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A case of an omphalomesenteric duct remnant in an adult treated with laparoscopic surgery

Keisuke Morita^a, Yoshio Haga^a, Nobutomo Miyanari^a, Hiroshi Sawayama^a, Katsutaka Matsumoto^a, Takao Mizumoto^a, Tatsuo Kubota^a, Hideo Baba^{b,*}

^a Department of Surgery, National Hospital Organization Kumamoto Medical Center, 1-5 Ninomaru, Kumamoto 860-0008, Japan

^b Department of Gastroenterological Surgery, Graduate School of Medical Sciences, Kumamoto University, 1-1-1 Honjo, Kumamoto 860-8556, Japan

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ABSTRACT

INTRODUCTION: The presence of an omphalomesenteric duct (OMD) remnant is a rare condition that typically affects the pediatric population. This report describes an extremely rare case of an OMD remnant that was diagnosed and resected by laparoscopic surgery in an adult.

PRESENTATION OF CASE: A 52-year-old man underwent a medical examination at our hospital for right lower quadrant pain. Laboratory findings showed slight leukocytosis and an elevated C-reactive protein level. A luminal structure connected to the umbilicus was detected in the right pelvic wall by abdominal computed tomography, and an OMD remnant was suspected. Laparoscopic surgery was performed by inserting three trocars into the left side of the abdomen; no trocars were inserted near the umbilicus. This procedure provided both a good field of view around the umbilicus and adequate working space. We definitively diagnosed the structure as an OMD remnant and resected it with minimal invasion. The patient was discharged on postoperative day 7 without complications. Pathologic analysis found the lumen is covered by ileum-like mucosa, and a microabscess is formed in the surrounding fat tissue.

DISCUSSION: OMD remnants are uncommon, and their diagnosis is difficult. Most reports advocate for prompt surgical resection in symptomatic patients.

CONCLUSION: In the present case, definitive diagnosis and treatment were accomplished with minimally invasive laparoscopic surgery.

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1. Introduction

The presence of an omphalomesenteric duct (OMD) remnant is a rare condition that typically affects the pediatric population [1–3]. The most common type of OMD remnant is Meckel's diverticulum. Although a few reports have described the treatment of Meckel's diverticulum by laparoscopic surgery [4–6], reports on OMD remnants treated by laparoscopic surgery are extremely rare.

OMD remnants are usually asymptomatic, but they may induce various complications or symptoms such as intestinal obstruction, abdominal pain, melena, and umbilical hernia. Surgery is often required in such cases, but a preoperative diagnosis may be difficult. We herein describe an extremely rare case of an OMD remnant in an adult. Both the diagnosis and resection were achieved by laparoscopic surgery. Our experience suggests that laparoscopic surgery is a good option for patients with complicated OMD remnants.

2. Case presentation

A 52-year-old man was referred to our hospital in August 2012 for evaluation of right lower quadrant pain, fever, and nausea. Physical examination revealed tenderness in the right lower abdominal quadrant. The patient had a history of interstitial pneumonia, dermatomyositis, scleroderma, and laparoscopic cholecystectomy. The patient also had paralysis of lower extremities due to thoracic spinal cord injury suffered from a past traffic accident. Laboratory findings showed slight leukocytosis (10,100/ μ l) and an elevated C-reactive protein level (3.84 mg/dl). Abdominal computed tomography demonstrated a luminal structure connected to the umbilicus in the right pelvic wall (Fig. 1). The soft tissue density around this structure was increased. Based on these findings, an OMD remnant with inflammation was suspected. We first selected conservative therapy using antibiotic drugs, and the patient's symptoms and inflammation improved. However, we were concerned that the OMD remnant may cause recurrence of the inflammation and an intestinal obstruction in the future; therefore, we performed laparoscopic surgery to achieve a definitive diagnosis and perform resection.

* Corresponding author. Tel.: +81 96 373 5587; fax: +81 96 373 4378.
E-mail address: hdobaba@kumamoto-u.ac.jp (H. Baba).

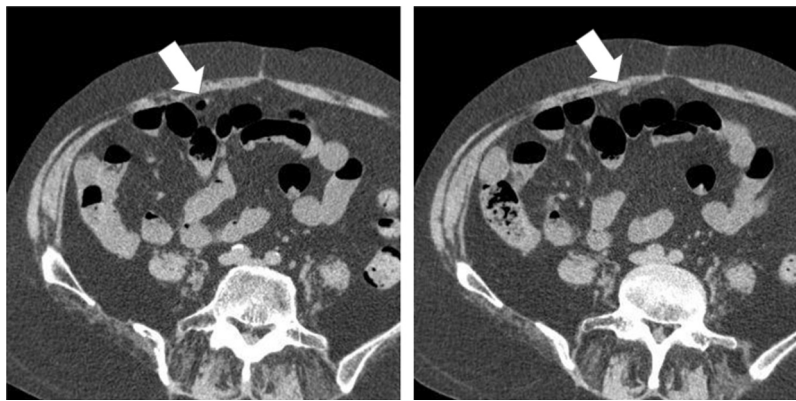


Fig. 1. Luminal structure connected to the umbilicus, suspected to be an OMD remnant with inflammation (arrow) in the right pelvic wall on an axial computed tomography scan. The density of soft tissue around this structure was increased.

First, we inserted a 5-mm trocar into the left middle segment. The abdomen was insufflated to a pressure of 12 mm Hg, and two additional 5-mm trocars were placed in the left upper and lower quadrants. A ductal structure was found between the distal ileum and the umbilicus. The structure was connected on the antimesenteric side of the ileum, 50 cm proximal to the ileocecal valve (Fig. 2). Exploration of the right iliac fossa revealed a normal appendix. Accordingly, we diagnosed the lesion as an OMD remnant with inflammation. The OMD remnant was dissected, and ligation was performed on the intestinal tract side using an ENDO GIA. The umbilical side was ligated using a surgical clip. The patient experienced no complications after surgery and discharged on the seventh postoperative day. The length of hospital stay was prolonged due to paralysis of lower extremities.

Pathologic analysis found the lumen is covered by ileum-like mucosa, and a microabscess is formed in the surrounding fat tissue.

3. Discussion

OMD remnants are congenital anomalies associated with the primitive yolk stalk, which persists in approximately 2% of the population and with a higher incidence in male patients [1–3]. The OMD is the embryonic structure connecting the primary yolk sac to the embryonic midgut, which normally closes completely by week

8 or 9 of gestation [7]. Failure of such closure may result in various lesions: Meckel's diverticulum, umbilicoileal fistula, umbilical sinus, umbilical cyst, umbilical mucosal polyp, or a fibrous cord connecting the ileum to the umbilicus [8]. Meckel's diverticulum is the most common OMD anomaly.

Patients with an OMD remnant usually have no symptoms, but OMD remnants occasionally cause complications. Common symptoms are abdominal pain, rectal bleeding, intestinal obstruction, umbilical drainage, and umbilical hernia. The appearance of these symptoms is age-dependent [7–9]. Most of these symptoms appear before the age of 4 years, and 40% of children with this anomaly reportedly have symptoms [7]; however, OMD remnants are usually asymptomatic in adults. Surgical resection is necessary for symptomatic OMD remnants, but is not necessary for asymptomatic OMD remnants [10].

In the present case, the presence of an OMD remnant was suspected from the physical and imaging examination findings. We were concerned that the OMD remnant may lead to repeated inflammation or an intestinal obstruction in the future. Laparoscopic surgery provided both a definitive diagnosis of an OMD remnant and curative treatment by resection with minimal invasion. Insertion of trocars into the left abdomen while avoiding insertion of any trocars near the umbilicus, made it possible to peel off the adhesions around the umbilicus caused by both the OMD-associated inflammation and previous laparoscopic cholecystectomy. The use of a 5-mm flexible scope also facilitated observation of the abdominal wall when peeling the adhesions around the umbilicus. Importantly, this procedure provided both a good field of view around the umbilicus and an adequate working space in which to resect the OMD remnant.

In conclusion, we have described an extremely rare case of an OMD remnant safely resected by laparoscopic surgery in an adult patient. The preoperative diagnosis of OMD is sometimes difficult. Therefore, when an OMD remnant is suspected, the minimally invasive laparoscopic surgery technique described here may be useful for both diagnosis and treatment.

Conflicts of interest

The authors declare that they have no conflicts of interest. Authors are Keisuke Morita, Yoshio Haga, Nobutomo Miyanari, Hiroshi Sawayama, Katsutaka Matsumoto, Takao Mizumoto, Tatsuo Kubota and Hideo Baba.

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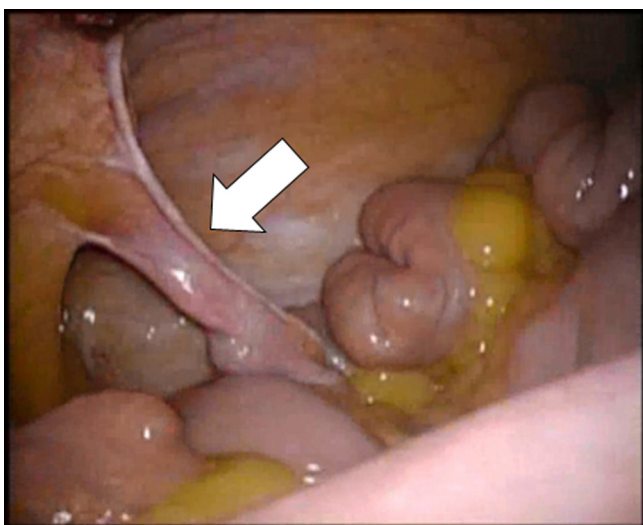


Fig. 2. Ligamentum-like structure (arrow) identified between the distal ileum and the umbilicus. The structure was connected to the ileum on the antimesenteric side of the ileum, 50 cm proximal to the ileocecal valve.

Consent

This paper is a case report. Written informed consent was obtained from the patient.

Author contribution

Keisuke Morita contributed acquisition of clinical data, drafting of the manuscript. Yoshio Haga contributed critical revision of the manuscript. Nobutomo Miyanari contributed surgical procedures of this case report. Hiroshi Sawayama contributed acquisition of data, drafting of the manuscript. Katsutaka Matsumoto contributed surgical procedures of this case report. Takao Mizumoto contributed critical revision of the manuscript. Tatsuo Kubota contributed critical revision of the manuscript. Hideo Baba contributed study supervision.

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