

Rapidly Expanding Infectious Aortic Aneurysm Caused by Perforated Colon Cancer

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Abstract

A 50-year-old male smoker presented with a perforated colon cancer and underwent an extended right colectomy. Feculent peritonitis was treated with empiric antibiotics. Postoperatively he developed severe back pain and rising leukocytosis. Serial computed tomography revealed a rapidly expanding infrarenal aortic aneurysm. He was urgently treated with extra-anatomic bypasses and aortic resection. No organisms grew from the resected aortic wall. He was discharged in stable condition, and the ileostomy was reversed 9 months later.

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Key Words

Infected aortic aneurysm • Colon cancer • Aorta • Inflammation • Aneurysm

Introduction

The etymology of aneurysm derives from the Greek word for dilation (ἀνεύρυσμα). Aortic aneurysms are full-thickness dilations of the aorta that exceed its normal diameter by 50% [1]. The role of infectious micro-organisms in the development of aortic aneurysms was classically described by Sir William Osler in 1885 [2]. With the advent of antibiotics, infectious aortic aneurysms have become very rare [3, 4]. Here we describe an infectious aortic aneurysm caused by perforated colon cancer.

Case Presentation

A 50-year-old male smoker presented with acute onset abdominal pain and peritoneal signs. Exploration revealed a perforated transverse colon mass that was treated with an extended right colectomy with mobilization of the splenic flexure and end ileostomy. Pathology of the mass showed medullary colon carcinoma with stage T4b N1a (1 out of 30 positive regional lymph nodes). Postoperatively the patient was started on empiric vancomycin and piperacillin/tazobactam to prevent feculent peritonitis. His postoperative course was complicated by delayed return of bowel function and persistent leukocytosis. Computed tomography (CT) on postoperative day 6 demonstrated evidence of partial bowel obstruction. The patient also complained of progressive back pain that was not controlled with opiates. A second opinion on the CT scan was sought from a cardiovascular radiologist, who noted mild retroperitoneal stranding around the aorta (Figure 1). The patient made a good further recovery but continued to complain of back pain. Repeat CT scan on postoperative day 15 showed new aneurysmal dilation of the infrarenal aorta with a dramatic increase in diameter from 3.3 cm to 5.5 cm since the first CT scan 9 days earlier. Moreover, a sacular contour irregularity at the left posterior aspect of the aneurysm and worsened peri-aortic stranding were noted (Figure 2). These findings were suggestive of an infectious aortic aneurysm with concern for impending rupture, and the patient underwent emergent surgery.



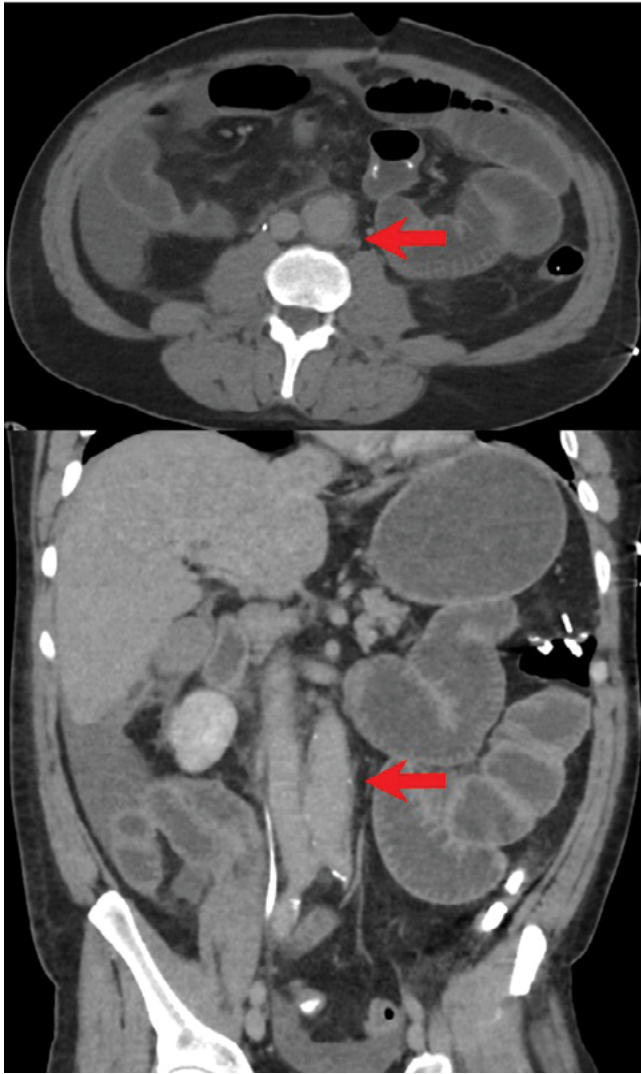


Figure 1. Computed tomography scan on postoperative day 6 in cross-sectional and coronal views showing mild stranding around the aorta (arrows).

In the first part of the operation, axillary-to-femoral and femoral-to-femoral polytetrafluoroethylene bypass grafts were constructed in a sterile field. The contaminated abdominal field was addressed in the second half of the surgery. The old laparotomy was re-entered, and dense adhesions were removed. Exposure of the infrarenal aorta revealed a prominent aortic aneurysm with surrounding necrotic and inflamed tissue but no frank purulence. Proximal and distal control were obtained by clamping the infrarenal aorta and common iliac arteries, respectively. The involved aortic segment and both proximal iliac arteries were resected. Bleeding lumbar arteries were oversewn with figure-of-eight polypropylene sutures.

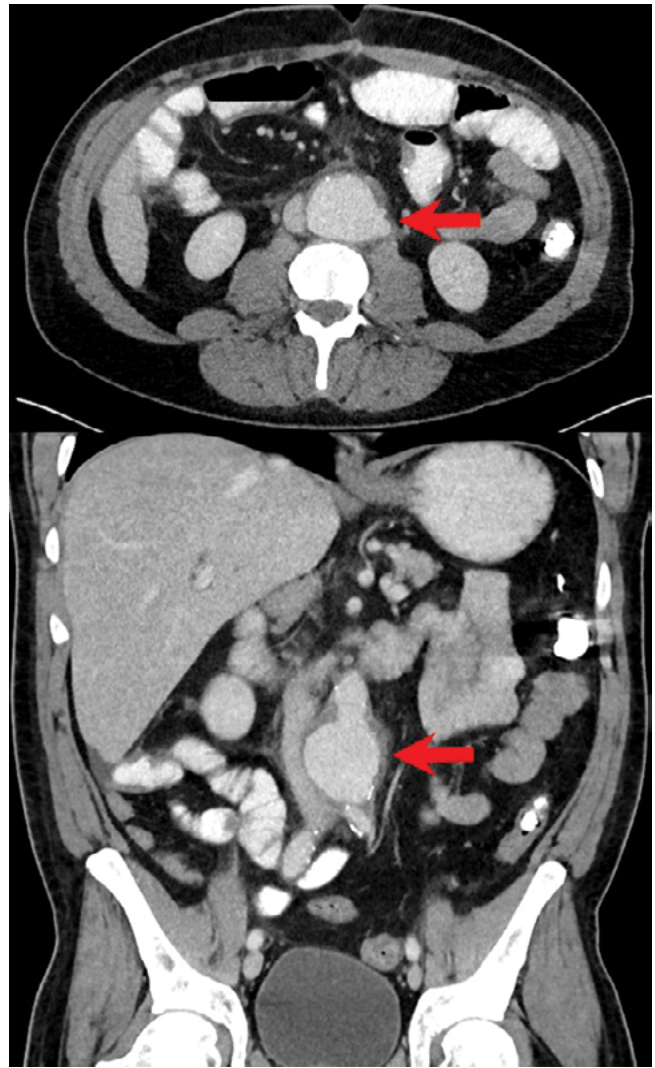


Figure 2. Computed tomography scan on postoperative day 15 in cross-sectional and coronal views showing aneurysmal dilation of the infrarenal aorta (arrows).

The aortic stump was closed with a polypropylene continuous horizontal mattress suture to obtain intimal apposition and a top layer polypropylene whip-stitch to ensure hemostasis. The common iliac stumps were closed in the same fashion. The contaminated field was then debrided and irrigated by pulsed lavage with 3 L normal saline solution containing cefazolin, vancomycin, and gentamycin. The retroperitoneum was closed over the arterial stumps, but no omental pedicle flaps were available for additional coverage. Pathology of the resected aorta showed a polymorphonuclear infiltrate, but no organisms were seen, and culture results were also negative. The patient's postoperative course was

unremarkable, and he was discharged on intravenous vancomycin and meropenem to a rehabilitation facility. His ileostomy was removed 9 months later, and he was well at the 1-year postoperative follow-up.

Discussion

Infectious aortic aneurysms feature amongst the most challenging problems in vascular surgery because they are rare, difficult to diagnose, difficult to manage, and rapidly fatal. Infectious aortic aneurysms constitute less than 1% of aortic aneurysms [3, 4]. The diagnosis is based on history as well as clinical, laboratory, and radiographic manifestations of the infection and the aortic mass effect. In our patient, empiric antibiotics started at the time of colon cancer perforation masked the stigmata of infection and explain the negative culture results. Expedient surgical management is critical because over half of infectious aortic aneurysms are already ruptured at the time of surgery [5,6]. In our patient, a saccular

protuberance on CT was concerning for an impending rupture, so he was urgently taken for surgery. In such cases, extra-anatomic bypass grafting in a sterile field followed by aortic resection and retroperitoneal debridement achieve the surgical objectives by preventing aortic rupture, controlling sepsis, and reconstructing the vasculature.

This case highlights that a high index of suspicion with active investigation to determine the diagnosis and expeditious surgery are critical for successful management of infectious aortic aneurysms.

Conflict of Interest

The authors have no conflict of interest relevant to this publication.

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Cite this article as: Rajab TK, Rinewalt DE, Goldberg JE, Zhou H. Rapidly Expanding Infectious Aortic Aneurysm Caused by Perforated Colon Cancer. *AORTA (Stamford).* 2016;4(4):131-133. DOI: <http://dx.doi.org/10.12945/j.aorta.2016.16.011>