



International Journal of Medical and Pharmaceutical Case Reports

11(2): 1-4, 2018; Article no.IJMPCR.41415
ISSN: 2394-109X, NLM ID: 101648033

Early Small Bowel Obstruction in a 9-Year Old Boy After Laparoscopy and Minilaparotomy Due to Traumatic Small Bowel Perforation

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

Article Information

DOI: 10.9734/IJMPCR/2018/41415

Editor(s):

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Complete Peer review History: <http://www.sciencedomain.org/review-history/24592>

Received 26th February 2018

Accepted 9th May 2018

Published 12th May 2018

Case Study

ABSTRACT

Intra-abdominal adhesions are common after abdominal surgery. They occur more frequently after conventional laparotomy, but they can also occur after laparoscopy and can cause mechanical small bowel obstruction. The reported incidence of adhesive small bowel obstruction in children depends on the type of surgery, but it is estimated to be in 1-6% of children following abdominal surgery. This paper presented a case of a 9-year-old boy, who developed an adhesive small bowel obstruction six weeks after abdominal surgery.

Keywords: laparoscopy; minilaparotomy; small bowel obstruction; intra-abdominal adhesions; emergency surgery.

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1. INTRODUCTION

Intra-abdominal adhesions are common after abdominal surgery. Usually, they are asymptomatic, but sometimes they can cause symptomatic small bowel obstruction (SBO), that requires surgical management. Adhesive small bowel obstruction (aSBO) is an important cause of postoperative morbidity in children, who underwent an abdominal surgery [1]. Laparoscopy usually produces less intra-abdominal adhesions, but still, surgeons must keep in mind, that adhesions can be the cause of SBO even after laparoscopy. Obstruction can occur anytime from the early postoperative period after the primary operation to many decades later. [2]. The reported incidence of aSBO varies considerably following different primary operations. Overall, aSBO is reported to occur in 1-6% of children following abdominal surgery [3]. Many experimental methods have been studied in an attempt to decrease post-operative adhesions because of their importance (intestinal obstruction and infertility). Adhesions may be diminished in five ways: First, the initial injury can be minimized. Second, the coagulation of exudate can be prevented. Third, prolonged contact of surfaces can be reduced. Fourth, fibrin can be removed after it is formed, and fifth, fibroblast proliferation can be stopped or slowed. Laparoscopic adhesiolysis would be more effective in preventing reformation of adhesions than adhesiolysis with laparotomy [4].

This paper presented a case of a 9-year-old boy, who developed an aSBO six weeks after laparoscopy and minilaparotomy due to traumatic small bowel perforation. The aSBO was successfully managed with emergency surgery.

2. CASE STUDY

A 9-year-old boy was referred to the pediatric emergency department (PED) due to abdominal pain and vomiting. Six weeks earlier he was operated due to traumatic small bowel perforation, which occurred after bicycle fall and blunt abdominal trauma. Then, laparoscopy was performed and later mini-laparotomy, the small bowel perforation was sewn, without bowel resection. The postoperative course was uneventful. After six weeks, the boy got crampy abdominal pain, he started to vomit and did not pass any stool. On clinical examination at the PED, the abdomen was distended and painful on palpation. The abdominal ultrasound (US) was performed, that showed dilated and a peristaltic

small bowel loops with a transition point between dilated and nondilated small bowel loops (Figure 1). According to that, we suspected on mechanical small intestinal obstruction. We decided for an emergency operation. Small median laparotomy and abdominal exploration were performed. There was a marked dilation of the jejunum and the ileum was not dilated. The transition point was between the jejunum and ileum. The cause of mechanical SBO was an adhesion. The bowel was vital, without signs of ischemia. Adhesiolysis was performed and the abdomen was closed with interrupted resorbable sutures, an abdominal drain was not inserted. The skin wound was closed with staples. The further postoperative course was uneventful.

3. DISCUSSION

Adhesions following abdominal surgery are a common cause of small bowel obstruction (SBO) in adults. There is less information available on aSBO in children; however, the available data suggest that from 1% to 9% of children will experience aSBO after abdominal surgery. All adhesions do not cause intestinal obstruction. One patient with extensive adhesions may be completely asymptomatic throughout his life while a single adhesion in another patient can lead to obstruction and strangulation of the bowel. Recurrent intestinal obstruction from adhesions presents a difficult problem [5,6,7]. Obstruction can occur from a few days to many years or decades after the primary operation. As aSBO can lead to morbidity and mortality, and has high associated socioeconomic costs, effective treatment is essential. Diagnosis of aSBO in children is based on history and physical exam combined with selective use of imaging studies. The most frequent symptoms include crampy abdominal pain, anorexia, emesis and obstipation. Late signs including lethargy, constant abdominal pain and distention are worrisome findings [2]. Treatment of aSBO can be operative with laparoscopic or open adhesiolysis or conservative with bowel rest, nasogastric suction and fluid resuscitation [5]. The role of conservative treatment is still debatable, but many studies have reported successful non-operative management of aSBO in children in up to 40% to 50% [8]. In general, there is a lack of consensus, or indeed available guidelines, on the management of aSBO in children. Initial conservative management can be attempted in children, who do not present with signs of bowel ischemia. In cases of high clinical suspicion on bowel ischemia, emergency surgery



Fig. 1. UZ image of SBO, showing dilated and with fluid filled small bowel loops (arrow)

must be employed. Clinical signs and symptoms, that are worrisome for bowel ischemia, are peritoneal signs on clinical exam, tachycardia, fever, laboratory studies indicating leukocytosis or lactic acidosis, and/or worrisome cross-sectional imaging. Computed tomography (CT) should be avoided in children because of high radiation. The diagnosis of SBO can usually be established based on history, physical and plain radiographs. The abdominal US can be helpful, as it can show dilated and peristaltic small bowel loops, and as it was in our case, the transition point between dilated and nondilated bowel [9]. Surgical treatment can be with conventional laparotomy or laparoscopy. Laparoscopic approach is safe in hands of an experienced laparoscopic surgeon and is associated with reduced morbidity and length of hospital stay. In addition to the management of acute bowel obstruction, elective laparoscopy may have a role for children with recurrent admissions for partial SBO or symptoms attributable to adhesions [10].

Prevention of adhesions can be divided into a series of technical measures that operators can and must put in place to try to minimize the mesothelial damage and possibly drug therapies that can be used. It is crucial to emphasize that the use of these measures, still subject to ongoing studies, do not obviously exclude a good surgical technique that represents the fundamental substrate for prevention [11].

In our case, abdominal US showed dilated small bowel loops with the transition point, that was

suspicious for a mechanical small bowel obstruction. The abdomen was distended and at that time, a skilled laparoscopic surgeon was not available, so we decided for laparotomy. The adhesiolysis was performed and the small bowel obstruction was successfully resolved. The postoperative course was uneventful.

4. CONCLUSION

Intra-abdominal adhesions are a predictable component after abdominal surgery. Adhesive small bowel obstruction is a common reason for hospital readmissions in children after abdominal surgery. Conservative treatment is a feasible option for children without signs of bowel ischemia and is successful in about 40% to 50%. The surgical procedure can be with laparotomy or laparoscopy. Laparoscopic adhesiolysis is a safe alternative to laparotomy in hands of an experienced laparoscopic surgeon. Good surgical technique is essential for prevention of postoperative adhesions.

CONSENT

As per international standard or university standard, parents of the patient written consent has been collected and preserved by the authors.

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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The peer review history for this paper can be accessed here:
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