



SUBACUTE INTESTINAL OBSTRUCTION DUE TO EVISCERATION OF APPENDIX IN ABDOMINAL DRAIN – A RARE CASE SCENARIO

Paediatric Surgery

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ABSTRACT

Introduction: The prophylactic application of abdominal drains remains a debated topic. Though it has advantages of prevention of fluid accumulation, drain related complications has created a cause of concern amongst the surgeons. A rare complication of evisceration of abdominal organs has been noted following abdominal surgery. **Case:** We present a case of subacute intestinal obstruction due to evisceration of appendix in abdominal drain in previously operated paediatric patient. Management included intraoperative drain removal, adhesiolysis with appendectomy. **Conclusion:** In order to prevent drain-related complications, the prudent use of abdominal drains in children is essential.

KEYWORDS

Abdominal drains, evisceration of organs, intestinal obstruction, appendectomy

INTRODUCTION

Over the past few decades, surgeons have actively studied the role of drains following gastrointestinal surgery. Postoperative drainage serves both therapeutic and preventive purposes. The main objectives of prophylactic drains are to eliminate intraperitoneal fluids such as blood, ascites, and intestinal contents, as well as to identify early complications like postoperative haemorrhage or anastomotic leakage. Nonetheless, the use of drains can lead to a variety of complications, including foreign body reactions, mechanical failures, physiological problems (such as pain, surgical emphysema, pneumoperitoneum), and insufficient drainage [1,2]. There have also been previous reports of organs such as the omentum, gallbladder, vermiform appendix, and small intestine being eviscerated through a drain site [3-6]. However, evisceration of different organs through the drain site is observed in adults, but it occurs rarely in children [7].

CASE REPORT

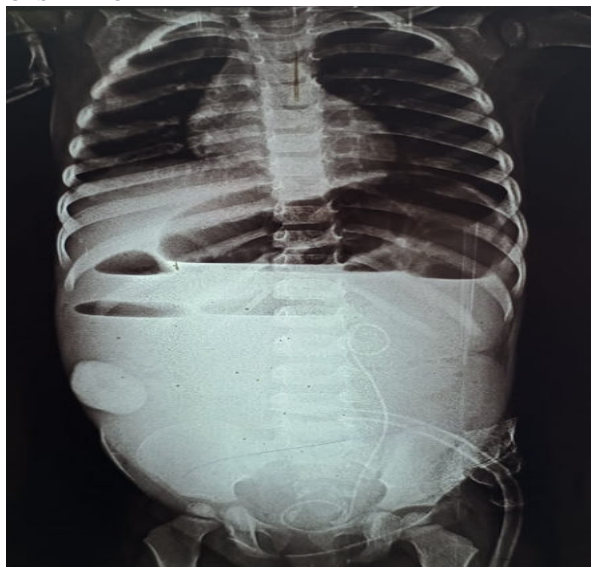


Figure 1 - X-ray findings suggestive of intestinal obstruction.

A 2-year-old girl presented with abdominal fullness for 2 weeks. She was a known case of Hirschsprung disease for which she underwent primary Modified Duhamel Procedure. In post op period, she had persistent constipation. Per rectal dye study done showed narrowing of a of a distal colon segment. Laparoscopy done thereafter suggested left

sided massive hydronephrosis due to left vesicoureteric junction obstruction causing a compression effect on the colon. She underwent left ureteric reimplant with intra-operative placement of a 20F ADK. On post-operative day 4, she developed features of intestinal obstruction. She was referred to our centre where, the patient underwent X-ray which revealed signs of intestinal obstruction [Figure 1] and after optimization, exploratory laparotomy revealed appendix sucked up in the previously placed drain and forming band obstruction over distal ileum with distended proximal loop & distal bowel collapse [Figure 2]. The drain was removed and adhesiolysis with appendectomy was performed. Post-operative period was uneventful and patient tolerated feeds on post-operative day 5. The patient recovered well and was discharged on post-operative day 7 in stable condition. The HPE of appendix showed transmural inflammation with areas of necrosis and extensive mucosal ulceration.



Figure 2 - An intra-operative photograph of evisceration of appendix in the abdominal drain.

DISCUSSION

The necessity of using drains has long been a topic of ongoing discussion in surgical practice. The history of drains dates back to the Hippocratic era, during which there were significant efforts to drain pus from chest empyema and to manage ascites associated with liver disease [8]. In 1891, Hunter Robb at Johns Hopkins Hospital conducted the first major bacterial study on drains, a time when glass rods were widely used. He also highlighted various complications

associated with drains, including evisceration [9].

The complications that may arise from the use of drains include infections at the drain site, mechanical bowel obstruction, erosion of nearby tissues, and, in rare instances, evisceration of intra-abdominal organs [10]. Although evisceration of organs at the drain site is uncommon, it can happen from time to time. This condition can lead to the herniation of various organs, including the intestine, appendix, omentum, gallbladder, and fallopian tube at the surgical drain site [5,6,11,12]. Most reports indicate that evisceration typically occurs between 3 to 8 hours after drain removal, although some cases have been documented up to 24 to 48 hours later [12,13]. A case by Falidas et al. noted evisceration occurring 15 hours after drain removal [14]. In our case, however, it was discovered intraoperatively during management of subacute intestinal obstruction that appendix was herniated in the drain tube leading to the problem.

The precise mechanism underlying evisceration is not yet completely understood, however, factors that contribute to risk such as drain size, the technique used for drain placement, and the presence of postoperative complications [15]. In adult patients, it is often postulated to several predisposing factors such as recurrent increases in intra-abdominal pressure from activities like coughing or straining, prolonged surgical procedures, inadequate nutrition, wound infections, obesity, and corticosteroid use [16]. Some surgeons noted that complications are more likely to occur with stab incisions for drains that have an external diameter greater than 1 cm. As oppose to this, Matthews et al. reported a case of small bowel evisceration occurring through a 5mm port site that had been utilized for drain placement [11]. Evisceration has also been recorded with smaller drains (6 mm), indicating that drain size is not the sole contributing factor, even though most cases have involved drains sized 10 mm or larger [14]. Hence, the nature of the tract plays a vital role than size.

In children, such drain complications are rarely reported, possibly due to less frequent use of drains or the smaller caliber of the drains used. In our case, although the drain was 20 F in size, the appendix was lodged in the end hole of the drain, resulting in obstruction [15].

Drains should be removed once drainage has ceased. To avoid the risk of evisceration, it is essential to discontinue any negative suction on the drain before its removal. Furthermore, the drain should be rotated a full 360° to help break any adhesions that may have developed between the tube and the surrounding viscera prior to its extraction. [12]. Making a purse-string for closure of the defect after removal of the drain can prevent the risk of evisceration. [17].

Additionally, utilizing smaller-bore drainage systems can help reduce the risk of complications. When making a stab incision for drain insertion, it is important to do so at an angle and avoid reaching the peritoneum, allowing for proper stretching as the drain is placed [15].

Evisceration in the drain and/or at the drain site demands urgent intervention. Treatment options for evisceration of vermiform appendix ranges from repositioning the appendix back into the abdominal cavity to performing an appendectomy as illustrated in the current case. A case study by Bhagnu et al. noted a potential strategy to reduce the risk of postoperative evisceration of the appendix at the drain site is by performing an incidental appendectomy [4].

CONCLUSION

While complications such as evisceration of organs from drains are uncommon in children, their use should be minimized. It is advisable to ensure careful insertion and conduct regular inspections both after surgery and following drain removal. In cases where use of drains is imperative, it is important to use smaller sizes, limit the number of side holes, and focus on early drain removal as these openings can pose a risk for tissue entanglement and evisceration of intra-abdominal organs in pediatric patients. Management of evisceration of organs involves bedside reduction if the tissue is viable; otherwise, exploratory laparotomy may be performed, as described in our case.

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