



Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Laparoscopic colectomy for persistent descending mesocolon in sigmoid colon cancer: A case report

Teppei Matsuo*, Koki Otsuka, Toshimoto Kimura, Mizunori Yaegashi, Kiyoharu Takashimizu, Yuichiro Hirata, Yuya Nakamura, Akira Sasaki

Department of Surgery, Iwate Medical University School of Medicine, 2-1-1 idaidori yahaba, Iwate 028-3695, Japan

ARTICLE INFO

Article history:

Received 18 November 2020

Received in revised form 7 December 2020

Accepted 10 December 2020

Available online 17 December 2020

Keywords:

Laparoscopic colectomy

Persistent descending mesocolon

Colon cancer

ABSTRACT

A 55-year-old-man underwent laparoscopic sigmoidectomy for sigmoid colon cancer. Preoperative barium enema showed a slightly medial displacement of the descending colon, and the sigmoid colon was quite long. The operative findings showed that the descending colon was not fused with the retroperitoneum and shifted to the midline and the left colon adhered to the small mesentery and right pelvic wall. Thus, a diagnosis of persistent descending mesocolon (PDM) was made. The left colon, sigmoid colon, and superior rectal arteries often branch radially from the inferior mesenteric artery. The sigmoid mesentery shortens, and the inferior mesenteric vein is often close to the marginal vessels. By understanding the anatomical feature of PDM and devising surgical techniques, laparoscopic sigmoidectomy for sigmoid colon cancer with PDM could be performed without compromising its curative effect and safety.

© 2020 The Authors. Published by Elsevier Ltd on behalf of IJS Publishing Group Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Persistent Descending Mesocolon (PDM) is a fixation disorder in which the descending colon does not adhere to the parietal peritoneum and the left colon adheres to the small intestinal mesentery and right pelvic wall (Fig. 1). The left and sigmoid colon arteries often branch radially. In addition, the sigmoid mesentery shortens, and the inferior mesenteric vein (IMV) is often close to the marginal vessels (Fig. 2). Understanding the anatomical characteristics of PDM and improving the existing surgical procedures are important to ensure a safe laparoscopic surgery for patients. The aim of this case report is to present tips and techniques in the surgical procedure for PDM. This work has been reported in accordance to the Surgical Case Report (SCARE) guidelines [1].

2. Case report

A 55-year-old-man with positive fecal occult-blood test results was diagnosed as having sigmoid colon cancer on colonoscopy. He visited the hospital on an independent walk for the purpose of detailed examination and surgery for sigmoid colon cancer. He

gave a history of hypertension with no other significant medical or surgical history. Abdominal examination was normal with no evidence of peritonitis, organomegaly or any localising tenderness. His height was 174.5 cm, body weight was 79.6 kg, and body mass index was 26.3 kg/m². A preoperative barium enema showed a slightly medial displacement of the descending colon (Fig. 3A). Preoperative enhanced computed tomography (CT) revealed the left colon artery (LCA), sigmoid colon artery (SCA), and superior rectal artery (SRA) branched radially from the inferior mesenteric artery (IMA; Fig. 3B). The preoperative clinical diagnosis was cT1 N0 M0 stage I (TNM classification, 8th edition). Laparoscopic sigmoidectomy with the double-stapling anastomosis technique was performed. The operative findings showed that the descending colon was not fused with the retroperitoneum and shifted to the midline and the left colon adhered to the small mesentery and right pelvic wall. The patient was diagnosed as having persistent descending mesocolon (PDM).

The surgical findings are shown in Video 1. The author has performed about 250 cases of laparoscopic surgery for colorectal cancer. The left colon adhered to the right pelvic wall, and the adhesion was dissected initially to prepare the place for the medial-to-lateral approach. The medial-to-lateral approach was started from the right side of the rectum with few adhesions. The adhesion between the left colon and the small mesentery was dissected after the correct adhesion exfoliation layer was confirmed and widely mobilized. As the LCA, SCA, and IRA branched quite radially from the peripheral side of the IMA, the root of the IMA was cut for lymph node dissection. IMV ligation was carefully performed not to damage the marginal vessels. The specimen was extracted

* Corresponding author at: Department of Surgery, Iwate Medical University School of Medicine, 2-1-1 idaidori yahaba, Iwate, 028-3695, Japan.

E-mail addresses: tematsuo@iwate-med.ac.jp (T. Matsuo), kokiotsu@iwate-med.ac.jp (K. Otsuka), toshikim@iwate-med.ac.jp (T. Kimura), myaegasi@iwate-med.ac.jp (M. Yaegashi), kiyo.clear14@me.com (K. Takashimizu), hirata@iwate-med.ac.jp (Y. Hirata), yuyan@iwate-med.ac.jp (Y. Nakamura), sakira@iwate-med.ac.jp (A. Sasaki).

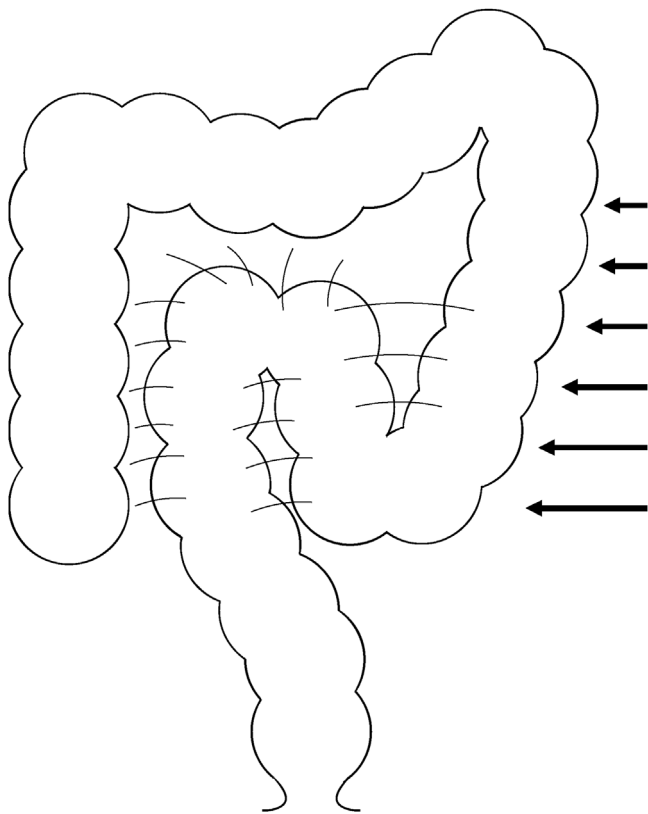


Fig. 1. Persistent descending mesocolon (PDM) is a fixation disorder in which the descending colon does not adhere to the parietal peritoneum and the left colon adheres to the small intestinal mesentery and the right pelvic wall.

through a small incision in the umbilical port and the LCA was dissected simultaneously. Then End-to-end anastomosis was performed intracorporeally using a double stapling technique with a circular stapler. The operation time was 176 min, and the bleeding volume was 6 mL. The patient passed without complications and was discharged on the postoperative 9 day. After discharge, tumor markers were performed every 3 months, CT was performed every 6 months, and colonoscopy was performed 12 months later. It has been 30 months after the operation without any late complications or recurrence.

3. Discussion

At the end of the 5-month fetal life, the ascending and descending mesenteries fuse with the mural peritoneum, becoming permanently fixed to the retroperitoneum. PDM has been reported as a fixation abnormality in which the descending mesentery does not fuse with the peritoneum on the sides of the dorsal and lateral walls [2]. Although some cases of PDM have been reported, most cases were mainly due to radiodiagnosis and have not received much attention in surgery. Reports regarding laparoscopic surgery for colorectal cancer in patients with PDM are rare. On the other hand, adhesions to the medial mesentery and pelvic wall of the displaced left colon, radial vascular bifurcation of the IMA, and shortening of the left mesentery have been reported to make surgery difficult [3,4]. Owing to the marked increase in laparoscopic surgery for colon cancer, colonic abnormalities such as PDM may be difficult for laparoscopic surgery. In this case, enema examination revealed a slight inward deviation of the descending colon, and contrast-enhanced CT examination confirmed the radial vascular bifurcation of the IMA. PDM was diagnosed because the intraoperative findings showed no fusion to the retroperitoneum of the descending colon. PDM has been reported to be observed in 2.3% (19/837) of laparoscopic surgery or robot-assisted laparoscopic surgery cases for left colorectal cancer [5]. From April 2017 to May 2018, the author performed laparoscopic-assisted sigmoid or high anterior resection for sigmoid colon and rectal cancers (RS) in 22 cases. Four cases (18.2%) had PDM. The author seems to have experienced a relatively large number of PDM cases in a short period. On the basis of this case and the experience at our facility so far, we will describe the key points in surgery for PDM cases. In some cases, the surgery progresses without a diagnosis of PDM before and during surgery. Appropriate surgery cannot be performed without understanding the fixation disorder of the left colonic mesentery, radial vascular bifurcation of the IMA, and shortening of the left mesentery, which are the characteristics of PDM. Preoperative examination is not useful for the diagnosis of adhesions or shortening of the left mesentery, but preoperative and intraoperative suspicion is the first step toward proper surgery. Adhesions of the left colon to the mesentery and pelvic wall are widespread and require some ingenuity for complete mesocolic excision. If performing adhesion detachment of PDM, the mesentery is easily damaged. Starting the medial-to-lateral approach from the right side of the rectum with less adhesion, activating the dorsal side sufficiently widely, and then performing adhesion detachment of PDM will prevent mesenteric damage. As the pro-

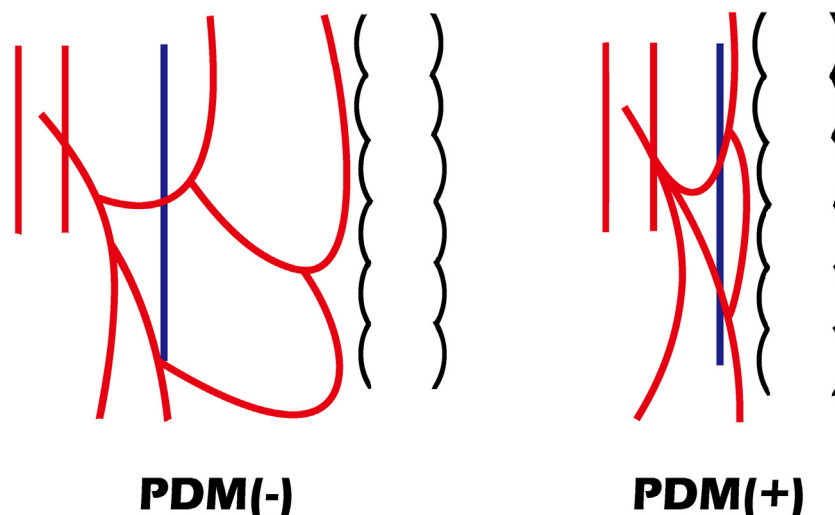


Fig. 2. The left colon artery and the sigmoid colon artery often branch radially. Also, the sigmoid mesentery shortens and the IMV is often close to the marginal vessels.

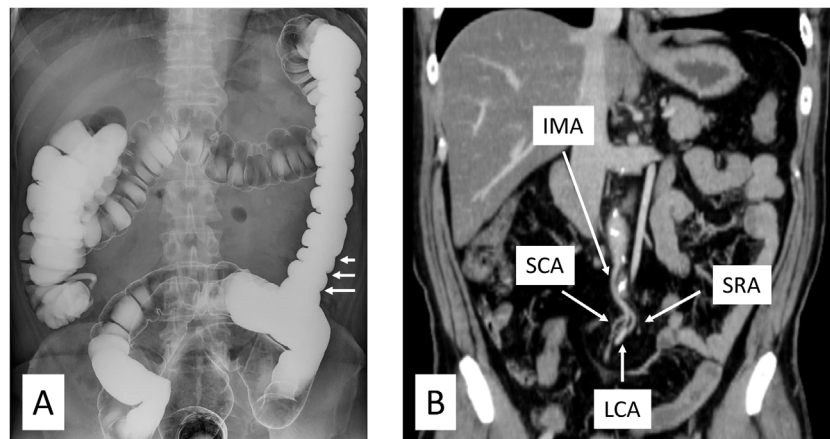


Fig. 3. A. The descending colon shows a slightly medial displacement. B. The white arrows in the enhanced computed tomography image indicate the left colon artery (LCA), sigmoid colon artery (SCA), and superior rectal artery (SRA) branching radially from the IMA.

cedure is complicated owing to the radial branching of the IMA, all PDM cases are dissected at the root of the IMA. Therefore, preservation of marginal arteries is important. LCA and IMV are often in close proximity to the marginal artery because of the shortening of the mesentery, and dissection of the LCA and IMV should be performed with caution. Therefore, dissection under direct vision should be considered except for dissection of the IMA root. In this case, laparoscopic surgery could be safely performed owing to the preoperative diagnosis of PDM, understanding of the intraoperative anatomy, sufficient mobilization and adhesion dissection, and careful vascular cutting.

4. Conclusion

By understanding the anatomical feature of PDM and devising surgical techniques, laparoscopic surgery for left-sided colorectal cancer could be performed without compromising its curative and safety.

Declaration of competing interest

None.

Funding

None.

Ethical approval

Ethical approval has been exempted by Clinical Research Ethics Committee of Iwate Medical University.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal upon request.

Author contribution

TM and KO conceived the case presentation and drafted the manuscript.

MY, YN and HY participated in the design of the case presentation.

TK and KT took care of the management of the patient.

AS read and approved the final manuscript.

Registration of Research Studies

Not applicable.

Guarantor

Koki Otsuka.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at <https://doi.org/10.1016/j.ijscr.2020.12.036>.

References

- [1] R.A. Agha, M.R. Borrelli, R. Farwana, K. Koshy, A. Fowler, D.P. Orgill, For the SCARE Group, The SCARE 2018 statement: updating consensus surgical Case Report (SCARE) guidelines, *Int. J. Surg.* 60 (2018) 132–136.
- [2] E.J. Balthazar, Congenital positional anomalies of the colon: radiographic diagnosis and clinical implications. II. Abnormalities of fixation, *Gastrointest. Radiol.* 2 (1) (1977) 49–56.
- [3] Y. Hiyoshi, Y. Miyamoto, K. Eto, et al., Laparoscopic surgery for colorectal cancer with persistent descending mesocolon, *World J. Surg. Oncol.* 17 (1) (2019) 190.
- [4] A. Tsuruta, A. Kawai, Y. Oka, et al., Laparoscopic right hemicolectomy for ascending colon cancer with persistent mesocolon, *World J. Gastroenterol.* 20 (18) (2014) 5557–5560.
- [5] M. Hanaoka, H. Hino, A. Shiomi, et al., Minimally invasive surgery for colorectal cancer with persistent descending mesocolon: radiological findings and short-term outcomes, *Surg. Endosc.* (2020).

Open Access

This article is published Open Access at [sciencedirect.com](https://www.sciencedirect.com). It is distributed under the [IJSCR Supplemental terms and conditions](#), which permits unrestricted non commercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.