

Transanal specimen extraction following combined laparoscopic colectomy and liver resection

Extracción de muestra transanal después de colectomía laparoscópica combinada y resección hepática

Ersin Gundogan*, Cuneyt Kayaalp, Mufit Sansal, Kutay Saglam, and Fatih Sumer

Department of Gastrointestinal Surgery, Inonu University, Malatya, Turkey

Abstract

A 47-year-old woman admitted with constipation and a sigmoid colon adenocarcinoma and liver metastasis was diagnosed. Synchronous laparoscopic anterior resection and liver metastasectomy were done and transanal specimen extractions were performed for both resection materials. No recurrence or procedure-related problem was found in the follow-up of the 14th months, and her esthetic score was determined as 9/10. Transanal specimen extraction can be a viable method for patients with left-sided colon cancer with liver metastasis. It avoids additional abdominal incision, and as far as we know, this is the first liver specimen removed through the anus.

Key words: Metastasectomy. Natural orifice specimen extraction. Laparoscopic colorectal. Natural orifice surgery. Hepatectomy.

Resumen

Una mujer de 47 años ingresó con estreñimiento y fue diagnosticada de adenocarcinoma de colon sigmoide y metástasis hepáticas. Se realizaron resección anterior laparoscópica sincrónica y metastasectomía hepática, y se extrajeron muestras transanales de ambos materiales de resección. No se encontró ningún problema relacionado con la recidiva o el procedimiento en el seguimiento a los 14 meses, y su puntaje estético se determinó como 9/10. La extracción transanal de muestras puede ser un método viable para pacientes con cáncer de colon izquierdo con metástasis hepáticas. Esta técnica previene la incisión abdominal adicional. Hasta donde sabemos, esta es la primera muestra de hígado extraída a través del ano.

Palabras clave: Metastasectomy. NOSE. Colorrectal laparoscópico. Cirugía de orificio natural. Hepatectomía.

Correspondence:

*Ersin Gündoğan

Bulgurlu, Malatya Elazığ Yolu

10.KM No:44210

C.P. 44000, Battalgazi, Malatya, Turkey

E-mail: ersingundogan@hotmail.com

0009-7411/© 2020 Academia Mexicana de Cirugía. Published by Permanyer. This is an open access article under the terms of the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Date of reception: 11-01-2020

Date of acceptance: 16-04-2020

DOI: 10.24875/CIRU.20000031

Cir Cir. 2020;88(S1):120-123

Contents available at PubMed

www.cirugiaycirujanos.com

Introduction

Natural orifice surgery is a technique developed to reduce the length of abdominal wall incision and to minimize the related complications. Transanal route as a field of extraction is used for benign tumors and occasionally for small volume malign tumors, but transvaginal tract is frequently used for larger lesions¹. Isolated laparoscopic liver resection combined with transvaginal extraction has been reported before²; however, transanal removal of a liver specimen has not been reported in the literature yet.

In this case report, we aimed to present a case with combined laparoscopic resection and transanal specimen extraction.

Case

A 47-year-old woman presented with complaints of constipation. The patient had no additional disease and a history of the previous abdominal operation. Her body mass index was 31 kg/m^2 . On colonoscopy, a lumen narrowing ulcerated mass was detected in the sigmoid colon. A biopsy-proven adenocarcinoma was reported, and in computed tomography, a 5 cm metastasis was detected in liver segment 7. The patient was operated for combined laparoscopic resection.

Surgery was performed in the French position (legs abducted). Umbilical 12 mm trocar was placed with an open technique. Right lower abdominal and lumbar 12 mm trocars, left lower abdominal 5 mm trocars were placed. At first, mesocolon dissection was performed, and the inferior mesenteric artery was ligated, then sigmoid and descendent colons were released from the lateral abdominal wall. Splenic flexura was mobilized, rectosigmoid junction, and descendent colon were transected separately by 60 mm linear endoscopic staplers (Blue cartilage, Ethicon, US). After completing left colectomy, we started to transect the liver parenchyma leaving a safe surgical margin from the tumor using LigaSure 10 mm (Medtronic, US). Following both resections, the rectosigmoid stump was opened with endoscopic scissors, and the free abdominal colonic and liver specimens were taken out from anus by an ovarian clamp (Fig. 1). Descendent colonic stump was opened with scissors. The anvil of a circular stapler was inserted into the abdomen through the open rectal stump and placed in the proximal colonic axis.



Figure 1. Colon and liver specimen.

Rectal and descendent colonic stumps were re-closed with a 60 mm linear stapler. The colorectal anastomosis was accomplished by side-to-end fashion using a transanally placed circular stapler (Medtronic, US, 31 mm).

The duration of operation was 420 min, and the perioperative blood loss was 50 ml. The specimen size of the colon and liver was $21 \times 8 \times 0.6 \text{ cm}$ and $6.5 \times 5 \times 4 \text{ cm}$, respectively. In the post-operative period, on day 4, a toracoabdominal computed tomography was necessary for respiratory distress and fever. Left pleural effusion and perisplenic abscess were detected, and percutaneous drainage catheters were placed in both localizations. On the 8th day, the percutaneous catheters were removed, and the patient was discharged on the 21st day. The prolonged hospitalization was required for long-term antibiotic therapy that was advised by the infectious disease department. Histopathology was reported as stage 4a (T3N2aM1a), and the patient underwent six cycles of Folfox-6 chemotherapy program. No pathology was found in the follow-up of the patient on the 14th-month control, and her esthetic score was 9/10 (Fig. 2).

Discussion

With the latest developments in minimally invasive surgery, a number of methods have been developed



Figure 2. Postoperative patient's abdomen.

with minimal injury. Starting with single-port laparoscopic surgery, this process continued with natural orifice surgery (NOTES), which further minimizes the amount of incision. The purpose of these new approaches is to provide complete treatment by minimizing abdominal wall incision. By the way, it is aimed to provide faster patient recovery, better cosmesis, less pain, and reduction of complication rates due to incision (infections and hernia).

In this case, we did not use the bowel preparation, and we do not use routine bowel preparation in colorectal surgery. If the bowel preparation cannot be done by the patient appropriately, a semi-liquid feces make the intraoperative management much more complicated. From our view of point, the reason for the perisplenic abscess was a piece of ischemic omentum that was retained after the mobilization of the splenic flexura of the left colon. We had a previous similar case following colectomy who treated by re-laparoscopy and abscess drainage.

The natural openings used in abdominal surgery are transanal, transoral, and transvaginal routes. In a literature review on natural orifice colonic surgery, the extraction area of sigmoid colon resections was frequently transanal route (81%)³. The transvaginal route is used for malignant and large tumors, whereas the transanal route is only used for benign and small-sized malign colorectal pathologies. Transanal specimen extractions are generally limited to only colorectal pathologies, and

its exceptions are very rare. As far as we know, there was one report in the synchronous colon and gastric carcinoma resected laparoscopically, then both stomach and total colectomy materials were extracted through the anus⁴. All the laparoscopically resected specimens outside of colorectal resections had been extracted through the mouth or vagina. A small-sized liver specimen can be taken out of the abdomen by the transanal route. In larger liver resections, the transvaginal route can be more suitable due to the wider extraction orifice^{2,5}. Transanal liver extraction has not been found in the literature yet. Here, we preferred the transanal way for the extraction. Actually, transvaginal way is easier than the transanal route. In our colorectal natural orifice specimen extraction surgery (NOSES) program, the transanal route was always chosen as the first option, and when it failed, the transvaginal route was tried in female patients. If both failed, the specimen was judged as unsuitable for natural orifice specimen extraction (NOSE) and removed through an abdominal wall incision. The objective of this approach is to prevent an innocent area and using the transected organ for specimen extraction.

Combined resections may require more incision due to surgical procedures involving multiple abdominal quadrants, and the advantages of laparoscopy are more prominent in these surgical procedures. In addition, natural orifice surgery procedures, which further minimize the amount of incision, are expected to further reduce incision related complication rates.

A recently reported consensus report on colorectal NOSES surgery gives some suggestions on the T level of the colorectal cancers (T2-T3) but not the N or M stages of the tumors⁶. Therefore, this case not against the suggestion report in this manner. However, this case report pushes envelop in other means that are beyond the consensus report. Transanal and transvaginal routes were offered most appropriate for the patients with body mass index $< 30 \text{ kg/m}^2$ and $< 35 \text{ kg/m}^2$, respectively⁶. The body mass index of our patient was 31 kg/m^2 and we used the transanal NOSES. This is our preference and we believe that scarless surgery is a valuable option for the obese patients who had more wound-related complications than the normal weighted patients. Previously, we demonstrated that natural orifices can be used even for morbidly obese (44.2 kg/m^2) patients⁷.

With the reduction of the wound complication rates, hospital stay, pain score, analgesic requirement, and the consequent reduction in hospital costs are expected. In a meta-analysis comparing laparoscopic and

NOTES cholecystectomy, pain scores were significantly lower in the NOTES group, but there was no significant difference in the duration of hospitalization⁸. In a study comparing NOSE and conventional group in the right colon surgery, in addition to the pain scores, it was found that the hospital stays were lower and the esthetic scores were better in the NOSE group⁹. Due to the post-operative subphrenic abscess in our patient, there was no advantage of the length of stay and pain scores, but it was found that the esthetic score of the patient was quite high.

This is not a standard strategy for the treatment of colorectal cancers with liver metastasis and should become to the agenda in selected cases under a research program in experienced centers on NOSES. We have more than 100 cases of laparoscopic colorectal NOSES experience more than ten cases of laparoscopic liver resection with NOSES. We perform all these procedures under our NOSES research program, and we share our experiences with the international associations⁶.

Conclusions

The transanal pathway can be used as an extraction site for combined colon and small-sized liver specimens following laparoscopic resections.

Conflicts of interest

The authors declare that there are no conflicts of interest.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

References

1. Gundogan E, Aktas A, Kayaalp C, Gonultas F, Sumer F. Two cases of laparoscopic total colectomy with natural orifice specimen extraction and review of the literature. *Wideochir Inne Tech Maloinwazyjne*. 2017;12:291-6.
2. Ersan V, Kayaalp C, Aktas A, Gundogan E, Teomete U, Sumer F, et al. Transvaginal extraction of laparoscopic liver resection specimen. *Interv Med Appl Sci*. 2017;9:215-7.
3. Wolthuis AM, de Buck van Overstraeten A, D'Hoore A. Laparoscopic natural orifice specimen extraction-colectomy: a systematic review. *World J Gastroenterol*. 2014;20:12981-92.
4. Sumer F, Karakas S, Gundogan E, Sahin T, Kayaalp C. Totally laparoscopic resection and extraction of specimens via transanal route in synchronous colon and gastric cancer. *G Chir*. 2018;39:82-6.
5. Truong T, Arnaoutakis D, Awad ZT. Laparoscopic hybrid NOTES liver resection for metastatic colorectal cancer. *Surg Laparosc Endosc Percutan Tech*. 2012;22:5-7.
6. Guan X, Liu Z, Longo A, Cai JC, Chen WT, Chen LC, et al. International Alliance of NOSES. International consensus on natural orifice specimen extraction surgery (NOSES) for colorectal cancer. *Gastroenterol Rep*. 2019;7:24-31.
7. Sumer F, Kayaalp C, Karagul S. Laparoscopic gastrectomy and transvaginal specimen extraction in morbidly obese patient with gastric cancer. *J Gastric Cancer*. 2016;16:51-3.
8. Peng C, Ling Y, Ma C, Ma X, Fan W, Niu W, et al. Safety outcomes of notes cholecystectomy versus laparoscopic cholecystectomy: a systematic review and meta-analysis. *Surg Laparosc Endosc Percutan Tech*. 2016;26:347-53.
9. Park JS, Choi GS, Kim HJ, Park SY, Jun SH. Natural orifice specimen extraction versus conventional laparoscopically assisted right hemicolectomy. *Br J Surg*. 2011;98:710-5.