mechanical and infectious factors. Indeed, the constant pulsations of the prosthesis and systolic jerks as well as an infected postoperative hematoma would be the cause of erosion and then an opening of the duodenal wall. An infection of the prosthesis due to intestinal contents would weaken the anastomotic suture line that would rupture. The authors also believe that the inflammatory process related to the presence of the

prosthesis as a foreign body would be a contributing factor, as it would lead to adhesions between the duodenum and the site of the anastomosis [1, 2, 4]. The time interval between the placement of the prosthesis and the onset of secondary FAD is on average three years, with extremes varying between 2 days and 15 years [3, 4].

The cardinal clinical sign is digestive hemorrhage (hematemesis, melæna or occult hemorrhages) in 60% of cases [4]. As shown in our case, the fistula was the result of an inflammatory and infectious process of an acute necrotizing pancreatic that occurred three (3) weeks earlier, manifested by excruciating abdominal pain and digestive hemorrhage (melena). This finding corroborates with data from the literature on the causes and symptoms of occurrence of this pathology.

In terms of imaging, oral clouding is not routinely recommended because it could mask a slight extravasation of contrast medium from the aortic lumen to the intestines. The CT scan is currently the most efficient examination, with sensitivity and specificity very variable depending on the series (sensitivity of 40 to 90% and specificity of 33 to 100% for Vu *et al.*, [5]), the rather low figures being probably partly related to poor recognition of the "fine" signs of this pathology. The proposed abdominopelvic acquisition protocol consists of spiral scanning without contrast injection (collimation 0.625, thickness 2.5 mm, interval 2 mm), followed by arterial phase acquisition for bolus detection, and acquisition 80 seconds after injection (collimation 0.625, thickness 1.25 mm, interval 0.9 mm). It is very difficult in imaging to distinguish a simple prosthesis infection from an authentic fistula, because these two entities are intimately related [5, 6]. The highly indicative criteria for a fistula are: the presence of images of gas bubbles in the prosthesis or a peri-prosthetic collection; thickening and/or retraction of the intestinal walls on contact (subject to sufficient distension of the lumen); Another CT sign is that of the aortic protrusion in the third duodenum the existence of a false aneurysm; extravasation of contrast medium in the intestinal lumen, extremely rare and pathognomonic fistula, but the absence of which should never be a reason to question the diagnosis of aortoenteric fistula [7]. In the illustrated case, the presence of intraprosthetic aortofemoral air bubble that was in intimate contact without cleavage plane with the wall of the fourth portion of the duodenum and protruding within it was objectified, thus supporting the diagnosis of secondary aorto digestive fistula.

Therapeutically and as shown in this case, surgical exploration must be carried out in this emergency context at the risk of occurrence of complications such as hemorrhagic shock and fatal

outcome. The mortality of this complication varies according to the authors between 70 and 85% and it reaches 100% for patients not operated [8]. Our patient was operated immediately confirming the suspicion diagnosis intraoperatively. The postoperative follow-up was favorable.

CONCLUSION

The diagnosis of secondary enterodigestive fistula is sometimes easy if the clinical context suggests it (abundant rectal bleeding in a patient with an aortic prosthesis) and if it is associated with complete and typical CT signs. The final diagnosis will therefore almost always be based on the contribution of imaging in frustrated forms, and it is essential for all radiologists to know perfectly the subtle signs, in order to be able to convince the skeptical vascular surgeon, often too optimistic about the images.

REFERENCES

1. Thomson, V. S., Gopinath, K. G., Joseph, E., & Joseph, G. (2009). Primary aorto-enteric fistula: a rare complication of abdominal aortic aneurysm. *J Postgrad Med*, 55(4), 267-9.
2. Tomlinson, M. A., Gold, B., Thomas, M. H., & Browning, N. G. (2002). Endovascular stent graft repair of a recurrent aorto-enteric fistula. *Eur J Vasc Endovasc Surg*, 24(5), 459-61.
3. Girard, C., & Steinmetz, E. (2003). Épidémiologie, prévention et traitement des infections de prothèses vasculaires. Conférences d'actualisation SFAR 2003. Paris: Elsevier SAS.
4. Wasikova, S., Staffa, R., Kriz, Z., & Piskac, P. (2007). Treatment of vascular prosthesis infection and aorto-enteric fistula as a late complication after reconstructive surgery of the abdominal aorta: a case report. *Rozhl Chir.*, 86(10), 522-4.
5. Vu, Q. D., Menias, C. O., Bhalla, S., Peterson, C., Wang, L. L., & Balfé, D. M. (2009). Aortoenteric fistulas: CT features and potential mimics. *Radiographics*, 29(1), 197-209.
6. Danneels, M. I., Verhagen, H. J., Teijink, J. A., Cuypers, P., Nevelsteen, A., & Vermassen, F. E. (2006). Endovascular repair for aorto-enteric fistula: a bridge too far or a bridge to surgery? *Eur J Vasc Endovasc Surg*, 32(1), 27-33.
7. Dorigo, W., Pulli, R., Azas, L., Pratesi, G., Innocenti, A. A., & Pratesi, C. (2003). Early and long-term results of conventional surgical treatment of secondary aorto-enteric fistula. *Eur J Vasc Endovasc Surg*, 26(5), 512-8.
8. Raymond, A., Fairise, A., Ropion-Michaux, H., Mathias, J., Laurent, V., & Régent, D. (2011). Imagerie des anévrismes infectieux (mycotiques) de l'aorte abdominale. *Feuillets de radiologie*, 51, 245-53.