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Synchronous sigmoid cancer and abdominal aortic aneurysm treated by laparoscopic colectomy followed by endovascular aneurysm repair

Mohamed Hamid^a, Sarah Benammi^{a,*}, Ayoub Bounssir^b, Youness Bakali^a, Brahim Lekehal^b, Abdelmalek Hrora^a^a Surgical Department "C" Ibn Sina University Hospital, Morocco^b Vascular Surgery Department Ibn Sina University Hospital, Morocco

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ABSTRACT

INTRODUCTION: The occurrence of synchronous abdominal aorta aneurysms and colorectal cancer represents a real management challenge. Up till now, there is no evidence-based consensus recommendation in the surgical management of such patients. Herein we reported the clinical management challenge of synchronous abdominal aorta aneurysms (AAA) and colorectal cancer (CRC).

PRESENTATION OF CASE: 78-year-old man was admitted in our structure for acute abdominal pain, vomiting and constipation. His past medical history included type 2 diabetes, arterial hypertension and a stable infra-renal aortic aneurysm documented 2 years ago. Physical examination found a stable patient with blood pressure and heart rate within normal range, pulsatile mass along with abdominal distension with vital signs within normal limits. Abdominal CT scan and subsequent CT angiogram confirmed an 88 × 75 mm infra-renal aortic aneurysm concomitant with considerable lumen reduction due to asymmetric wall thickening of the sigmoid. Colonoscopy combined with biopsy examination confirmed structuring irregular sigmoid adenocarcinoma. Therefore we report a case of a large AAA and concomitant sigmoid adenocarcinoma tumor causing stricture.

DISCUSSION: In such situation, the main controversy is the necessity of treating the diseases simultaneously in two stages favoring the AAA management first. To our best knowledge, we report the first case published in literature in which the patient was treated for colorectal cancer first by laparoscopic surgery followed by AAA management with EVAR.

CONCLUSION: In this case report, we highlight some tricks required in performing laparoscopic sigmoid colectomy for patient with large AAA to prevent per-operative pitfalls. Evidence-based consensus is required to determine the optimal surgical treatment.

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1. Introduction

The occurrence of synchronous abdominal aorta aneurysms (AAA) and colorectal cancer (CRC) presents a real management challenge. In such situation, the main controversy is the necessity of treating the diseases simultaneously or in two stages, if so in which order, and finally balancing between open or mini-invasive approach [1–3]. Recently, the introduction of endovascular AAA repair (EVAR) and the standardization of laparoscopic resection for colorectal cancer offer more benefits for this group of patients. To our best knowledge, we report the first case in literature in

which the patient admitted in university hospital structure that was treated first laparoscopic for sigmoid cancer, followed for abdominal aortic aneurysm with EVAR. Our work has been reported in line with the SCARE criteria [4]. Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

2. Presentation of case

A 78-year-old man was admitted in our institute for acute abdominal pain, vomiting and constipation. His past medical history included type 2 diabetes, arterial hypertension and a stable infra-renal aortic aneurysm documented 2 years ago. Upon evaluation no relevant toxicological history or family history was noted. Physical examination found a stable patient with vitals within normal limits. Blood pressure was 130/70 mmHg, pulse rate was 95 beats/min, respiratory rate was 22 breaths/min, and body tempera-

* Corresponding author at: Rue Lamfadel Cherkaoui Rabat - Institut, B.P 6527, Morocco.

E-mail addresses: Mohamed.hamid@um5s.net.ma (M. Hamid), sara-benammi@hotmail.fr (S. Benammi), dbouns.ayoub@gmail.com (A. Bounssir), youness.bakali@um5.net.ma (Y. Bakali), Brahim.lekehal@um5.ac.ma (B. Lekehal), a.hrora@medramo.ac.ma (A. Hrora).

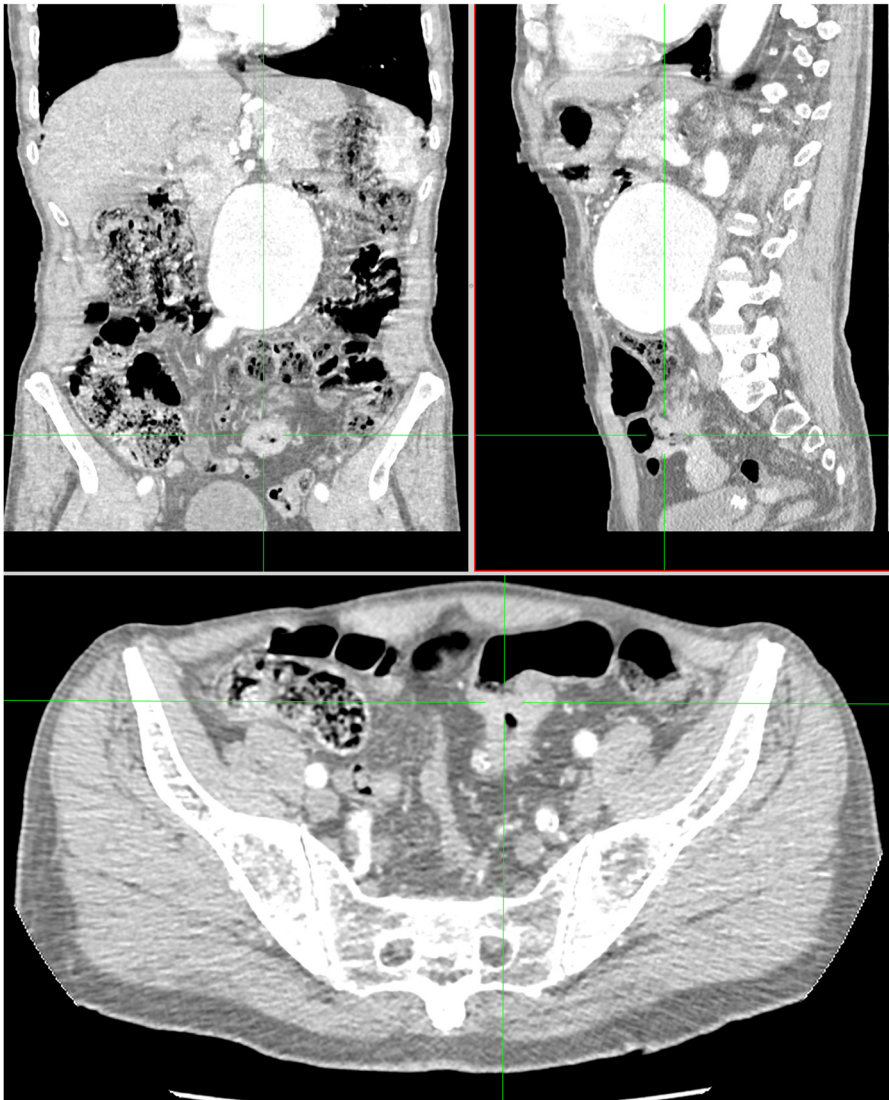


Fig. 1. Contrast-enhanced CT scan revealing an infrarenal abdominal aortic aneurysm that measured 88 × 75 mm in maximum diameter associated with a stenotic sigmoidal tumor.

ture was 37.4 °C. Abdominal examination assessed a pulsatile mass along with abdominal distension. Basic cardio vascular examination was normal, femoral pulses and lower extremity pulses were bilaterally palpable. Abdominal CT scan revealed an infra-renal aortic aneurysm concomitant with considerable lumen reduction due to asymmetric wall thickening of the sigmoid (Fig. 1). There were no liver or lung metastases. A subsequent CT angiogram confirmed an 88 × 75 mm aneurysm in diameter and involving the right iliac artery (Fig. 2). Finally colonoscopy combined with biopsy examination confirmed structuring irregular adenocarcinoma tumor at 35 cm from the anal verge. The carcinoembryonic antigen (CEA) and circulating tumor associated antigen (CA 19.9) were within a normal range. Therefore we report a case of a large AAA and concomitant sigmoid adenocarcinoma tumor with stricture. The general surgery team decided to pursue laparoscopic colectomy first, followed by endovascular aneurysm repair. Carbon dioxide pneumo-peritoneum was established using an open technique through a 10-mm trocar through per umbilical incision, the abdomen was insufflated to 10 mm Hg. A 30° endoscope was positioned on the umbilical port. At surgical exploration, the aneurysmal sac occupied the median region of the abdomen cavity and a significant colonic dilatation upstream of a sigmoidal

stenosis was noted (Fig. 3). Four trocars were used and the right trocars ports sites were moved to the midline in order to avoid the aneurysm. The inferior mesenteric artery (IMA) dissection was carried out above the aneurysm with attention to not manipulate the aneurysmal sac; IMA ligation was performed by double clipping. The colorectal anastomosis was performed as an end-to-end using a 33 mm by transanal circular stapling device. Perioperative monitoring was carried out carefully to maintain a stable normal blood pressure. The duration of the operation was 2 h. The patient had an uneventful post-operative recovery period and was discharged on day six. Pathologic examination of the specimen showed a well-differentiated adenocarcinoma pT3N1a (1N+/12N), distal clearance margin from the tumor was 7 cm, and lateral margins were clear. The patient was readmitted two weeks later for EVAR, and was performed under spinal anesthesia. Aorto-bi-iliac endograft was deployed through bilateral femoral arteriotomy. Control angiogram confirmed a well-positioned endograft without endoleak. The patient made an uneventful recovery, he was sent for adjuvant chemotherapy. Twenty-month follow-up showed the persistent exclusion of the aneurysms without endoleak, and the absence of malignant recurrence or metastasis. The clinical report has been reported in line with the SCARE

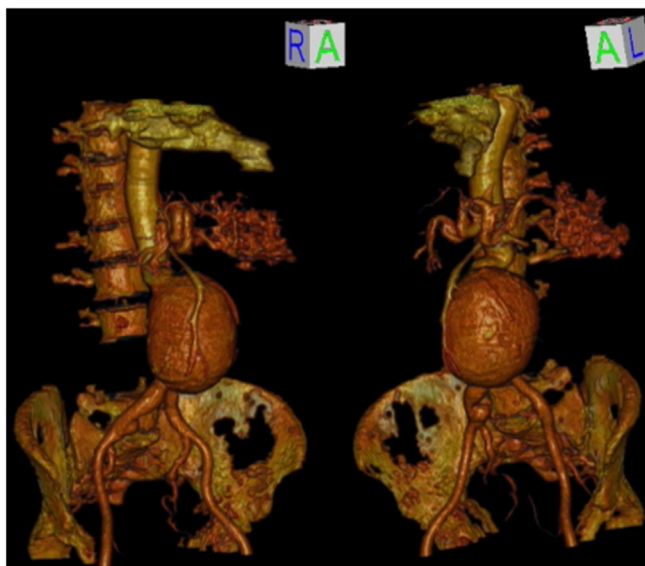


Fig. 2. Three-dimensional computed tomography showing a large fusiform infrarenal abdominal aortic aneurysm.

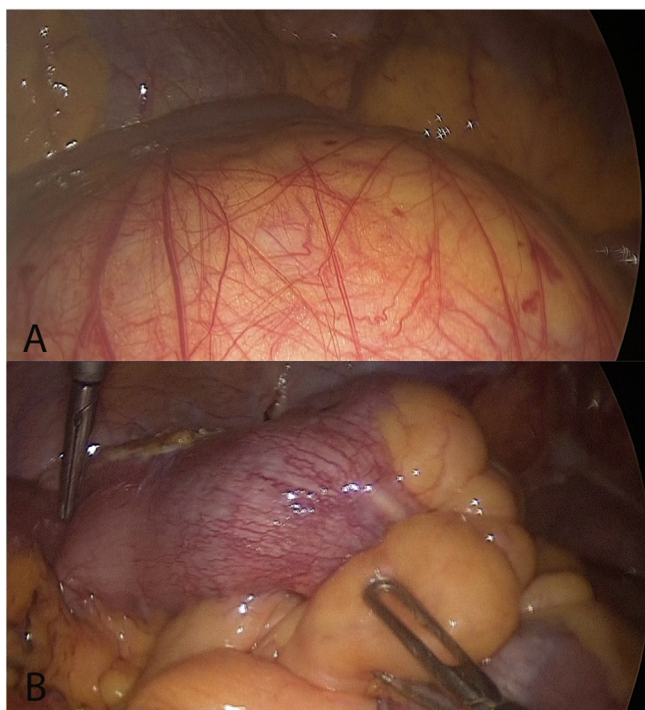


Fig. 3. Intraoperative finding at laparoscopic exploration of large abdominal aortic aneurysm occupying the median region of the abdomen cavity (A) and sigmoidal tumor is founded after the left mesocolon mobilization (B).

2018 criteria [5]. What would have been your course of treatment?

3. Discussion

3.1. What we did and why

To the best of our knowledge we report the outcome of first-time reported approach favoring sigmoid tumor management followed then by aneurysm management. Anatomic criteria of the AAA for an endovascular treatment were met, but the unavailability of an adapted endograft in our context would have delayed the man-

agement. In addition to the irregular tumor stricture unsuitable for stenting, the decision was to undergo colonic tumor resection first. We preferred to uphold the sigmoid tumor dilemma first since the patient in pre-occlusive state, we had enough evidence to execute oncologic management, and finally the patient had a stable AAA. Performing laparoscopic procedure in patients with AAA require some tricks to prevent perioperative pitfalls. First, to avoid aneurysm traumatism, pneumoperitoneum creation with an open technic and trocar introduction must be under vision. Egeberg T reported an aneurysmal sac perforation by a trocar sac requiring immediate laparotomy, aneurysm resection [6]. Secondly, both right trocars positioning is critical in performing left colectomy and should be moved accordingly in order to avoid the aneurysm. In contrast with laparoscopic colectomy after simultaneous EVAR where the pulsatile AAA disappeared, it is important to consider avoiding the leverage effect due to the aneurysm which causes difficulties to achieve precise motion when an instrument is inserted deeper into the body [7]. Therefore, trocars port positioning is a dynamic matter and should go in accordance to the aneurysm dimensions and anatomic presentation. Thirdly, in order to avoid pressurization and kinking of the aneurysmal sac we maintained a 10 mmHg pressure insufflation and deep anesthesia during the operation [8]. Coggia and all described the use of pneumoperitoneum insufflated up to 14 mm Hg in total laparoscopic infrarenal aortic aneurysm repair without reporting related incident [9]. Finally, high ligation of the IMA is recommended, as cancer resection requires adherence to oncologic imperative of cancer surgery, including adequate ligation of the vessels at their origin and complete lymph node dissection to adequately stage the tumor. However, in such situation security is favored over oncologic imperative; we clipped the IMA on its free portion above the aneurysmal sac because dissecting the IMA at its origine exposes the aneurysmal sac and leads to further weakening of the wall thus increasing the risk of rupture. On pathologic examination of the surgical specimen, there were 12 lymph nodes allowing an accurate pN-staging.

4. Conclusion

In conclusion, synchronous abdominal aortic aneurysm and colorectal cancer is uncommon, yet this association is progressively more reported. The absence of evidence-based consensus regarding which strategy to be taken requires a collegiate decision that must take into account the AAA rupture risk, the malignancy stage and particularly the existing technic platform. Staged laparoscopic sigmoid colectomy followed by EVAR in short delay seems to be a safe and effective treatment strategy for patients presenting synchronous complicated colonic cancer and large AAA. Nevertheless, the surgeon must adapt his technique according to the situations, and respect the oncological and functional requirements as much as possible.

Declaration of Competing Interest

The authors report no declarations of interest.

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Ethical approval

We obtained approval from the Faculty's Ethics Committee.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author's contribution

Pr Hrorra and Pr Lekehal were the main operators respectively in the patient's colorectal surgery and in vascular surgery. Dr Hamid contributed in the assembly and initial making of the manuscript. Dr Benammi and Dr Bakali contributed in the final drafting of the manuscript and complete the writing. Dr Bounssir, Pr Hrorra and Pr Lekehal contributed in the critical review and validation of the manuscript.

Guarantor

Pr Hrorra Abdelmalek.

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