

CASE REPORT

Coincident Port-site and Functional End-to-end Anastomotic Recurrences after Laparoscopic Surgery for Colon Cancer : A case report and literature review

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Abstract : Herein, we report coincident recurrences at the port site and functional end-to-end anastomosis after laparoscopic right hemicolectomy for cancer of the ascending colon. The patient was an 83-year-old man who had undergone the aforementioned procedure (Stage IIA) in the referral hospital. At the 10-month follow-up, computed tomography showed two tumours around 3 cm in diameter : one on the right-flank abdominal wall—the surgical port-site—and the other at the functional end-to-end anastomosis. Likewise, a positron emission tomography scan was positive for two tumours. Endoscopic examination showed an ulcerated tumour with a clear margin, and a biopsy confirmed moderately differentiated tubular adenocarcinoma. The patient was diagnosed with coincident recurrences at the port site and functional end-to-end anastomosis after laparoscopic right hemicolectomy for cancer of the ascending colon. We re-operated in March 2016. The tumours at the functional end-to-end anastomosis and functional end-to-end anastomosis were resected. After 7 months, no recurrence was detected. *J. Med. Invest.* 64 : 177-180, February, 2017

Keywords : Colorectal cancer, Functional end-to-end anastomotic recurrence, Port-site recurrence

INTRODUCTION

Laparoscopic resection of colorectal cancer is a common procedure worldwide. Less frequent, however, are local recurrences at the port site and functional end-to-end anastomosis (1-3). Furthermore, the mechanism of such recurrences, when they do occur, remains unexplained. Conversely, in the case of laparotomy, recurrences at the wound site and at the functional end-to-end anastomosis have been reported. The exact difference between laparotomy and laparoscopic resection in terms of such recurrences is unknown (4). In any case, the first line of treatment for recurrence is operative resection, especially when the recurrence is observed in a single organ. Complete surgical resection of the recurrent tumour should be strongly considered (4).

Herein, we report coincident recurrences at the port site and functional end-to-end anastomosis after laparoscopic right hemicolectomy for cancer of the ascending colon.

CASE PRESENTATION

The patient was an 83-year-old man who had undergone laparoscopic right hemicolectomy for cancer of the ascending colon in the referral hospital in March 2015. The primary tumor was excised through a small midline incision not the surgical port-site on right lower quadrant. He was discharged after an uneventful postoperative course. Histopathological examination confirmed a moderately differentiated tubular adenocarcinoma with no lymphatic or

venous invasion and with no remnant cancer on the surgical margin, it was classified as Stage IIA (T3N0M0). The postoperative adjuvant chemotherapy was not received due to high age.

At the 10-month follow-up at the referral hospital, abdominal computed tomography revealed two tumours about 3 cm in diameter : one on the right-flank abdominal wall—the surgical port-site—and the other at the functional end-to-end anastomosis. Likewise, a positron emission tomography (PET) scan was positive for two tumours. The patient was subsequently referred to our hospital (Aichi Cancer Center Hospital, Nagoya, Japan) (Figure 1).

Endoscopic examination and contrast enema showed an ulcerated tumour with a clear margin, and biopsy confirmed a moderately differentiated tubular adenocarcinoma (Figure 2). Serum carcinoembryonic antigen (CEA) and serum carbohydrate antigen 19-9 (CA19-9) were 7.1 ng/ml and 22.2 U/ml, respectively.

The patient was diagnosed with coincident recurrences at the port site and functional end-to-end anastomosis after laparoscopic right hemicolectomy for cancer of the ascending colon. We re-operated in March 2016.

There was no evidence of metastasis or peritoneal dissemination other than the two tumours described. The tumour at the functional end-to-end anastomosis was resected (Figure 3), and a hand-sutured re-anastomosis was performed. Subsequently, we performed an en-bloc excision of the abdominal wall tumour at the port site of the laparoscopic right hemicolectomy (Figure 4). The two resected specimens constituted moderately differentiated tubular adenocarcinoma ; their histology was similar to that of the primary lesion. Postoperative serum carcinoembryonic antigen (CEA) and serum carbohydrate antigen 19-9 (CA19-9) were 1.6 ng/ml and 7.6 U/ml, respectively.

The patient was discharged without any symptoms 14 days after surgery. Due to his age, we did not perform postoperative adjuvant chemotherapy. After 3 months, no recurrence was detected.

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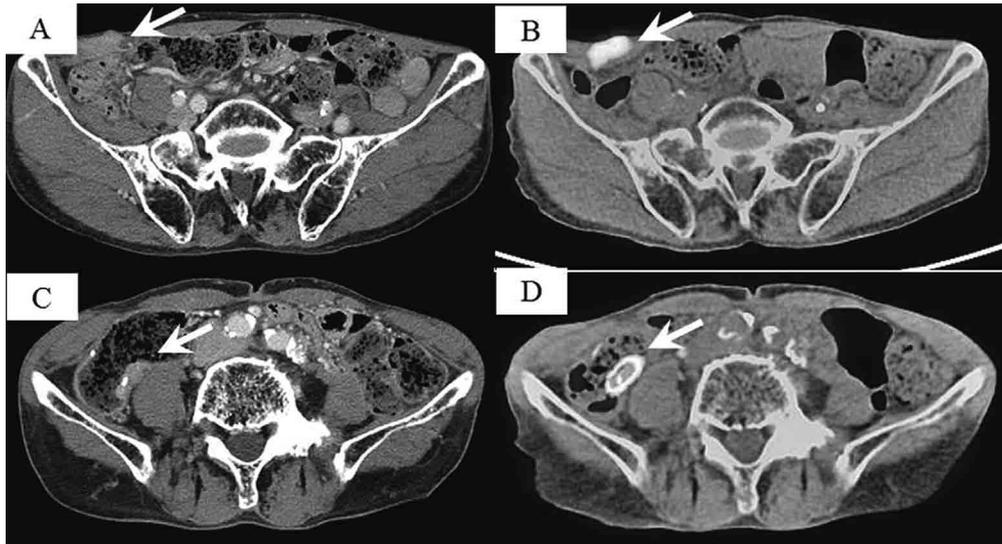


Figure 1. Abdominal computed tomography and positron emission tomography showing the tumour on the right-flank abdominal wall—the port-site of the laparoscopic right hemicolectomy of the ascending colon (white arrow, A and B), as well as the tumour at the functional end-to-end anastomosis (white arrow, C and D)



Figure 2. Endoscopic examination (right side) and contrast enema (white arrow, left side) showing an ulcerated tumour with a clear margin

DISCUSSION

Cases of port-site recurrence after laparoscopic colectomy for colon cancer have been reported sporadically (1, 2), as have instances of recurrence at the functional end-to-end anastomosis (5). However, no previous reports have described how frequently these lesions recur and are resected coincidentally. However, with reference to laparotomy rather than laparoscopy, Nakagoe *et al.* did report the coincident recurrence of lesions at the port site and anastomosis. However, their case also involved multiple lung metastases (6).

Alexander *et al.* were the first to report port-site metastases after laparoscopic colorectal resection (7). In their study, the frequency of such metastases was very low. More recently, Lim *et al.* reported that the frequency of port-site metastases was 0.18% (8). Zanghi *et al.* reported the most recent meta-analysis of dissemination metastasis after laparoscopy and conventional laparotomy for colorectal cancer (4). With regards to recurrences, they found no statistically significant differences between the laparoscopic and laparotomic colorectal procedures. In particular, the incidence of

port-site metastasis after laparoscopic colorectal resection has decreased gradually, and there is no significant difference in the incidence of wound recurrence between laparoscopy and laparotomy.

The mechanism of port-site recurrence after laparoscopic colorectal resection remains unexplained. Nonetheless, some researchers have speculated that tissue trauma at trocar sites, as well as leakage of CO₂ along the trocar, appear to promote implantation and growth of tumour cells at port sites (9).

In other respects, patients at the advanced stages of colon cancer (Stage II, III—especially pT4a, or IV—especially diffuse peritoneal carcinomatosis) are at higher risk of port-site metastases (1).

Goligher *et al.* were the first to report anastomotic recurrence after implantation of colon cancer cells (10). Kyze *et al.* stated that the frequency of recurrence at the functional end-to-end anastomosis was 5.9% (5). On the other hand, Hardy KJ *et al.* stated that the frequency of recurrence at the manipulative anastomosis was 0.8% (11).

The mechanism of recurrence at the functional end-to-end anastomosis remains unexplained. Experiments in mice have shown that colonic cancer cells penetrate and implant on the anastomotic

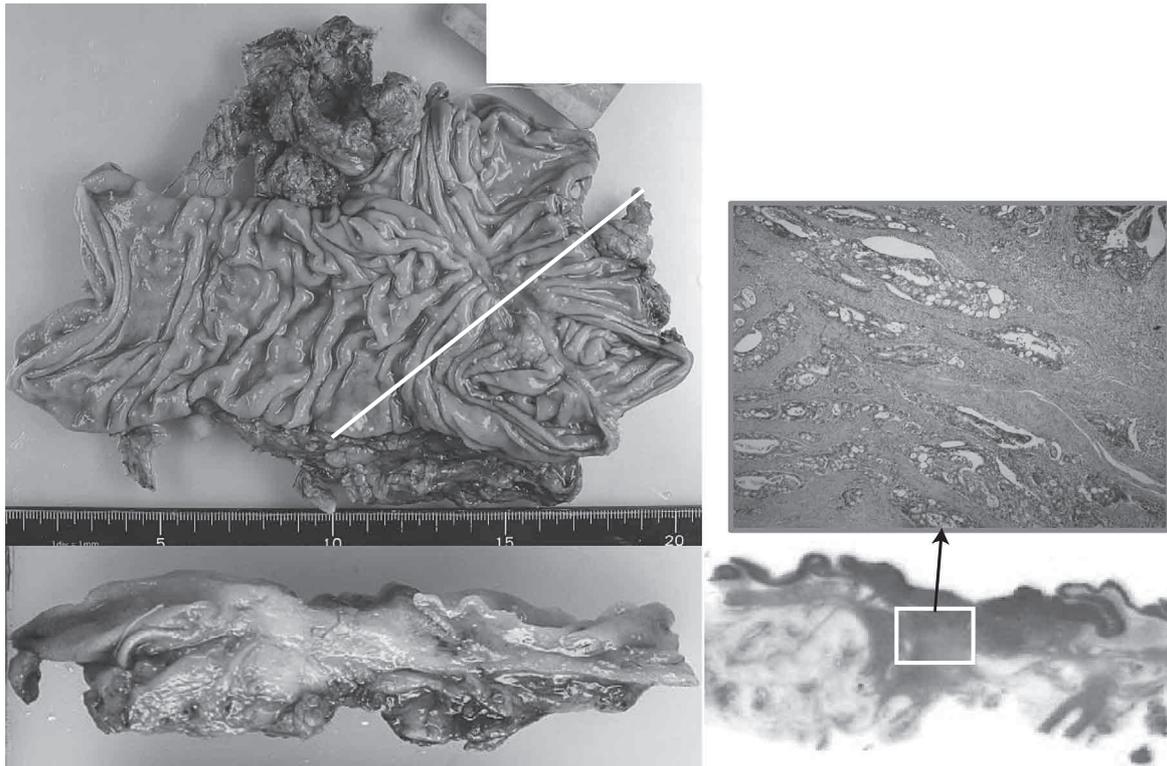


Figure 3. The resected functional end-to-end anastomotic tumour (upper left side), the carcinoma in the cleavage plane (lower left side). The histology (moderately differentiated tubular adenocarcinoma) was similar to that of the primary lesion (right side).

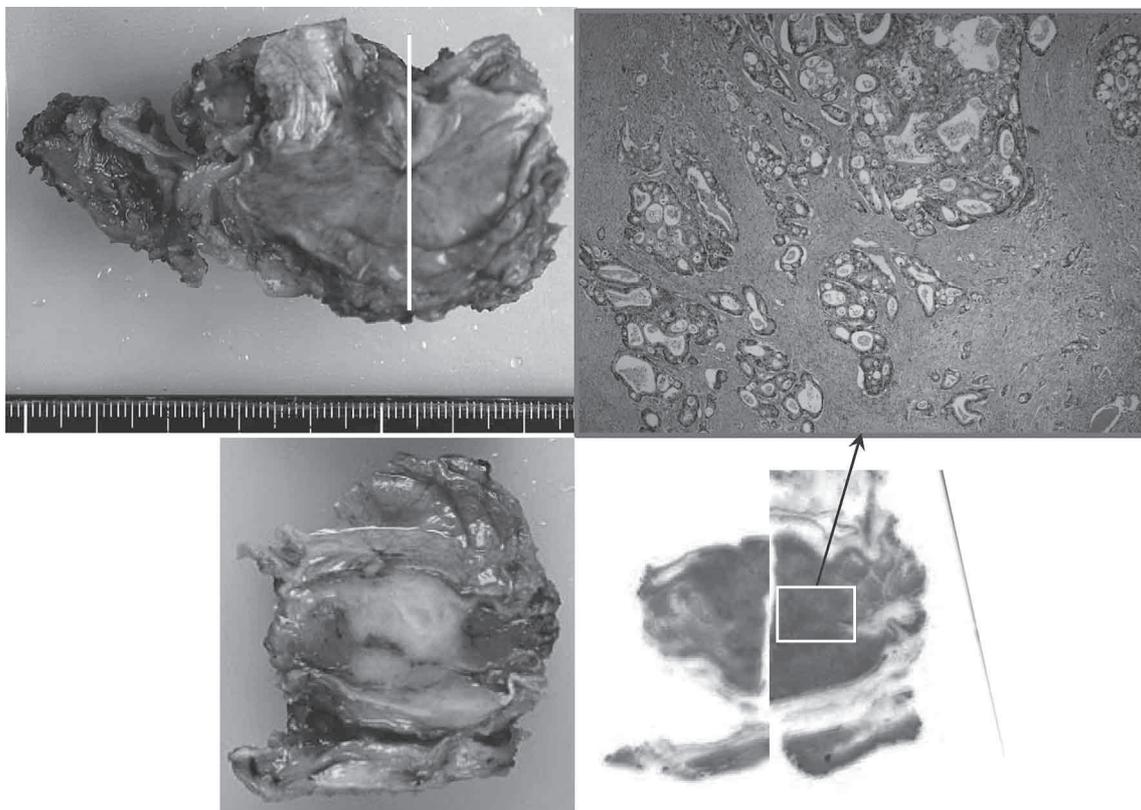


Figure 4. Wide en-bloc excision of the abdominal wall tumour at the port-site of the laparoscopic right hemicolectomy (upper side), and the carcinoma in the cleavage plane (lower side)

surface, eventually forming a tumour (3).

Some methods of preventing such cancer cell seeding have been reported. For instance, Balli *et al.* described intraluminal irrigation with 5% iodine povidone, specimen isolation before extraction from the abdominal cavity, and intraperitoneal and trocar site irrigation with tumouricidal solution (2). Zanghi *et al.* devised the no-touch technique, as well as desufflation of the pneumoperitoneum before trocar extraction; they found that these limited port-site recurrences (4). In our case, the primary operation was performed in another hospital, so the details of the original procedure were largely unknown. However, we suspect that the laparoscopic procedure affected the oncological outcome.

In our opinions, the seeding of cancer cells was assumed to be spread widely in the gut lumen by the surgical technique in the referral hospital. Subsequently the cancer cells adhered to at the site of the functional end-to-end anastomosis, and the recurrence occurred. Likewise, the functional end-to-end anastomosis was performed in the extraperitoneal area, the colon serosa attached the cancer cells was assumed to be drawn through the port, subsequently attached the port. Thus the functional end-to-end anastomotic recurrences relapsed. Nevertheless, it is impossible to verify the surgical technique in the referral hospital owing to not obtain the detail information.

The frequency of recurrences of Stage II cases was low, those cumulative 5-year survival was 85.8%. But the high risk group (including pT4 cases, perforation cases, poorly differentiated adenocarcinoma cases, etc.) of Stage II was recommended for adjuvant chemotherapy (4). Our case did not correspond to the above-described high risk group, but the duration of relapse-free survival was about 10 months. As a consequence, the causation of recurrence might to be attributable to the surgical technique in the referral hospital.

We experienced a rare case of coincidental recurrences at the port site and functional end-to-end anastomosis after laparoscopic right hemicolectomy for cancer of the ascending colon. The pathogenesis of this recurrence was unclear; nonetheless, it is critical that surgeons take steps to prevent implantation and seeding of colonic cancer. If a preoperative diagnosis is clinical T3, the laparoscopic operative manipulation of grasping and detaching tumour must be performed cautiously. It is are concerned about the seeding of cancer cells in the gut lumen by the rough manipulations.

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ETHICAL STATEMENTS

The Ethics Committee of Aichi Cancer Center Hospital approved this manuscript and agreed to submission to the Asian Journal of

Endoscopic Surgery. The subject gave informed consent, and patient anonymity was preserved.

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