

Resection of Asynchronous Quadruple Advanced Colonic Carcinomas Followed by Reconstruction with Ileal Interposition between the Transverse Colon and Rectum

Sho Mineta¹, Kimiyoshi Shimanuki¹, Yoshikazu Tsuchiya¹, Atushi Sugiura¹, Masahiro Kaneko¹, Yoshihiko Sugiyama¹, Koho Akimaru² and Takashi Tajiri²

¹Department of Surgery, Aizu Central Hospital, Fukushima

²Surgery for Organ Function and Biological Regulation, Nippon Medical School Graduate School of Medicine

Abstract

We report an extremely rare case of resectable asynchronous quadruple advanced colonic carcinomas. Successful reconstruction was performed after resection with an ileal interposition between the remaining colon and rectum, and the patient recovered bowel function. Resections of the four colonic lesions in three operations allowed us to leave a portion of the large bowel and to thereby preserve the rectum and a portion of the transverse colon. After resection of the third and fourth cancer lesions, we reconstructed the large bowel with ileal segment interposition between the residual transverse colon and rectum, leaving a 15-cm-long segment portion of the transverse colon. This surgical procedure is an option for reconstruction after left-sided colectomy.

(J Nippon Med Sch 2006; 73: 149–153)

Key words: ileal interposition, asynchronous quadruple colonic carcinomas

Introduction

Multiple primary malignant neoplasms have been documented in single patients. The appearance of synchronous and metachronous colon carcinomas or multiple synchronous or metachronous malignant lesions in patients with carcinomas of the colon and rectum are not rare. To our knowledge, however, there have been no reports of quadruple advanced colon carcinomas that could be resected. After resecting the third and fourth cancer lesions in our patient, we reconstructed the large bowel with ileal segment interposition between the residual

transverse colon and rectum, leaving a 15-cm-long segment of the transverse colon.

Although earlier reports have described ileocecal interposition for rectal cancer, very few have reported an interposition with an ileal conduit¹. In this paper we describe our experience in resecting four asynchronous advanced colonic carcinomas and reconstructing the large bowel with an ileal interposition between the remaining transverse colon and rectum. We also discuss our case in relation to the literature.

Correspondence to Sho Mineta, Aizu Central Hospital, 1-1 Tsuruga-machi, Aizuwakamatsu, Fukushima 965-0011, Japan

E-mail: minesho@nms.ac.jp

Journal Website (<http://www.nms.ac.jp/jnms/>)

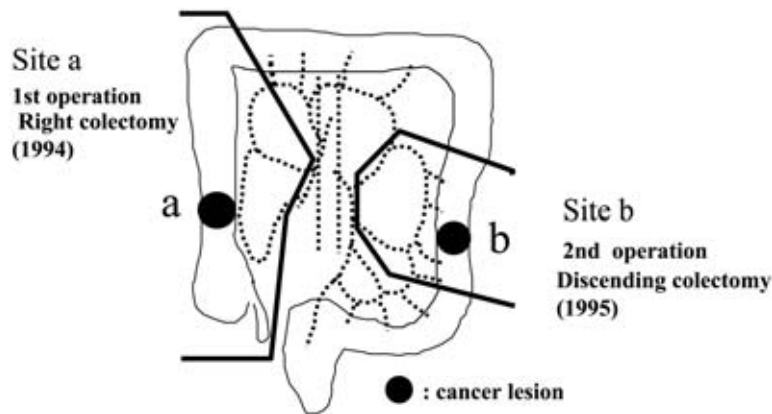


Fig. 1 Previous operations for carcinomas of the ascending and descending colon (performed under the General rules for clinical and pathological studies on cancer of the colon, rectum, and anus, 6th edition, Japanese Society for Cancer of the Colon and Rectum 1998 KANEHARA & Co., Ltd.)

Site a (first operation): well-differentiated adenocarcinoma: mp, n (-), Po, Ho, M (-), Stage I.

Site b (second operation): well-differentiated adenocarcinoma: mp, n (-), Po, Ho, M (-), Stage I.

Case Report

A 67-year-old man visited our hospital with symptoms of malaise and feces with bloody mucus in January 2001. He had undergone right colectomy in 1994 and descending colectomy in 1995 for asynchronous well-differentiated adenocarcinomas of the ascending and descending colons, respectively (**Fig. 1**). Both cancer lesions had infiltrated the muscularis propria without regional lymph node metastasis. He received no adjuvant chemotherapy, and no surveillance colonoscopy was performed after the colectomies. No other members of the patient's family had ever been diagnosed with either colorectal cancer or polyps.

The physical examination on admission at our hospital revealed no abnormal findings. The peripheral blood cell count was normal, and the only blood chemical abnormalities were elevated serum levels of glucose and hemoglobin A1c. Serum levels of carcinoembryonic antigen and carbohydrate antigen 19-9 were within normal limits. A double-contrast barium enema examination revealed narrowing of the transverse and sigmoid colons (**Fig. 2**). Colonoscopy of the residual colon showed large elevated lesions without ulceration at the same sites.

Histopathologic examination of the specimens from these lesions showed poorly differentiated adenocarcinoma. Chest and abdominal computed tomography, ultrasonography of the abdomen, and bone scintigraphy showed no abnormal findings indicative of distant metastasis.

We decided to operate to remove the lesions. With the previous operations in 1994 and 1995, the middle colic and inferior mesenteric arteries had been preserved. The right colic, ileocecal, and left colic arteries and the first branch of the sigmoid artery had been ligated and divided. In our operation we performed sigmoidectomy, partial resection of the transverse colon, and lymph node dissection because of tumor infiltration into the muscularis of the colon. Of the lymph nodes obtained at surgery surrounding the middle colic artery, only those around the inferior mesenteric artery showed cytological evidence of metastasis. The inferior mesenteric artery was ligated and divided at the root for lymph node dissection. The remaining transverse colon could not be mobilized owing to marked adhesions around the previous ileotransverse colonostomy. An ileal isoperistaltic segment 30 cm long was interposed between the remaining 15 cm of the transverse colon and the rectum (**Fig. 3, 4**). Anastomoses were performed with the stapling

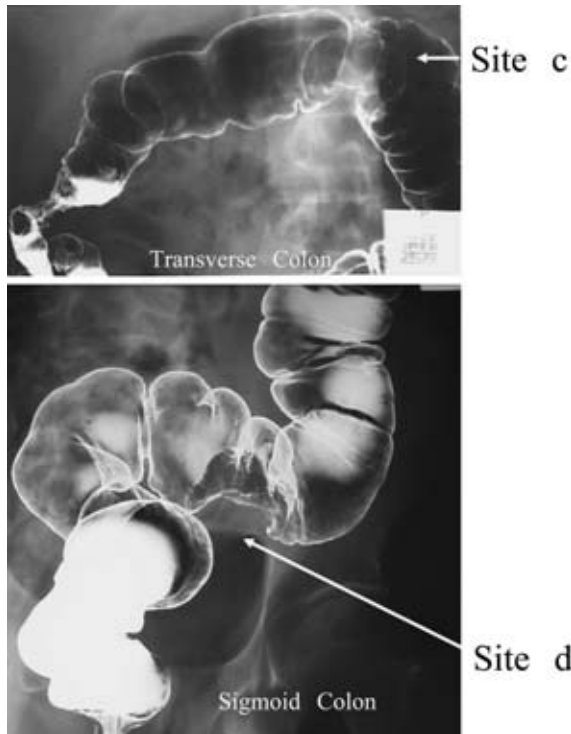


Fig. 2 Preoperative barium enema study
 Site c: tumor of the transverse colon (third colonic lesion)
 Site d: tumor of the sigmoid colon (fourth colonic lesion)

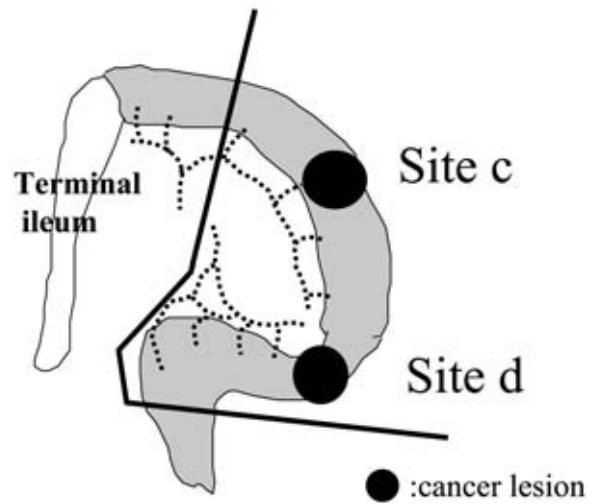


Fig. 3 Third operation for the third and fourth carcinomas of the colon
 Site c: poorly differentiated adenocarcinoma: ss, n1 (+), Po, Ho, M (-), stage IIIa
 Site d: poorly differentiated adenocarcinoma: mp, n2 (+), Po, Ho, M (-), stage IIIb

technique. The lesion of the resected transverse colon was histologically diagnosed as poorly differentiated adenocarcinoma infiltrating the subserosa, with paracolic lymph node metastases. The lesion of the sigmoid colon was diagnosed as the same type of adenocarcinoma infiltrating the muscularis propria, with paracolic and regional lymph node metastases.

A postoperative barium enema examination demonstrated smooth passage of contrast medium and peristalsis through the ileal segment without dilatation (Fig. 5). Colonoscopy during the first postoperative year revealed no erosive, ulcerative, or atrophic mucosal changes in the ileal conduit (Fig. 6). In the two years since the operation, the patient has generally voided loose or semiformed stools fewer than 3 times a day. Moreover, he has gained 6 kg in weight over the last year. No episodes of tenesmus, bleeding on defecation, constipation, or frequent passage of liquid stools have been reported in the state of subtotal colectomy.

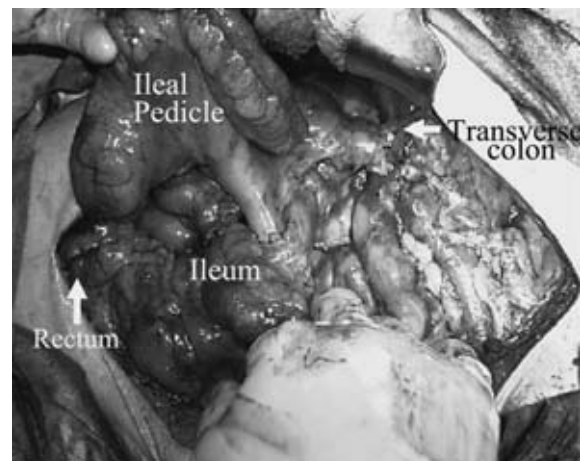


Fig. 4 Operative finding after reconstruction with ileal pedicle

Discussion

Although many surgeons have reported reconstruction with ileal pouch-anal anastomosis following total colectomy, small intestinal interposition between the colon and rectum to maintain continuity of the large bowel is extremely rare. To our knowledge, the only previous published report is a case history by Sauer¹ on the interposition of the small intestine following subtotal

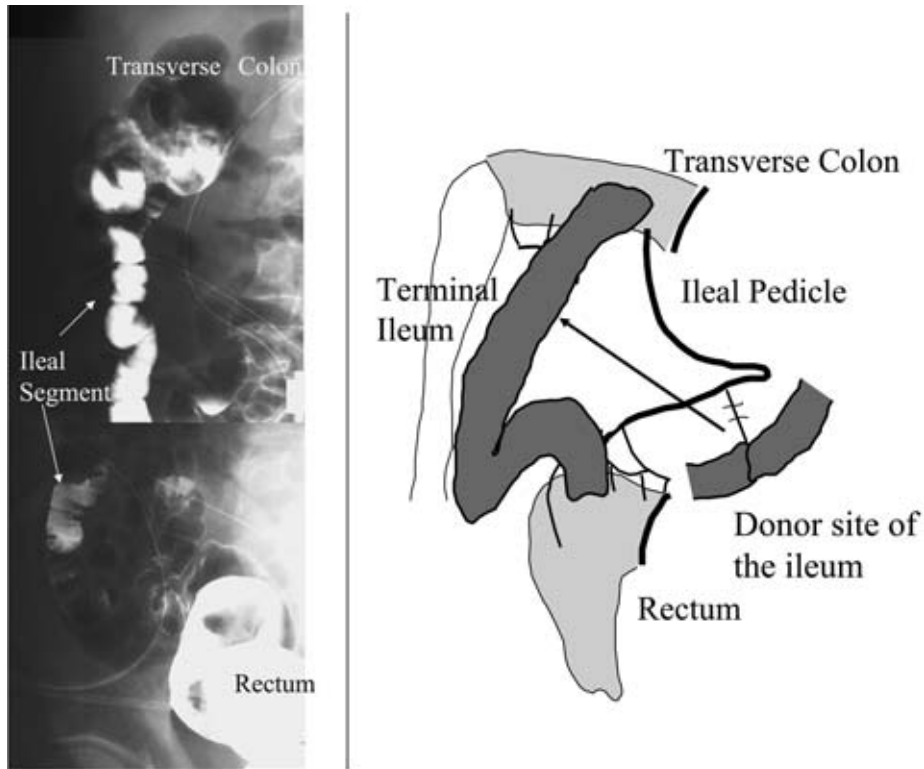


Fig. 5 Postoperative barium enema study and a diagram of reconstruction with ileal interposition between the transverse colon and rectum

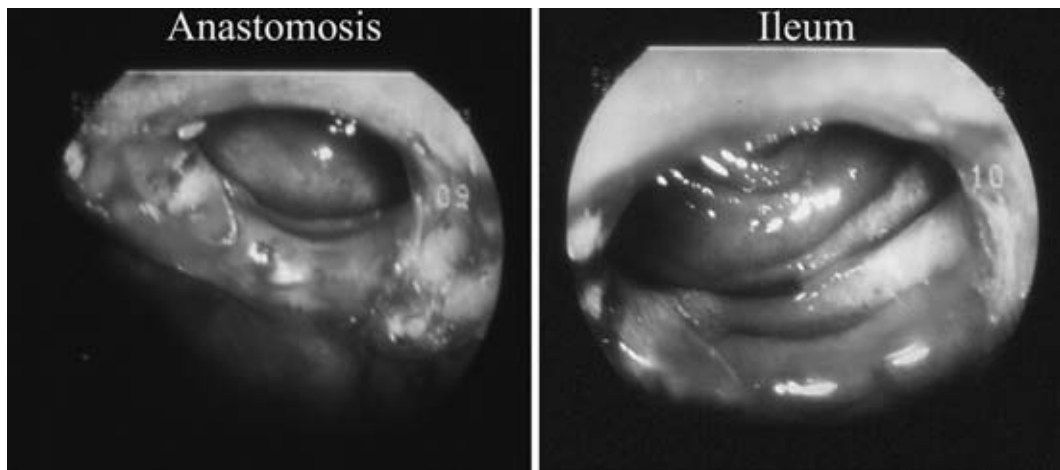


Fig. 6 Colonoscopic findings of the ileal conduit during the first postoperative year

colectomy for Hirschsprung's disease in childhood. In the present report we describe multiple colonic cancers occurring 1 and 6 years after the resection of asynchronous colonic cancers. By resecting the four colonic lesions in three operations, we were able to leave a portion of the large bowel and thereby preserve the rectum and a portion of the transverse colon. Our method of reconstruction using an ileal segment interposed between the transverse colon

and rectum allowed us to preserve as much of the large bowel as possible to restore gut continuity. Because the entire transverse colon was not mobilized, we could perform the important lymph node excision. We have not recognized any recurrence of the colonic cancers in the 2 years since the surgery.

In our patient frequent liquid stools have not occurred in the state of subtotal colectomy after

reconstruction with ileal interposition. The remaining transverse colon may function as a reservoir for stool. There were no endoscopic findings of mucosal atrophy, erosion, or ulceration of the interposed ileal segment during the first postoperative year. Hotokezaka et al.², however, have reported pathological mucosal alteration in animal experiments. They made careful examinations to detect signs of chronic inflammatory cell infiltration, atrophy of the villi, and fibrosis of the lamina propria. Chronic morphologic changes of this type inevitably occur at any site in the remaining intestine after proctocolectomy, especially in an interposed jejunal segment with severe changes. Hotokezaka et al. found that fibrosis of the lamina propria tended to be more advanced in the interposed distal jejunum than in the proximal jejunum and ileum. The ileum was preferable to the jejunum for interposition of the small intestine. Results of experiments in pigs by Hershko et al.³ have suggested that one-stage jejunal interposition as an alternative to primary colonic anastomosis for providing intestinal continuity after resection for acute obstruction of the left colon. Hershko et al. have found that the bursting pressures of the jejuno-colic anastomoses are significantly higher than those of the primary colocolonic anastomoses. With interpositions, on the other hand, there were no problems with wound healing. The ileum is more useful for interposition, as we found in our case, owing to the minimal fibrosis of the mucosa and the strong resistance of the ileum to carcinogenesis in experimental studies. This surgical procedure is effective and can be considered for reconstruction after left-sided colectomy.

The metachronous and synchronous colorectal carcinomas in our case were detected with colonoscopy performed because of melena after a previous operation for asynchronous colonic carcinomas. We emphasize the need to perform colonoscopy during the follow-up after surgery, especially if the patient has a history of asynchronous colon cancers. The remnant colon should be periodically examined for the rest of the patient's life. In postoperative surveillance

colonoscopies of 341 patients by Togashi et al.⁴, the cumulative incidence of newly developed metachronous colorectal carcinomas over a 5-year period was 5.3%. Seventeen of 22 carcinomas in their study were 10 mm or less in diameter, and 14 of the carcinomas in early stages showed a flat appearance. In a later review, Moreaux and Catala⁵ have reported the recurrence of a second cancer of the colon or rectum in 36 of 1,528 patients who underwent operations for colorectal carcinoma. The interval between the first and second carcinomas ranged from 1 to 24 years, with a mean of 6.3 years. Three of the 36 patients developed a third metachronous lesion. In our patient, the second lesions in 1995 might have been synchronous lesions missed the year before. The patient had no evidence of metastases and eventually underwent resection of all lesions.

Our patient had a favorable postoperative course after interposition with an ileal conduit between the transverse colon and rectum. We have reported this case in view of the good results obtained and the absence of similar reports in the literature.

References

1. Sauer H: Interposition of the small intestine following subtotal colectomy for Hirschsprung's disease in childhood. *Chirurg* 1972; 43: 280-282.
2. Hotokezaka M, Nakahara S, Nakamura K, Mibu R: Morphology following proctocolectomy in dogs: effect of introduction of a 'neocolon' using an interposed jejunal segment. *Eur Surg Res* 1994; 26: 179-186.
3. Hershko DD, Bishara B, Paxton JH, Robb BW, Wray CJ, Eitan A: Interposition of a jejunal segment as an alternative one-stage operation for acute left colon obstruction. *Surg Today* 2002; 32: 804-808.
4. Togashi K, Konishi F, Ozawa A, et al.: Predictive factors for detecting colorectal carcinomas in surveillance colonoscopy after colorectal cancer surgery. *Dis Colon Rectum* 2000; 43 (10 Suppl): S47-53.
5. Moreaux J, Catala M: Multiple cancers of the colon and rectum. Incidence and results of surgical treatment. *Gastroenterol Clin Biol* 1985; 9: 336-341.

(Received, January 31, 2006)

(Accepted, March 6, 2006)