

Abdominal Cellulitis following a Laparoscopic Procedure: A Rare and Severe Complication

Arnaud Bonnard¹ Jean Baptiste Terrasa¹ Jerome Viala² Sophie Aizenfisz³ Dominique Berrebi⁴
Alaa El Ghoneimi¹

¹ Department of General Pediatric Surgery, Robert Debré Hospital, Paris, France

² Department of Pediatric Gastroenterology, Robert Debré Hospital, Paris, France

³ Department of Pediatric Intensive Care Unit, Robert Debré Hospital, Paris, France

⁴ Department of Pediatric Pathology, Robert Debré Hospital, Paris, France

Address for correspondence Arnaud Bonnard, Department of General Pediatric Surgery, Robert Debré Children University Hospital, 48 Boulevard Serurier, Paris 75019, France
(e-mail: arnaud.bonnard@rdb.aphp.fr).

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Abstract

Advantages of laparoscopic approach in Hirschsprung disease have been already published decreasing the hospital stay and postoperative adhesions. To our knowledge, we report the first case of postoperative abdominal cellulitis after laparoscopic procedure. A laparoscopic Duhamel pull through was done on a 3-month-old child. Full-thickness biopsy under laparoscopy was performed with intraperitoneal inoculation. Large peritoneal irrigation was used. Abdominal necrotizing cellulitis starting from a port site occurred few days after the procedure requiring repeat surgical excision, broad spectrum antibiotics, and hyperbaric oxygen.

Keywords

- ▶ laparoscopic
- ▶ abdominal cellulitis
- ▶ Hirschsprung

Introduction

Several studies are available on laparoscopic Duhamel pull through for Hirschsprung disease.^{1–3} Advantages of laparoscopic approach have been already published decreasing the hospital stay and postoperative adhesions. For a clear reason, complications related to a surgical technique are not reported in literature. Regarding the laparoscopic approach for Duhamel pull through, the longer operative time may be responsible for increasing the infection risk. To our knowledge, we report the first case of postoperative abdominal cellulitis after laparoscopic Duhamel pull through.

Clinical Case

A full-term baby girl presenting at 2 days of age with abdominal distension, tenderness, fever, and severe sepsis was took to the operative room with a preoperative diagnosis of small bowel volvulus. The operative findings were consis-

tent with Hirschsprung disease (HD) showing a left transverse transition zone. Fresh frozen section was done confirming the diagnosis and a stoma diversion was performed just above the transition zone. Postoperative course was uneventful. Characteristics clinical findings of Mowat–Wilson syndrome with typical facial features (square-shaped face, prominent and narrow triangular chin, hypertelorism, large eyes, broad nasal bridge, posteriorly rotated ears, and large uplifted ear lobes with central depression) were associated and confirmed by genetic analysis. She was discharged home at day postoperative 27 (DPO).

Three months later, she was booked for a definitive treatment of HD and a laparoscopic Duhamel pull through as previously described.¹ Preoperative preparation of the colon was not performed. Prophylactic antibiotics as per protocol were used (amoxicillin, metronidazole, and gentamicin). To confirm the length of colon involved, a fresh frozen section was done on the left colon just beyond the splenic flexure. This was performed under laparoscopic visualization

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Fig. 1 Abdominal necrotizing cellulitis at day postoperative 6 after drainage and surgical incision.

doing a full-thickness biopsy. During this procedure, a leak of intestinal contents occurred with peritoneal septic inoculation and the biopsy site was then closed. A large peritoneal irrigation was then realized. Total operative time was 240 minutes. She received a postoperative antibiotics treatment during 48 hours.

At DPO 3, the patient developed a left flank abdominal cellulitis with purulent fluid coming from a left port incision, high fever and clinical signs of sepsis shock requiring an admission in the intensive care unit. Broad-spectrum antibiotics were started. Microbiology analysis showed an enterobacter consistent with an abdominal inoculation by intestinal flora. Appropriate antibiotics were used. Despite the treatment, extension of abdominal cellulitis occurred requiring repeated surgical debridement and hyperbaric oxygen (→Fig. 1). At DPO 21, the infection was controlled and the dress was changed daily in the operative room until complete recovery (→Fig. 2). Finally, a skin graft on the left flank was done 2 months later for a complete healing.



Fig. 2 Day postoperative 21.

Discussion

To our knowledge, abdominal necrotizing cellulitis starting from a port incision has never been previously published. Three causes may be responsible: intestinal fluid leak during the biopsy, the use of a large peritoneal irrigation that could have spread the fluid through the port incision, and the long operative time.

Many studies have already reported that colon and rectal surgery can be safely performed without preoperative mechanical bowel preparation.⁴ Thus, we do not really think that it could be responsible for the abdominal cellulitis. Because intestinal bacteria was involved in this complication suggesting a peritoneal inoculation during the full-thickness biopsy we think that doing it each time it is possible using an open approach is better. Umbilical incision has been reported as a validated option in this indication.⁵ This could be done also exteriorizing the bowel through the port incision. Otherwise, full-thickness biopsy can be done safely using a stapler as previously described by Mazziotti and Langer.⁶ Furthermore, it seems important to determine preoperatively in this kind of patient what could be the intestinal flora status performing microbiology analysis on fecal samples. Indeed, on patient who has been admitted in hospital for many days before and presenting with a stoma diversion (excluded bowel), bacteria flora is certainly modified and can present antibiotic resistance. This can permit to use prophylactic antibiotics during the surgery adapted to the patient's flora. In our patient, the use of antibiotics adapted to his own intestinal flora during and after the surgery might have limited the infection.

Furthermore, a large peritoneal irrigation associated with the long operative time is for sure risky and may probably result for a port site's inoculation. Actually, as is shown in case of perforated appendicitis,⁷ it is probably better not to use a large amount of fluid irrigating the peritoneal cavity as it could be responsible for production of greater bacterial contamination.

Finally, the operative time is certainly a crucial point. Time to conversion to open surgery is still left to the surgeon and remains controversial. The progression of the procedure is probably more important than time. Indeed, if a surgical procedure under laparoscopic approach is quite long but mostly not on going, it is probably time to convert to open approach. In this case, the previous surgery with postoperative adhesion, the Deloyer artifice used for pull through which is hard to do to preserve the vascularization of the right colon is certainly responsible for the long operative time. Furthermore, this is the part that has to be repeated many times to make the surgery faster and safer.

Conclusion

We report here a severe complication following a laparoscopic Duhamel pull through. Of this case, there are some laparoscopic surgical tricks we can learn: biopsy under direct vision each time it is possible or using a stapler device, the use of moderate peritoneal irrigation and only when it is necessary, the use of adapted prophylactic antibiotics based on

preoperative microbiology study on patient with medical history. Furthermore, time to conversion to open surgery remains debated and depending of the surgeon and is a part of learning curve.

Conflict of Interest

None.

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