



Original research

One-step mini-invasive treatment of abdominal aortic-iliac aneurysm associated with colo-rectal cancer



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ABSTRACT

Background: Endovascular aneurysm repair (EVAR) is still now a controversial technique, which remains the subject of a number of prospective randomised trials. Although questions remain regarding its long-term durability, objective evidence exists which demonstrates its reduced physiological impact compared with conventional open repair, especially for older population and for the concomitant treatment of aortic abdominal aneurysm (AAA) and abdominal neoplas, such as colo-rectal cancer (CRC). In these patients it may reduce the high perioperative mortality. **Patients and methods:** Abdominal aortic aneurysm and colo-rectal neoplasm are occasionally discovered concurrently. Simultaneous operative treatment may be in these cases an effective management strategy, alternative to a staged procedure. The medical record of three consecutive patients undergoing mini-invasive colectomy for cancer and abdominal aortic aneurysm repair were reviewed. Data collected included mode of presentation, preoperative evaluation, colo-rectal pathology and in-hospital morbidity and mortality. Long term follow-up was obtained through office records and telephone contact. **Results:** In one patient a asymptomatic colo-rectal mass was identified in the course of CT-scan evaluation for AAA; in the other two patients AAA was discovered during CT-scan oncological evaluation for symptomatic CRC. All patients underwent successfully concomitant repair of AAA and CRC by means of EVAR procedure and mini-invasive colo-rectal resection. Pathology revealed adenocarcinomas in all three cases. Perioperative follow-up revealed minor postoperative complications. Two years follow-up showed no cases of graft infection, and no interference of vascular procedure on oncological course of the colo-rectal malignancies.

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1. Introduction

With advancing age, the diagnosis of AAA and CRC increases in frequency. The incidence of synchronous AAA and CRC is rare (0.5–2% in most series [1,2]), but the management of this clinical

situation remains perplexing and controversial. Careful clinical decision-making is required regarding which lesion to resect first, whether to resect both lesions at the same time and what to do when one lesion is an unexpected finding during elective or emergent resection of the other. Treating CRC first may lead to increased risk of rupture of AAA in the perioperative period [3]. It may also theoretically increase the rate of graft infection if AAA repair is done soon after bowel surgery [2]. Resection of AAA first may lead to significant delay of CRC treatment, which involves not only the operative resection of tumour but adjuvant (and nowadays neo-adjuvant) treatment as well. Concomitant treatment of both lesions has been described and has been successful [4]. The

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List of abbreviations

EVAR	endovascular aneurysm repair
AAA	aortic abdominal aneurysm
CRC	colo-rectal cancer
CEA	carcinoembryonic antigen
CT-A	computed-tomographyangiography
ASA	American Society of Anesthesiologists
EG	endograft

theoretical disadvantage is that of graft infection. The advent of endovascular techniques for AAA and aorto-iliac aneurysm repair may add new options for the treatment of synchronous lesions. We report three cases of successful treatment of aneurysmal disease and CRC using endovascular techniques and mini-invasive colo-rectal resection.

2. Patients and methods

A retrospective review of the records of patients with colo-rectal oncologic disease and AAA was performed from 2009 to 2012. Among 62 patients (56 male and 6 female, ranging in age from 54 and 88 years, with a mean age of 74 years) with abdominal aortic aneurysm admitted during that period to our department for elective surgery, 3 of them (4.83%) had also synchronous colo-rectal cancer. One of them could be defined in type I of Szilagy Classification (because the aneurysm was discovered pre-operatively after the cancer); while the other two cases may be considered as type II of Szilagy Classification (because AAA and CRC were discovered at the same time pre-operatively). No AAA was discovered intra-operatively, during cancer surgery (Type III) or during AAA surgery (Type IV). So we have been considering a group of three patients with synchronous CRC and AAA. Mean age was 73 years, and all patients were men. Two patients were symptomatic for CRC and one asymptomatic. In Table 1, the data regarding the AAA are shown, whereas in Table 2, the data regarding characteristics of CRC of all patients are presented.

2.1. Case 1

A 76-year-old male underwent colonoscopy after complaining of change in bowel habits along with rectal bleeding; colonoscopy revealed an irregular vegetant lesion involving half of the circumference of the sigmoid colon. Biopsy revealed a tubule-villous adenoma with areas of cancer degeneration. The carcinoembryonic antigen (CEA) and circulating tumor-associated antigen (CA 19.9) were within a normal range. Clinical examination did not reveal a pulsatile abdominal mass, but the thoraco-abdominal computed-tomographyangiography (CT-A) performed as part of the preoperative staging workup showed a 43-mm fusiform infrarenal AAA without involvement of the aortic bifurcation and a 32-mm fusiform left common iliac artery aneurysm. There was no liver or lung metastases. No hypercoagulable disorder was documented. American Society of Anesthesiologists (ASA) score was class II. Anatomic

Table 1
Characteristics of aneurysms.

Sex	Age	AAA Diam. (cm)	Treatment
Male	76	4,3 Fusiform infrarenal + 3,2 left common iliac artery	Biforcated infrarenal aortic EG
Male	73	5,4 infrarenal	Biforcated infrarenal aortic EG
Male	82	3,2 left common iliac aneurysm	Iliac endograft

Table 2
Characteristics of CRC.

Sex	Age	CRC location	TNM	R-status	Treatment
Male	76	Sigma	T1N0M0	R0	Laparoscopic sigma resection
Male	73	Sigma	T2N0M0	R0	Laparoscopic sigma resection
Male	82	Rectum	T3N0M0	R0	Laparoscopic colo-rectal resection

criteria for endograft (EG) placement were met and informed consent for a synchronous procedure was obtained. A bifurcated infrarenal EG (Excluders 26 mm—W.L. Gore & ass. Inc., USA) was implanted through a conventional surgical exposure of the right common femoral artery with a contralateral percutaneous transfemoral approach; a completion angiogram showed the successful deployment of the EG, the complete exclusion of the both the aneurysms, the patency of the renal and hypogastric arteries, and no endoleak. During the same operation, a laparoscopic sigma resection was performed in standard fashion.

The histological examination of the sigmoid lesion confirmed a pT1 G2 adenocarcinoma, beyond the muscularis propria but no penetrating the peritoneum. The resection margins were free of malignancy. Lymphnodes showed no metastatic involvement. The patient had an uncomplicated recovery and was discharged home 6 days after the intervention. Six, twelve and twenty-four month follow-up CT-A showed the persistent exclusion of the aneurysms without endoleak, no EG-related complication, no sign of graft infection and the absence of malignant recurrency.

2.2. Case 2

A 73-year-old male underwent CT-A scan for a pulsatile abdominal mass after a routine abdominal echography for vague abdominal pain. This revealed an infrarenal AAA measuring 5.4 cm in diameter. This revealed also a lesion on the sigmoid colon. Biopsy at colonoscopy showed a moderately differentiated adenocarcinoma. Criteria for placement of an endograft were met. The patient underwent a successful placement of an aorto-bis iliac endograft (Excluders 26 mm—W.L. Gore & ass. Inc., USA). During the same procedure, the patient underwent a resection of the sigmoid colon, by means laparoscopic procedure. The pathologic diagnosis of the sigmoid lesion was that of a T2N0M0 adenocarcinoma. The patient had an uncomplicated recovery and was discharged home after 7 days. At 6, 12 and 24 months follow-up there have been no complications.

2.3. Case 3

A 82-year-old male underwent an abdominal A-CT scan for abdominal pulsation: a 3.2 cm left common iliac aneurysm was discovered. A lesion in the proximal rectum was also visualised and then biopsied at colonoscopy. Biopsy shown a moderately differentiated adenocarcinoma. Criteria for placement of an iliac endograft and concomitant laparoscopic colo-rectal resection were met. The patient underwent placement of an endograft (Excluders 12 mm—W.L. Gore & ass. Inc., USA) followed by a colo-rectal resection during the same operation. The pathologic diagnosis of the rectal lesion was that of a T3N0M0 adenocarcinoma. The patient had an uncomplicated recovery and was discharged home after 9 days. At 6–12 and 24 months follow-up there have been no mayor complications.

3. Results

Management of concurrent disease was standard, regarding sequence and timing of operations: all patients underwent

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