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Single-incision laparoscopic appendectomy for treating appendicitis in a patient with gastrointestinal malrotation



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ABSTRACT

INTRODUCTION: Intestinal malrotation is a rare congenital anomaly, and acute appendicitis associated with intestinal malrotation is extremely rare.

PRESENTATION OF CASE We report a rare case of a 47-year-old Japanese woman diagnosed with barium-related perforated appendicitis associated with intestinal malrotation. We used a transumbilical single-incision laparoscopic approach to resect the appendix, and the procedure was completed successfully without perioperative complications.

DISCUSSION: To our knowledge, single-incision laparoscopic surgery for appendicitis associated with intestinal malrotation has not been reported yet. In cases with mobile cecum such as this one, mobilization from inflammatory adhesion of the surrounding structures is easy.

CONCLUSION: We conclude that transumbilical single-incision laparoscopic appendectomy is a simple and less invasive method for treating appendicitis associated with intestinal malrotation.

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1. Introduction

Intestinal malrotation is a rare congenital anomaly, and the classification of this abnormality includes various subtypes based on the stage of midgut rotation.¹ However, from a practical viewpoint, we found it useful to apply a simplified categorization, including nonrotation, incomplete rotation, and reverse rotation. Most cases of malrotation are discovered in childhood, and the diagnosis is mostly incidental in adults.² Further, in cases with indefinite symptoms, it is sometimes difficult to diagnose this pathology correctly.

Acute appendicitis is one of the most common conditions requiring emergency surgery. However, acute appendicitis associated with intestinal malrotation is extremely rare. Some case reports and reviews³ have referred to atypical symptoms such as left lower quadrant pain⁴ and ileus.⁵

The treatment for this condition is appendectomy. In recent years, laparoscopic appendectomy has gained popularity, but there are limited reports of single-incision appendectomies. Herein, we report a case of a patient with intestinal malrotation who

presented with appendicitis, which we treated by a transumbilical single-incision laparoscopic appendectomy approach.

2. Case report

A 47-year-old woman with a 2-day history of epigastric pain was admitted to a local hospital. She had undergone double-contrast barium examination of her stomach 1 month earlier as a periodic checkup for gastric cancer. She had been using analgesic drugs for the treatment of colitis-like symptoms. Her symptoms did not improve, and she was transferred to the emergency department of our institution. The patient presented pain associated with nausea, low-grade fever (37.6 °C), and several episodes of vomiting. On physical examination, she had pain and defense on deep palpation of the periumbilical and lower abdominal regions. Laboratory tests showed an elevated WBC count (10,100/μL with 90% neutrophils) and a C-reactive protein level of 9.42 mg/dL with normal liver and renal function tests. A plain abdominal radiograph showed a radiopaque area in the center of the lower abdomen (Fig. 1).

Computed tomography (CT) with IV enhancement showed intestinal nonrotation findings, including right-sided small intestines, left-sided colon, and a midline-positioned appendix with barium retention near the cecum (Fig. 2). Nonrotation-type intestinal malrotation with ruptured appendicitis was diagnosed based on these findings. Usually, we performed a conventional three-port technique for standard laparoscopic appendectomy

Abbreviations: WBC, white blood cell; CT, computed tomography.

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Fig. 1. Radiograph examination. Radiopaque objects in the middle lower abdomen (arrowhead).

to facilitate the separation of the inflammatory adhesions of the appendix and mobilization of the ileocecal region. The appendix was dissected extracorporeally. However, we selected a single-incisional laparoscopic approach owing to the preoperative diagnosis of intestinal malrotation and because this approach required less ileocecal mobilization. The patient was transferred to the operating room for single-incisional laparoscopic appendectomy. For the single-incision laparoscopic surgery technique, the anesthetized patient was placed in the standard supine, crucifix, reverse-Trendelenburg position, with the surgeon on the patient's right side. A 2-cm vertical transumbilical incision was made, and an E•Z Access device designed exclusively for use with the LAP PROTECTOR™ mini-type (Hakko Co. Ltd., Tokyo, Japan) was used.⁶ A 10-mm 30° endoscope (Olympus, Tokyo, Japan) was used for intra-abdominal visualization. Another two 5-mm trocars were inserted through the umbilicus. We did not find a Ladd's band or any other GI malformation. After aspiration of dirty ascitic fluid, the appendix was detected behind the uterus. Blunt dissection was performed easily. Subsequently, the appendix was exteriorized and resected extracorporeally. Sufficient peritoneal lavage and drainage catheter insertion were also performed (Fig. 3). We did not perform any surgical intervention, such as Ladd's procedure, to address the malrotation. Pathological examination confirmed the diagnosis of barium appendicitis with perforation (Fig. 4). The patient was discharged 7 days later without any complications.



Fig. 2. Computed tomography and reconstituted imaging. (a) Radiopaque objects in the deep pelvis (arrowhead). (b) Right-sided small intestines and left-sided colon. (c) Appendix (arrowhead) and cecum (arrow).

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