

# The First Cases of Laparoscopic Colectomy for Cancer in Ziguinchor Peace Hospital

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## Abstract

Laparoscopic colectomy is a standardized technique for the curative treatment of colon cancer, based on the principles of carcinological surgery. It is rarely performed in our region but common practice in developed countries. We conducted a retrospective study of the first 4 cases of laparoscopic colectomy for cancer. The patients were 3 men and 1 woman, with a mean age of 54.2 years. Of the 4 cancers, 3 were localized to the sigmoid and one to the cecum. The main symptom was rectal bleeding. Total colonoscopy with biopsy was performed in 3 patients and the histological type was a lieberkühnian, infiltrative, moderately differentiated adenocarcinoma. Thora-co-abdomino-pelvic computed tomography (TAP CT) was performed in all the cases. Three patients were presented to the multidisciplinary team (MDT) prior to surgery. The operations were one right hemicolectomy and three left hemicolectomies. The mean operative time was 182.25 min [152 - 210]. Average blood loss was estimated at 200 cc. The average hospital stay was 4.71 days. Cancer staging was classified as stage I in 1 case (p T1N0M0) and stage III in 3 cases (pT3N1Mx, pT3N2Mx). Resection margins were healthy. The number of lymph nodes removed was 12, 14, 17 and 13 respectively. Conclusion: This is a safe and reproducible technique, but requires a much higher cost than laparotomy.

## Keywords

Colectomy, Cancer, Laparoscopy, Ziguinchor

## 1. Introduction

Laparoscopic colectomy is currently a well-codified technique whose results in terms of postoperative morbidity are superior to those of laparotomy. Since the

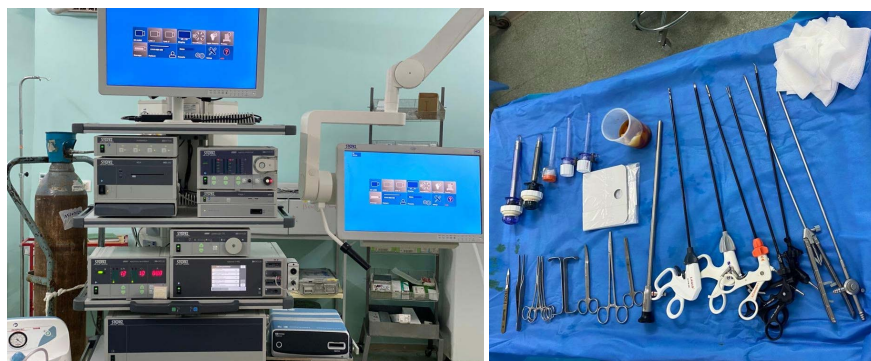
first laparoscopic resection of colon cancer in 1996, this approach has become the gold standard [1] [2] [3]. Following the success of cholecystectomy, appendectomy and laparoscopic hernia repair, we extended the scope of this minimally invasive technique to include colectomy. This ambition was based on the progressive reassurance of the surgical team, firstly for benign colon lesions (colonic volvulus, colonic diverticula) enabling the acquisition of surgical know-how, then for selected malignant colon lesions. We performed our first laparoscopic colectomy in May 2022. However, we must point out that the practice of laparoscopic colectomy in developing countries remains difficult, mainly due to the unavailability of consumables and limited professional skills. We report the first 4 cases of laparoscopic colectomy for cancer performed at the Hospital of Peace in Ziguinchor.

## 2. Materials and Methods

We carried out a retrospective study over a 12-month period [April 2022 to March 2023] at Ziguinchor's Hospital of Peace by laparoscopic colectomy in colon cancer patients. We excluded cases of colon operated by laparotomy or exploratory laparoscopy converted to laparotomy (10 cases). The procedure used was as follows: patients were positioned supine, in the gynecological position, under general anesthesia and orotracheal intubation (**Figure 1**). Open laparoscopy was performed in all cases. Exploration began with an 11 mm umbilical optical trocar (30°), and the other operating trocars were introduced under visual control according to indications and operative findings. The laparoscopy tower was a double-screen Storz column. The equipment consisted of two grasping forceps, laparoscopic scissors, bipolar forceps, suction-irrigation system, needle holder, clip forceps and ligaSure forceps. The instruments were multi-purpose. The variables studied were age, sex, indications, technical aspects of colectomy, operative time, oncological results, morbidity, mortality and hospital stay.

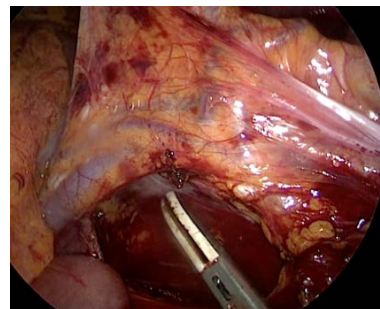
## 3. Results

In all, we collected 4 cases of colonic cancer that had undergone laparoscopic

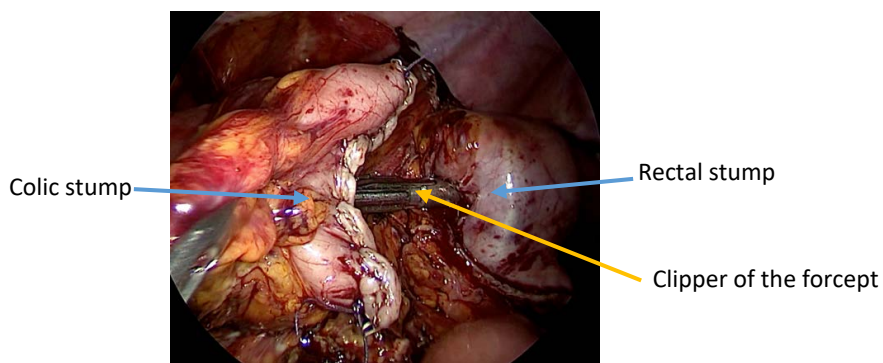


**Figure 1.** Equipment (column and instrumentation).

colectomy. The mean age was 54.2 years, with extremes of 42 and 83 years, predominantly male with a sex ratio of 4:1 (M/F). Of the 4 cancers, 3 were located in the sigmoid and one in the cecum. The main symptom was rectal bleeding, followed by abdominal pain and transit disorders such as constipation and diarrhea. Total colonoscopy with biopsy was performed in 3 patients. Macroscopic examination revealed an ulcerating-bourging lesion in 3 cases. The histological type was a lieberkühnian, infiltrating, and moderately differentiated adenocarcinoma. Thoraco-abdomino-pelvic computed tomography (TAP CT) was performed in all the cases. It showed lesions in the sigmoid colon (3 cases) and cecum (1 case). Three patients were presented to the multidisciplinary team (MDT) prior to surgery. The technique consisted of initial vascular ligation, medial to lateral dissection (**Figure 2**), detachment of the Told's fascia, followed by resection and anastomosis. The procedures performed were: a laparoscopic right hemicolectomy with extracorporeal ileo-transverse latero-lateral anastomosis, manual with Vicryl 3/0 (n = 1), a left hemicolectomy with colorectal anastomosis using Ethicon 60 circular forceps (n = 3) (**Figure 3**). Mean operative time was 182.25 min [152 - 210]. Average blood loss was estimated at 200 cc. Postoperative treatment was based on paracetamol (60 mg/kg/d), amoxicillin-clavulanic acid (80 mg/kg/d), metronidazole (30 mg/kg/d) and preventive heparin therapy. Gas transit was reported after 48 h post-op in 4 patients, with progressive resumption of feeding from day 3 onwards. The average hospital stay was 4.71 days [3 - 7 days]. Pathological examination of the surgical specimen (**Figures 4(a)-(c)**) showed an ulcerating-bourging lesion, with histological aspect of a lieberkühnian adenocarcinoma in 4 cases, moderately differentiated and infiltrating. Cancer staging was stage I in 1 case (p T1N0M0) and stage III in 3 cases (pT3N1Mx, pT3N2Mx). Resection margins were healthy. The number of lymph nodes removed was 12, 14, 17 and 13 respectively. **Table 1** summarizes the carcinological results of the patients' lesions. One patient underwent immunohistochemistry for microsatellite instability. Two patients benefited from adjuvant chemotherapy using the Capecitabine plus Oxaliplatin (CAPOX) protocol. Mortality was nil with a low follow-up of 8 months. All patients were followed up at the surgical outpatient clinic with regular appointments every 3 months. Abdominal CT scans were requested every 6 months for follow-up.



**Figure 2.** Dissection from inside to outside with the inferior mesenteric vein above the forceps.



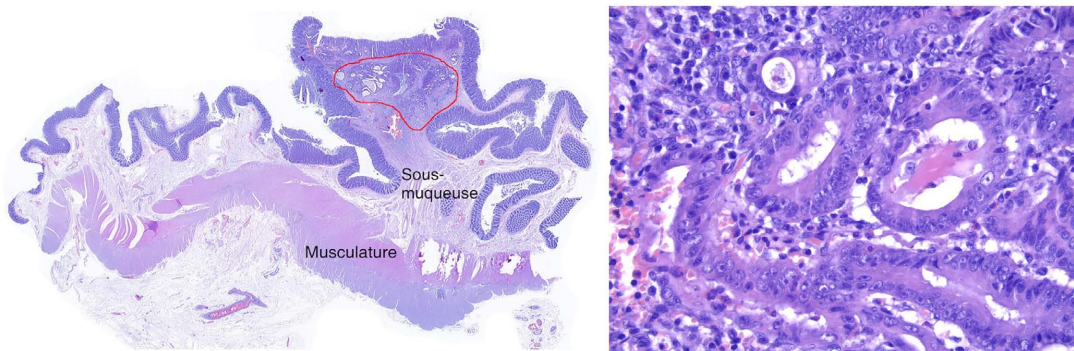
**Figure 3.** Intraoperative image of a mechanical colorectal anastomosis (circular clamp).



(a)



(b)



(c)

**Figure 4.** (a) Surgical specimen of a left colectomy with an ulcerating-bourging lesion; (b) Macroscopic appearance of an ulcerating lesion (in red); (c) In red, the area of sub mucosal infiltration, tumoral colonic glands.

**Table 1.** Carcinological results of lesions.

Carcinological parameters of surgical specimens	Length of the surgical specimen (cm)	Length of the lesion (cm)	Distal marging (cm)	Proximal marging (cm)	Number of lymph node removed	Number of invaded nodes	Tumor emboli	Tumoral stage
<b>Patient 1</b>	30/3	12	7	8	12	4	+	4
<b>Patient 2</b>	22/5	7	3	7	13	2	+	3
<b>Patient 3</b>	35/2.8	5	6	3.60	14	3	-	3
<b>Patient 4</b>	13/6.5	1.5	2	5	17	0	-	1

#### 4. Discussion

Surgery is the gold standard of colon cancer treatment. It is the only means of curing the disease. Several approaches are available (laparotomy, laparoscopy, robotic surgery). The choice of approach depends on the characteristics of the cancer (stage, size and complications), any previous surgical history, and the morphology and specialization of the surgical team. Since the first laparoscopic colectomy for cancer was performed in 1996, this has become the gold standard. Laparoscopic colectomy is no longer an issue in developed countries. In recent years, with the advent of 3D laparoscopy and robotics, colonic surgery has made great strides in terms of surgical techniques, technical resources and technology. The indication is clear for tumors T1 to T3 (grade A). For T4 tumors, the indication remains debated [1] [2] [4]. In developing countries, the use of this technique has evolved in recent years, but remains timid. This is mainly due to the late diagnostic stage of T4 colonic cancers and complications (occlusion, peritonitis) which are contraindications to the laparoscopic approach. Three of our patients were stage III. Sometimes this is due to a lack of equipment, consumables, technical skills and experience of the laparoscopic teams. We did not resort to conversion to laparotomy. Conversion was the main criterion for assessing technical feasibility. The conversion rate ranged from 4% to 23% in multicenter studies involving more than 200 patients [1]. It ranged from 6% to 14% in the study by Hahnloser D *et al.* [4]. The risk appears higher for tumors of the rectum and left colon. Obesity, invasion of neighboring organs, lack of experience and equipment seem to increase this risk [5] [6]. With experience and practice, this rate tends to decrease. The mean operating time was 182.25 minutes, which is in line with the figures found in the literature. Meyer C *et al.* [3] report a mean operating time of 240 min for left colectomies in their critical analysis of 613 laparoscopic procedures. Finaritra *et al.* in Madagascar [7] on 39 cases of colectomy by laparotomy found an average operating time of 135 min, with extremes of 90 and 480 min. Several authors have confirmed that laparotomy takes longer than laparoscopy [1]. The principles of carcinological colectomy are based on high vascular ligation, monobloc resection and lymphadenectomy. These rules must be respected in laparoscopy. They reduce the recurrence rate and improve survival [1] [3] [4]. In our series, the resection margins (proximal and distal) and the number of lymph nodes removed confirm com-

pliance with these principles. We do not have sufficient hindsight to discuss survival and recurrence rates. However, it should be noted that in randomized studies comparing the open approach with laparoscopy, the authors concluded that there was no difference in overall survival at 5 years [1] [3]. Apart from these principles, the major problem with laparoscopic colectomy for cancers was the occurrence of trocar-port metastases. Risk factors include the surgeon's experience in laparoscopic surgery, the surgical technique, the "no touch" principle, and CO<sub>2</sub> pneumoperitoneum due to the "chimney" effect of cancer cells [3] [4]. The risk of trocar-port metastasis was of the order of 0% to 2.5% in laparoscopy, superimposed on the risk of parietal metastasis in laparotomy, which varies from 0.9% to 1.5% [2] [3] [4]. The absence of tumor manipulation by the instruments, a parietal protection device for the extraction site and closure of the peritoneum of the trocar holes after application of a cytolytic product have been proposed as preventive measures. The benefits of laparoscopy in terms of short-term post-operative results are: preserved respiratory function, less post-operative pain thanks to reduced aggression on humoral and cellular immunity, faster resumption of transit and feeding, shorter hospital stay, faster recovery and aesthetic advantages. Morbidity was 16% in the series by Meyer *et al.*, dominated by anastomotic fistulas [3]. It varied from 4% to 30% in the randomized study by Peschaud *et al.* [1].

## 5. Conclusion

Laparoscopic colectomy has become a reference technique in developed countries, but remains difficult to perform in our context. It is a safe and reproducible technique, with a reduced hospital stay, less pain and low morbidity.

## Authors' Contributions

All authors contributed in the study. They also declared having read and approved the final version.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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