

Laparoscopic right colectomy with transvaginal extraction in a patient with prior pancreaticoduodenectomy

M.A. YAGCI¹, C. KAYAALP¹, K. KUTLUTURK²

SUMMARY: Laparoscopic right colectomy with transvaginal extraction in a patient with prior pancreaticoduodenectomy.

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Introduction. Previous complicated abdominal surgeries such as pancreaticoduodenectomy with large abdominal incisions may keep the surgeons away from major laparoscopic procedures. To the best of our knowledge, there is no published study that shows the feasibility of major laparoscopic surgery in a patient with previous pancreaticoduodenectomy.

Case report. A 68-year-old female (BMI 27 kg/m², ASA II), was admitted for anemia. Her medical history included an open pancrea-

ticoduodenectomy four years ago for chronic pancreatitis. She had an abdominal Mercedes incision. Computed tomography and colonoscopy showed a 5-cm cecal mass with a histological diagnosis of adenocarcinoma. We performed a totally laparoscopic right hemicolectomy and intracorporeal ileotransverse anastomosis. The specimen was extracted through the vagina. The operating time was 500 minutes and the blood loss was 400 ml. The patient was uneventfully discharged on postoperative day four.

Conclusions. Laparoscopic colon surgery can be feasible and safe despite previous extensive abdominal surgeries such as pancreaticoduodenectomy. Moreover, laparoscopic surgery in these cases can also be completed with intracorporeal anastomosis and specimen extraction through a natural orifice.

KEY WORDS: Laparoscopic colorectal surgery - NOTES - NOSE - Natural orifice surgery - Minimally invasive surgery - Pancreaticoduodenectomy.

Introduction

Laparoscopic colectomy was first described at the beginning of 1990s. It has some advantages over open surgery, such as fewer surgical site complications, less postoperative pain and faster recovery (1). Prior abdominal surgery can have a negative influence on laparoscopic colorectal surgery. Although previous abdominal surgery has historically been considered a contraindication to laparoscopic colectomy because of the potential adhesions, increasing experience has prompted reexamination of whether previous abdominal surgery is truly a valid contraindication to the laparoscopic approach. There are many studies about the impact of previous abdominal surgery on laparoscopic colorectal procedures

(2-5). Some of them warn surgeons of the increased risk of conversion or even complication rates in the prior surgery groups (2, 3). Others, however, concluded that laparoscopic surgery in patients with previous abdominal surgery was safe and did not have any negative effects (4, 5). Previous localized procedures such as cholecystectomy, appendectomy or pelvic surgeries may have a small negative effect on laparoscopic colorectal procedures. However, the extent of prior surgery in the abdominal cavity, large abdominal incisions, multiple abdominal procedures or a history of complicated surgery for a complicated disease such as pancreaticoduodenectomy may keep surgeons away from major laparoscopic surgery. We aimed to demonstrate the technical challenge of laparoscopic right hemicolectomy in a patient with previous pancreaticoduodenectomy.

Case report

A 68-year-old female was admitted for hypochromic microcytic anemia. Medical history was significant for a pancreatic head mass, suspected of malignancy, treat-

¹ Department of Surgery, Turgut Ozal Medical Center, Inonu University, Malatya, Turkey

² Kozluk State Hospital, Department of Surgery, Batman, Turkey

Corresponding Author: Cuneyt Kayaalp, e-mail: cuneytkayaalp@hotmail.com

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ted with a standard pancreaticoduodenectomy (not pylorus-preserving) procedure four years ago. Pancreas pathology revealed chronic pancreatitis. Her body mass index was 27 kg/m² and her American Society of Anesthesiologists (ASA) score was II. Physical examination revealed a Mercedes incision. Her biochemical parameters were in the normal range. Computed tomography showed a thickened area on the wall of the ascending colon and cecum, and a few enlarged mesenteric lymph nodes beneath the wall of the cecum (Fig. 1). Colonoscopy showed a 5-cm ulcerous cecal mass with histological diagnosis of adenocarcinoma.

We planned a totally laparoscopic right hemicolectomy. The patient fully consented to the operation and signed a detailed consent form. Furthermore, she was fully aware that we would need to use a natural orifice for specimen extraction- or might need to convert the operation to open surgery in case of intraoperative difficulties or complications. Mechanical bowel preparation was given the night before the surgery. Broad-spectrum intravenous antibiotics were administered 30 min before the skin incision and postoperatively for three days.

Surgical technique

Following induction of general anesthesia, all indicated monitoring lines were placed and secured. An upper body-warming device was laid across the patient's chest to help maintain normothermia. A urinary bladder catheter and a nasogastric tube were also inserted. The patient was placed on the operating table supine, in the modified lithotomy position, with legs abducted and slightly flexed at the knees. A 12mm port was inserted into the abdomen through the umbilical open technique. The insufflator was set to a pressure of 14mm Hg. A laparoscopic exploration showed several abdominal adhesions. Three more abdominal ports were inserted according to adhesions on the left side of the patient (Fig. 2). The patient was placed in a 15 degree right-up lateral position. The liver was evaluated for any possible metastatic lesions. Medial to lateral mesenteric dissection was carried out by identifying the ileocolic and right colic vessels and the retrocolic Roux limb of the hepaticojejunostomy. The vessels were ligated separately with a Ligasure device (ForceTriad™, Covidien, Boulder, CO, USA). Dissection was continued laterally at the retroperitoneal area from the anterior kidney and ureter. Dissection at the hepatic flexura was carried out similarly to the medial to lateral, over the previous duodenectomy area and vena cava inferior. The hepatocolic adhesions were divided and the distal line of resection was determined according to site of gastroenterostomy and the level of the retrocolic Roux limb. When we created a window in the transverse mesocolon, we divided the omentum at the same time at this level. Division of the proximal transverse colon was

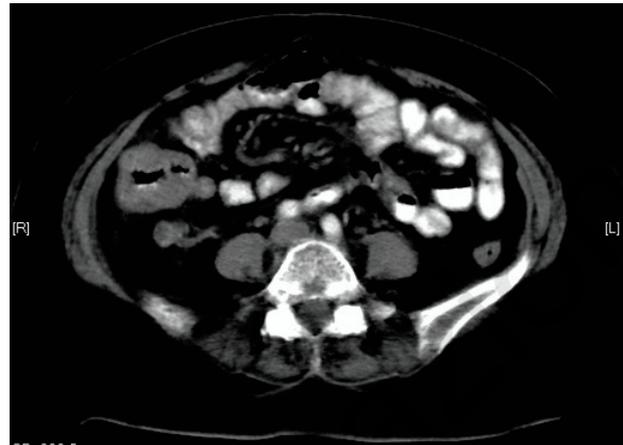


Fig. 1 - CT. Thickened area on the wall of the ascending colon and cecum.



Fig. 2 - Mercedes incision and trocar sites.

performed at the distal end of the mesenteric window with a 60mm endoscopic stapling device (EndoGIA™, Covidien, Mansfield, MA, USA). The lateral peritoneal attachments of the colon were mobilized from top-to-bottom until the cecum and terminal ileum were completely free. The terminal ileum was transected using the same endoscopic 60-mm linear stapler. The ileal limb and the transverse colon were anastomosed intracorporeally with a 60-mm laparoscopic stapler. The common enterotomy orifice was closed in two layers with a running intracorporeal suture. The mesenteric defect was closed. After preparation of the vagina with a povidone-iodine solution, the uterus was retracted and the patient was then placed in a steep Trendelenburg position. A 3-cm length transverse transvaginal posterior colpotomy was performed under laparoscopic control and the colpotomy incision was enlarged bluntly with fingers. The specimen



Fig. 3 - Transvaginal extraction of the right hemicolectomy specimen.

was grasped with an ovary clamp through the vaginal incision and it was pulled into the vagina. The specimen was delivered through the vagina in a snakelike fashion (Fig. 3). The vagina was irrigated with a povidone-iodine solution. The colpotomy was then closed with a running absorbable suture. A povidone-iodine-soaked vaginal pack was placed into the vagina for 12 hours. No drain was used. The nasogastric tube was removed at the end of the operation. The operating time was 500 minutes. The blood loss was 400 mL. The patient was followed up in the intensive care unit on the first postoperative day. The patient was allowed to drink fluids and a soft oral diet on the second postoperative day. Postoperative complications were not observed. The patient was discharged on postoperative day four. The histological analysis showed a pT3pN2 lesion and a referral was made to a medical oncologist. After a four month follow-up, the patient had no vaginal discharge or pain, tolerated a normal diet, and had normal bowel movements.

Discussion

Here we described a laparoscopic resection of a right-sided colonic malignancy with natural orifice specimen extraction and intracorporeal anastomosis in a patient with previous pancreaticoduodenectomy. There are conflicting reports of the impact of previous abdominal surgery on the outcomes of laparoscopic colectomy, but it leads to formation of intraperitoneal adhesions. Intraperitoneal adhesions can increase the risk of bowel injury by 3% to 17.6% during pneumoperitoneum, trocar placement or adhesiolysis (5). For prevention of injury, we used the open Hasson technique and placed trocars according to the location of the intraperitoneal adhesions. Widespread intraperitoneal adhesions limit intra-abdominal view and create an inadequate working space.

This leads to a longer operation time and higher conversion rate (2, 3, 5). The type of abdominal incision is also an important factor in the success of the laparoscopic procedure (6). We find that Mercedes incisions create a more difficult access for laparoscopic approach, because adhesions are usually located more than one quadrant of the abdomen.

Natural orifice specimen extraction (NOSE) has been proposed, in which the procedure is performed using totally laparoscopic techniques, with avoidance of a mini-laparotomy. In comparison with transabdominal specimen extraction, NOSE has the general advantages of laparoscopic surgery without mini-laparotomy related adverse effects such as pain, wound complications and increased recovery time. Singh et al. (7) reported that rates of incisional hernia reached 17% at the abdominal extraction sites for laparoscopic colorectal surgery. In our patient, parenteral analgesics were not needed after two days. NOSE also improves the cosmesis due to the absence of large abdominal incisions, although this was not relevant to our patient.

There was no specific study of the effect of prior abdominal surgery on the NOSE. Awad et al. (8), reported 14 patients with laparoscopic right hemicolectomy with transvaginal specimen extraction. Eleven of the patients (78%) had prior abdominal surgery, mainly appendectomy, cholecystectomy or gynecological procedures such as hysterectomy or tubal ligation. They reported postoperative complications in 36% of patients. McKenzie and co-workers (9) reported four cases of laparoscopic right hemicolectomy with transvaginal specimen extraction and they accepted previous abdominal surgery as an exclusion criterion.

According to our experience in this case, medial to lateral dissection of mesentery was more difficult due to the presence of a hepaticojejunostomy loop in the mesentery. An added risk is posed during the retroperitoneal dissection: the right kidney and retroperitoneal vessels can easily be injured due to a previously resected duodenum. Lastly, presence of antecolic gastroenterostomy was a restrictive factor in determining the surgical margin.

Conclusion

In conclusion, laparoscopic right hemicolectomy is a feasible method in patients with prior pancreaticoduodenectomy. Moreover, the ileocolic anastomosis can be done intracorporeally and the specimen can be removed through a natural orifice such as the vagina. To the best of our knowledge, there is no published study that shows the feasibility of major laparoscopic surgery in a patient with previous pancreaticoduodenectomy.

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