



## Case Report

# Simultaneous Laparoscopic Treatment of Gastric and Rectal Cancers in a 92-year-old Man

Nobumi Tagaya<sup>1\*</sup>, Hiroaki Kijima<sup>2</sup>, Shoujiro Taketsuka<sup>2</sup>, Kenji Horie<sup>2</sup> and Masatoshi Oya<sup>1</sup>

### Abstract

We report a successful simultaneous laparoscopic treatment for gastric and rectal neoplasms in a patient of very advanced age. A 92-year-old man presented with nausea, vomiting and appetite loss. Upper gastrointestinal endoscopy revealed a 5-cm ulcerated tumor in the gastric antrum and colonoscopy demonstrated a protruding tumor more than 3 cm in diameter with a tendency for easy bleeding in the recto-sigmoid colon. Abdominal CT revealed a 53x40-mm abdominal aortic aneurysm extending from just below the branch point of the renal artery to the bifurcation of the common iliac vessels. Physical examinations showed values within the normal ranges for general anesthesia. We considered simultaneous laparoscopic treatment for these lesions, at the request of the patient and his family. The operation was started by placing 5 ports and a 5-cm longitudinal incision, utilizing one of the previous ports, for the stomach lesion, and then adding a 4-cm longitudinal incision for the rectal lesion. The laparoscopic procedures consisted of distal gastrectomy with lymph node dissection and partial resection of the rectum. The pathological diagnoses were mucinous gastric cancer with no lymph node metastasis and cancer in adenoma of the rectum. The operation took 270 min and blood loss was 160 ml. The patient started oral intake from the seventh postoperative day and was discharged uneventfully. He suffered from no postoperative complications or abdominal symptoms during a 34-month follow-up period, and his aortic aneurysm was also followed up conservatively. To our knowledge, our patient is currently the world's oldest to have undergone successful simultaneous laparoscopic treatments of both gastric and rectal cancers.

### Keywords

Simultaneous laparoscopic treatment; Laparoscopic surgery; Distal gastrectomy; Rectal resection

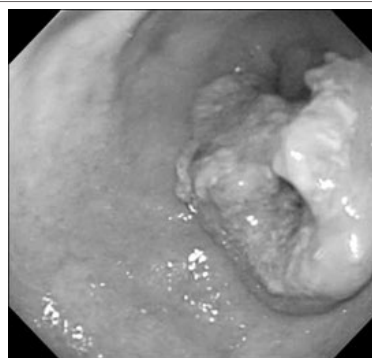
## Introduction

Endoscopic surgery has been actively adopted for various applications worldwide. In the field of abdominal surgery in particular, there has been a steadily shift from an open to a laparoscopic approach in order to achieve minimal while achieving similar outcomes and a superior aesthetic result. Furthermore, various limitations of a laparoscopic approach have been overcome, and its indications have

been extended to patients of a wide age range and to techniques with various degrees of technical difficulty. Recently, with improvements in quality of life and life expectancy, even very senior patients in good general condition can now be considered as candidates for surgical procedures, even in the treatment of cancer. Also, surgical treatments can now be extended to cover not only a single site, but also two or three sites simultaneously. In 2005, we reported simultaneous laparoscopic treatment for benign diseases of the gallbladder, stomach and colon [1], and Tessier et al. also described combined laparoscopic gastrectomy for in situ gastric cancer and colectomy for colonic polyp [2]. After those reports, several others describing synchronous or simultaneous laparoscopic procedures for gastric and colorectal cancers were published, thereafter leading to recognition of their feasibility and safety [3-10]. In the present report, we describe successful simultaneous laparoscopic treatment of gastric and rectal cancers in a highly aged patient who is believed to be the oldest person so far to have undergone this type of operation.

## Case Report

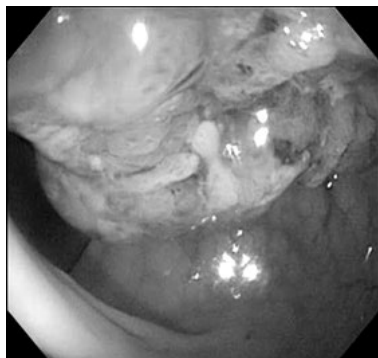
A 92-year-old man was brought to a local hospital complaining of nausea, vomiting and appetite loss. After several examinations including gastrointestinal fiberoscopy, he was found to require surgical resection for lesions in two organs, and transferred to our hospital for appropriate treatment. Upper gastrointestinal endoscopy revealed a 5-cm ulcerated tumor in the gastric antrum (Figure 1) and colonoscopy demonstrated a protruding tumor more than 3-cm in diameter with a tendency for easy bleeding in the recto-sigmoid colon (Figure 2). Both tumors were pathologically confirmed to be carcinomas. Abdominal CT also revealed a 53 x 40-mm abdominal aortic aneurysm extending from just below of the branch point of the renal artery to the bifurcation of the common iliac vessels, gastric wall thickening at the antrum, and mass formation at the recto-sigmoidal junction of the colon without any enlarged lymph nodes. We evaluated the clinical stage as IB (T2N0M0) for the gastric lesion and stage 0 (TisN0M0) for the colonic lesion. Although the patient had a surgical scar in the right sub costal region, resulting from cholecystectomy for gallbladder stones in 2001, physical examinations showed that his parameters were within normal ranges for general anesthesia despite his age. After obtaining informed consent, we planned simultaneous laparoscopic treatment of the two lesions, at the request of the patient



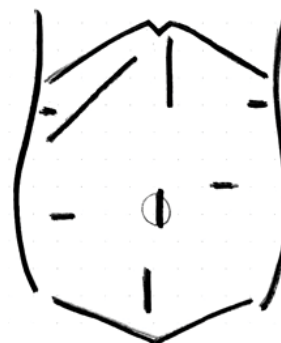
**Figure 1:** A 5-cm ulcerated tumor in the gastric antrum.

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**Figure 2:** A protruding tumor more than 3-cm in diameter in the recto-sigmoid colon with a tendency for easy bleeding.

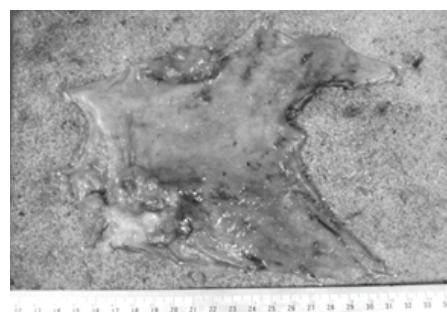


**Figure 3:** Placement of ports and minilaparotomy.

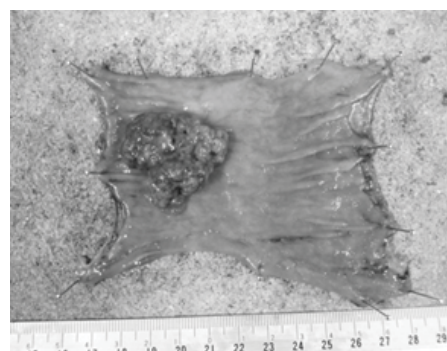
and his family. The laparoscopic approach initially required the use of 5 ports (12-mm x 2: umbilicus and left upper quadrant, 5-mm x 3: left and right upper quadrant) and a 5-cm longitudinal incision to access the stomach; we subsequently added a 4-cm longitudinal incision on the lower midline to access the rectum. The laparoscopic procedures consisted of distal gastrectomy with D1+ lymph node dissection (Nos.7, 8a and 9) and partial resection of the recto-sigmoid colon. The former was reconstructed using Billroth-I anastomosis is extracorporeally using a circular stapler via the 5-cm incision, and the latter in an end-to-end fashion intracorporeally using a double stapling technique via the 4-cm incision (Figure 3). There sectioned specimens were retrieved via each of the small incisions. The classification of staging of gastric and colorectal cancers was that of the Union of International Cancer Control (UICC) Version 7. The histopathological diagnoses were mucinous adenocarcinoma, 6.0 x 5.0 x 1.5cm, ss, ly2, v0, n0 (Stage IIA) for the gastric lesion (Figure 4) and cancer in adenoma, tub1, 3.0 x 2.0 x 51.5cm, m, ly0, v0, n0 (Stage 0) for the colorectal lesion (Figure 5). The operation took 270 min and blood loss was 160 ml. The patient started oral intake from the ninth postoperative day due to anal bleeding and was discharged on the nineteenth postoperative day. He had no postoperative complications or abdominal symptoms during a 34-month follow-up period (Figure 6), and his aortic aneurysm was also followed up conservatively.

## Discussion

Laparoscopic surgery has become broadly accepted as a minimally invasive form of surgery. Simultaneous laparoscopic procedures have also become a selective form of treatment for avoiding long skin incisions and thus hastening postoperative recovery. Simultaneous standard open surgical procedures for gastric and colorectal cancers using long skin incisions are associated with marked postoperative pain, lower pulmonary function, suppressed bowel movement, a high surgical site infection rate and a high possibility of intra-abdominal adhesion. Additionally, postoperative recovery is invariably delayed in aged patients. Therefore, simultaneous laparoscopic procedures are an effective surgical option for patients with concurrent disorders of the upper and lower abdomen. Recently, the Trans vaginal NOTES technique [11] and single-port laparoscopic surgery [12] have been introduced into the abdominal field to obtain a superior esthetic outcome and further minimize the degree of invasiveness. Furthermore, the chances of simultaneous detection of gastric and colorectal cancers have increased because of the wider use of



**Figure 4:** Mucinous gastric cancer



**Figure 5:** Cancer in adenoma of the recto-sigmoid colon.



**Figure 6:** Abdominal appearance 24 months after surgery.

endoscopic examinations of the gastrointestinal tract before surgery in major Asian surgical institutions [13-16], and thus the numbers of candidates for this approach have also increased. Therefore, we expect that the indications for minimally invasive procedures aimed at treatment of simultaneous gastric and colorectal cancers or other multiple organ disorders, including the fields of urology and gynecology, will increase in the near future.

Recent reports of simultaneous laparoscopic resection of primary colorectal cancers and liver metastases in selected patients have indicated that this approach is safe and yields better short-term outcomes, including a low morbidity rate and a shorter hospital stay [17,18]. Furthermore, using matched pair analysis, Takasu et

al. [19] have shown that simultaneous laparoscopic procedures have long-term (mean: 36.4 months) outcomes equivalent to those of simultaneous open procedures at least for patients with fewer than 4 liver metastases and tumors less than 5 cm in diameter. We have also employed several similar procedures for colorectal cancers with single liver metastasis, and the short-term postoperative outcomes have been uneventful. It is anticipated that combined resection of colorectal cancer along with liver metastases will become a promising option for selected patients with stage IV colorectal cancers.

Table 1 shows the results of simultaneous laparoscopic resection of gastric and colorectal cancers in aged patients since 2001, including the present case [3-10]. There were 36 males and 4 females with

**Table 1:** Reported cases of simultaneous laparoscopic resection of gastric and colorectal cancers

Case	Author	Year	Age	Sex	Procedure		Port P & 1	OT (min)	BL (ml)	Complications	POHS (day)	Pathology		Follow up (month)
						CRC						GC	CRC	
1	Omura	2001	90	M	PR	LC	5 ports & 1 incision	NA	NA	Paralytic ileus	NA	pT1N0M0	pT3N0M0	NA
2	Suda	2004	74	M	DG	LAR	6 ports & 1 incision	415	350	None	18	NA		NA
3	Nakajima	2007	70	M	DG	RHC	6 ports & 1 incision	NA	190	None	NA	pT1N0M0	N	NA
4	Zhu	2008	55	M	DG	LAR	7 ports & 1(5cm) incision	270	120	None	13	pT2N2M0	A	NA
5	Matsui	2009	72	M	PPG	PR	5 ports & 1(5cm) incision	474	145	None	14	pT1N0M0	pT3N0M0	43
6			6	F	PG	LAR	6 ports & 1 (5cm) incision	432	400	None	15	pT1N0M0	pT3N0M0	12
7			7	M	DG	RHC	7 ports & 1 (7cm) incision	746	150	Surgical site infection	NA	pT1N0M0	pT1N0M0	37
8	Lee	2010	71	M	DG	RHC	7 ports & 1(7cm) incision	400	500	None	17	pT3N3M0	pT3N1Mo	33
9	Nishikawa	2010	78	F	DG	S	6 ports & 1(3.5cm) incision	315	80	None	19	pT1N0M0	pT3N1M0	NA
10			84	M	DG	S	7 ports & 1(4cm) incision	340	300	None	13	pT1N0M0	pT3N0M0	NA
11			70	M	DG	S	7 ports & 1(3cm) incision	495	440	None	10	pT1N0M0	pT3N0M0	NA
12	Tokunaga	2010	58	M	DG	LAR	7 ports & 1(5-6cm) incision	365	100	Surgical site infection	15	pT1N0M0	pTisN0M0	NA
13			66	M	DG	S&RC	7 ports & 1(5-6cm) incision	363	65	None	12	pT1N0M0	pT3N0M0	NA
14			71	M	DG	RC	7 ports & 1(5-6cm) incision	350	15	None	11	pT1N0M0	pT1N0M0	NA
15			67	M	TG	S	7 ports & 1(5-6cm) incision	439	160	None	13	pT1N0M0	pTisN0M0	NA
16			77	M	TG	RC	7 ports & 1(5-6cm) incision	576	250	Enteritis	19	pT1N0M0	pTisN0M0	NA
17			72	M	DG	LC	7 ports & 1(5-6cm) incision	386	15	Gastric fullness	51	pT2N0M0	pT3N1M0	NA
18			66	M	PPG	LAR	7 ports & 1(5-6cm) incision	263	24	None	16	pT2N0M0	pT1N0M0	NA
19	Noguchi	2011	72	M	DG	APR	6 ports & 1 incision	319	144	None	NA	pT1N0M0	pT1N0M0	
20			60	M	DG	HAR	6 ports & 1 incision	333	64	None	NA	pT1N0M0	pT3N1M0	NA
21			70	M	TG	LAR	7 ports & 1 incision	39	180	None	NA	pT3N1M	pT4 N1M0	NA
22	Ikeno	2011	70	M	DG	LAR	6 ports & 1 incision	5	325	None	12	0	pT1N1M0	NA
23			73	M	PG	LAR	6 ports & 1 incision	425	210	None	12	NA	pT3N0M0	NA
24			61	M	PG	LAR	6 ports & 1 incision	378	190	None	14	NA	NA	NA
25			2	M	DG	HAR	6 ports & 1 incision	550	32	Paralytic ileus	26	NA	NA	NA
26			7	M	DG	RHC	5 ports & 1 incision	411	small amount	None	10	NA	NA	NA
27			86	M	DG	S	6 ports & 1 incision	492	small amount	None	8	NA	NA	NA
28	Hanai	2012	73	M	DG	ICR	6 ports & 1 (4.5cm) incision	448	137	None	14	NA	NA	NA
29			61	M	DG	HAR	5 ports & 1 (4cm) incision	540	39	None	15	pTisN0M0	NA	111.5
30			59	M	PPG	TC	5 ports & 1 (4cm) incision	451	36	None	12	pTisN0M0	pTisN0M0	94.7
31			67	M	TG	S	8 ports & 1 (4.5cm) incision	390	245	Non	29	pT0N0M0	pT1N0M0	78
32	Kasuga	2012	71	M	DG	TC	6 ports & 1 incision	605	NA	None	11	pT0N0M0	pT3N0M0	54
33	Hidaka	2013	77	M	TG	LAR	8 ports	NA	NA	None	19	NA	pT1N0M0	NA
34	Goto	2013	75	M	DG	S	6 ports & 2 incisions	NA	122	None	8	pT1N0M0	NA	20
35			75	M	PPG	S	5 ports & 1 incision	430	65	None	8	pT1N0M0	NA	NA
36			68	F	DG	RC	5 ports & 1 incision	352	10	None	8	pT1N0M0	pT1N0M0	NA
37			6	F	PPG	S	6 ports & 1 incision	254	30	None	8	pT1N2M0	pT1N0M0	NA
38			4	M	DG	LAR	7 ports & 2 incisions	348	310	None	10	pT1N0M0	pT1NoM0	NA
39			84	M	PPG	HAR	6 ports & 2 incisions	519	94	None	8	pT1N0M0	pT3N1M0	NA
40	Tagaya	2015	57	M	DG	PR	5 ports & 2 (4 & 5cm) incisions	413	160	None	19	pT3N0M0	pT1N0M0	NA



a mean age of 70.6years old (range: 55-92 years). Five patients (12.5%) were over 80 years old. The surgical procedures for gastric cancer included 25 (62.5%) distal gastrectomies, 6 (15.0%) pylorus-preserving distal gastrectomies, 5 (12.5%) total gastrectomies, 3 (7.5%) proximal gastrectomy and one (2.5%) partial resection, and those for colorectal cancer included 11 (27.5%) low anterior resections, 9 (22.5%) sigmoidectomies, 4 (10.0%) right hemicolectomies and high anterior resection, 3 (7.5%) right colectomies, 2 (5.0%) left colectomies, transverse colectomies and partial resections (ascending colon and recto-sigmoid colon), and one (2.5%) ileocecal resection, abdominoperineal resection, and simultaneous sigmoidectomy and right colectomy, respectively. Although distal gastrectomy for gastric cancer was performed in 25 patients (62.5%), the surgical procedures for colorectal cancer relatively varied. The placement of ports varies among individual institutions, and the number of ports has ranged from 5 to 8; 6 or 7 ports have been employed most commonly in 30 (75.0%) patients. The mean operation time and estimated blood loss were 415 min (range: 254-746 min) and 154 ml (range: 3-500 ml), respectively. The postoperative complications (17.5%) included 3 paralytic ileus, 2 surgical site infections, and one case each of enteritis and gastric fullness. The mean postoperative hospital stay was 14.9 days (range: 8-51 days). The histopathological findings of gastric and colorectal lesions in 31 cases were pT0N0M0 in 2 patients, pTisN0M0 in 2, pT1N0M0 in 20, pT2N0M0 in 3, pT2N2M0 in 1, pT3N0M0 in 1, pT3N1M0 in 1 and pT3N3M0 in 1, and pTisN0M0 in 5, pT1N0M0 in 12, pT3N0M0 in 8 and pT3N1M0 in 5, and pT4N1M0 in 1 in colorectal lesions, respectively. Patients with lesions exceeding Stage II included 4 (12.9%) with gastric cancer and 13 (41.9%) with colorectal cancer. The mean follow-up period (10 cases) was 51.7 months (range: 12-111.5) with no recurrence.

Although our present patient had previously undergone upper abdominal surgery (cholecystectomy with a right sub costal incision), his operation time was quite short in comparison with other reports. In the operation time, 4 of 40 cases (10.0%) were less than 270 min. A previous abdominal incision is not a contra indication even for simultaneous laparoscopic procedures. And his intraoperative blood loss was similar to an average volume. We think that simultaneous resections of stomach and colon or rectum do not greatly influence the volume of blood loss by performing of an experienced surgical team. Although the patient's postoperative hospital stay was relatively long due to anal bleeding of uncertain origin, he recovered with conservative care, despite his advanced age. In postoperative course, paralytic ileus occurred in aged patients (86, 90 and 92 years old) including our case. We require the careful observation for aged patients during the postoperative course after simultaneous gastric and colorectal resection. Regarding the curability of gastric cancer, although laparoscopically assisted distal gastrectomy with D2 lymph node dissection is routinely indicated for advanced gastric cancer, we performed distal gastrectomy with D1+ lymph node dissection for this patient with clinical Stage IIA considering that no clear lymph node swelling was evident on CT, and that it was desirable to minimize both the length and invasiveness of the operation as far as possible. As shown in Table 1 patients (9.7%) with gastric cancer had positive lymph nodes. As the T factors of these patients were T2 and T3, D2 lymph node dissection is required for patients who are at a more advanced stage than Stage II. We added a small laparotomy incision (4-cm long) on the midline of the lower abdomen to obtain easy access to the rectum. We think that this incision allows a safe and steady surgical procedure (minimal manipulation of recto-sigmoid

colon and easy performance of double stapling anastomosis between the sigmoid colon and rectum) and reduces the operation time.

To our knowledge, the present case is currently the oldest in the world to have undergone successful simultaneous laparoscopic treatments for gastric and rectal cancers. Simultaneous laparoscopic procedures for double cancers area feasible and safe approach, and yield a good outcome in the hands of an experienced surgical team.

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