



Totally Bypass of Anastomoses for an Advanced Sigmoid Cancer with Direct Duodenal Invasion in a 95-Year-Old Man: A Rare Case Summary

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The patient is a 95-year-old male with underlying disease of hypertensive cardiovascular disease, Type 2 diabetes mellitus, and old cerebrovascular accident. Persistent abdominal cramping pain with fullness sensation and poor appetite had been noted. The flexible colonoscopy could not pass through sigmoid colon. Abdomen computed tomography demonstrated tumor obstruction over sigmoid colon, measurable size in 5.2 cm, with highly suspicion of duodenum invasion. During operation, tumor which located in the sigmoid colon invaded to fourth portion of the duodenum. En bloc resection of the tumor, duodenorrhaphy, and feeding jejunostomy were performed. An end-to-end anastomosis and protective loop ileostomy formation at the right lower quadrant were performed as totally bypass of anastomoses consequently. Direct invasion of colorectal adenocarcinoma into adjacent structures occurs frequently, but only rarely in the duodenum involved. In the case presented above, we could aim that active surgical management is useful for improving patient prognosis without increasing the risk associated with surgery.

Key words: Totally bypass, advanced sigmoid cancer, duodenal invasion

INTRODUCTION

Colorectal cancer (CRC) is a highly prevalent disease worldwide. In 2020, approximately 147,950 individuals will be diagnosed with CRC and 53,200 will die from the disease, including 17,930 cases and 3640 deaths in individuals aged younger than 50 years. The incidence rate during 2012 through 2016 ranged from 30 (per 100,000 persons) in Asian/Pacific Islanders to 45.7 in blacks and 89 in Alaska¹ Natives, and approximately 15% of patients present with locally advanced tumors (T4 stage).² En bloc resection of the tumor is of pivotal importance and is associated with a highly significant improvement in patients' 5-year survival. An surgical treatment is presented for radical en bloc resection of locally advanced colon cancer.

CASE REPORT

The patient is a 95-year-old male with underlying disease of hypertensive cardiovascular disease, Type 2

diabetes mellitus, and old cerebrovascular accident. He had been diagnosed as adenocarcinoma of the sigmoid colon, cT3N1M0, stage IIIB in another facility. Persistent abdominal cramping pain with fullness sensation and poor appetite had been noted. The serology revealed relatively normal without life-threatening abnormality. The flexible colonoscopy could not pass through the sigmoid colon, and the lumen showed nearly total obstruction [Figure 1]. Thus, abdomen computed tomography was arranged consequently and demonstrated tumor obstruction over the sigmoid colon, measurable size of 5.2 cm. Besides, tumor also had duodenal invasion [Figure 2].

After admission, a series of examinations were arranged. Gastrografin enema was performed [Figure 3]. Positron emission tomography scan was also arranged, which reported

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imaging staging of colon cancer with cT3N2aM0, stage IIIB. Surgical intervention was indicated. Due to tumor progression and pending tumor obstruction status, surgical intervention was done with laparoscopically. During the operation, tumor which located in the sigmoid colon invaded to fourth portion of the duodenum [Figure 4]. En bloc resection of the tumor with duodenal repair and descending colon-rectal anastomosis were performed. In afraid of anastomotic leakage, bypassing feeding jejunostomy and protective loop ileostomy were performed [Figure 5]. The patient was discharged after 57 days after the operation after the closure of ileostomy and removal of feeding jejunostomy. The final pathologic report was adenocarcinoma, moderately differentiated, directly invading to the duodenum, without regional lymph nodes metastasis, stage pT4bN0M0, stage IIC.

DISCUSSION

Above many of the literature, the first reported of a duodenal resection for locally advanced colon cancer was in 1929, by Grey Turner.³ Since then, advanced colon cancer with direct invasion to the duodenum has still remained challenge.

Meanwhile, several studies also indicated other invaded adjacent organs, such as the liver, bladder, and anal sphincter.

According to TNM classification, the 8th edition of the American Joint Committee on Cancer manual which divides the T4 cases into two groups, T4 is subdivided into T4a and T4b. Tumors that invade the serosal surface (visceral peritoneum) are referred to as T4a. There is further clarification that tumors with perforation, in which the tumor cells are continuous with the serosal surface through inflammation, are also considered T4a. In areas of the colon and rectum without peritoneal covering, such as posterior aspects of the ascending and descending colon and lower rectum, T4a is not applicable. Tumors that directly invade or adhere to adjacent organs or structures are considered T4b.⁴ The incidence of the T4 colorectal tumors is around 5%–8.8% of the cases; among the advanced resected cases, the incidence of the T4 tumors is up to 21%–43%⁵⁻⁷ using the SEER dataset between 1973 and 2008. Gao *et al.*⁸ have found an incidence of 6.3% for pT4a and 4.4% for pT4b CRCs, but only in cases without distant metastasis. It is to be expected

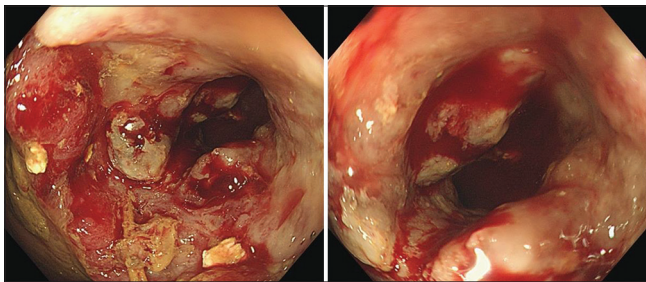


Figure 1: Colonoscopy revealed narrowing over sigmoid colon with erosion and tumor bleeding

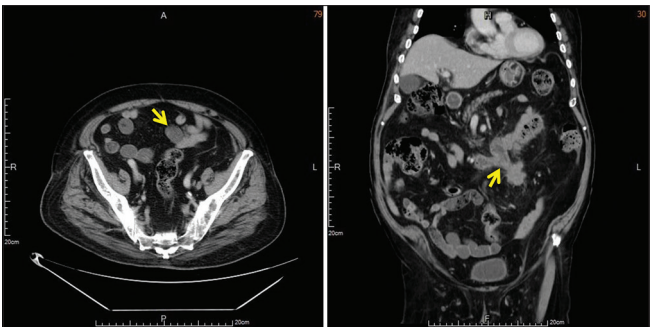


Figure 2: Abdominal computed tomography demonstrated a neoplasm (yellow arrow) over sigmoid colon invaded to the duodenum fourth portion

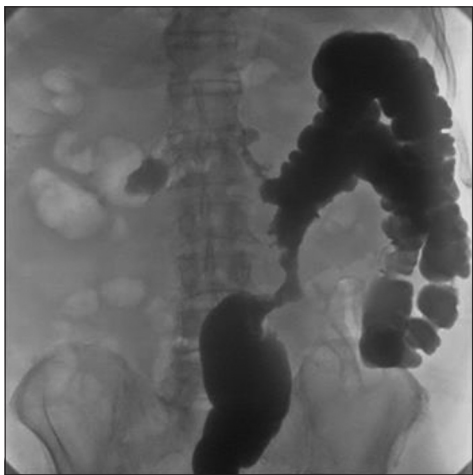


Figure 3: Gastrograffin enema revealed incomplete colonic obstruction by suspicion neoplasm impaction at sigmoid colon



Figure 4: Invasion of the duodenum fourth portion in sigmoid colon cancer (intraoperative aspects)

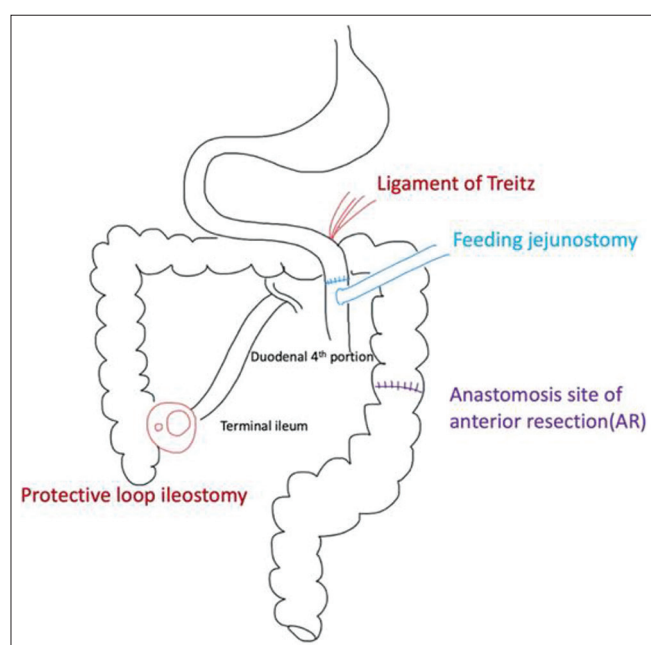


Figure 5: Schematic of surgery. Anterior resection combined with en bloc resection of tumor over sigmoid colon invading to fourth portion of the duodenum, status postfeeding jejunostomy, and protective loop ileostomy

that in cases with distant metastasis, the incidence of the T4 CRCs is even higher.

In T4B CRC, en bloc resection sometimes plays a determined procedure. The principle of en bloc resection is preferable to avoid tumoral perforation and neoplastic and stercoral contamination of the peritoneal cavity and also residual malignant tissue. The locally advanced tumor which invaded the duodenum may usually cause mechanical bowel obstruction, lead to poor nutrition supplements, and increased morbidity and mortality rates. Nevertheless, many investigators reported that this resection procedure for CRC has acceptable morbidity and mortality rates and a fair long-term prognosis. In the opposite, a highly extended operation such as exploratory laparotomy left hemicolectomy with en bloc resection of invaded duodenum could be also recognized high risk of morbidity and mortality. Besides, some large tumor that has invaded neighboring organs, such as pelvic organs and pancreas, are unresectable because of the dangers posed by high surgical stress.

Back to our case, symptomatic mechanical bowel obstruction at the sigmoid colon level was found. The necessity of the surgical intervention was indicated. Laparoscopic anterior resection combined with en bloc resection of the duodenal invaded portion was performed for not either pursuing a better oncologic outcome but also minimizing the risk of duodenal obstruction in the future. Considered of elder age and multiple comorbidity to be the risk of leakage over primary repair and

anastomotic site, bypass feeding jejunostomy and protective ileostomy were done for totally diversion. Review other literature, none of the cases had done such procedure above before in T4b lesion over sigmoid colon which invading to the duodenum.

CONCLUSION

Direct invasion of colorectal adenocarcinoma into adjacent structures occur frequently but only rarely in the duodenum involved. In this case, we performed a totally diverting strategy to minimize the consequence of stool leakage from anastomotic site. Through this method, we successfully treated the old male without any complications.

Ethical approval

This study proposal was approved by the Institutional Review Board of National Defense Medical Center, Taiwan, R.O.C. Approval number: B202215001. Approval date: 2022/02/10.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Data availability statement

All data generated or analyzed during this study are included in this published article.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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