Abdominal Drain-Associated Early Postoperative Small Bowel Obstruction

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ABSTRACT

Early postoperative small bowel obstruction (EPSBO) is a distinct clinical entity, occurring in about 9.5% cases. There is a wide range of causative factors and abdominal drains are a very rare cause of this condition. Due to its rarity, we report a successful management of EPSBO due to an abdominal drain in a 62-year-old gentleman.

Keywords: Early postoperative small bowel obstruction; EPSBO; Drain; Re-exploration; Enhanced recovery after surgery; ERAS

INTRODUCTION

Drains and tubes are widely used in surgical practice. While drains are useful, these can produce a wide range of complications and hence need to be used judiciously [1]. Early postoperative small bowel obstruction (EPSBO) caused by drains is rarely reported in literature. We present one such case, where a silicone suction drain mechanically obstructed the small gut of a 62-year-old male and needed re-laparotomy for successful management.

CASE REPORT

A 62-year-old gentleman had undergone transurethral resection of invasive bladder tumor of the dome of urinary bladder. The procedure was complicated by intraperitoneal rupture of the bladder that was repaired through a suprapubic transverse incision. An 18 Fr soft polyvinyl chloride negative suction (low suction, continuous) drain was left in the pelvis in view of the bladder injury. On second postoperative day, patient developed abdominal pain and vomiting. Clinical examination revealed distended abdomen, infra-umbilical tenderness on deep palpation and increased bowel sounds. Complete blood count and serum chemistry including electrolytes were normal. Early postoperative small bowel obstruction (EPSBO) was suspected and confirmed with imaging. Plain radiograph of abdomen (Figure 1) showed dilated small intestinal loops with multiple air-fluid levels. CT scan of abdomen and pelvis (Figure 2) revealed dilatation of the proximal small bowel loops up to 4.4cm with a transition zone seen at the mid small bowel loops adjacent to the drain. Small bowel loops as well as the large bowel distal to that transition zone were collapsed.

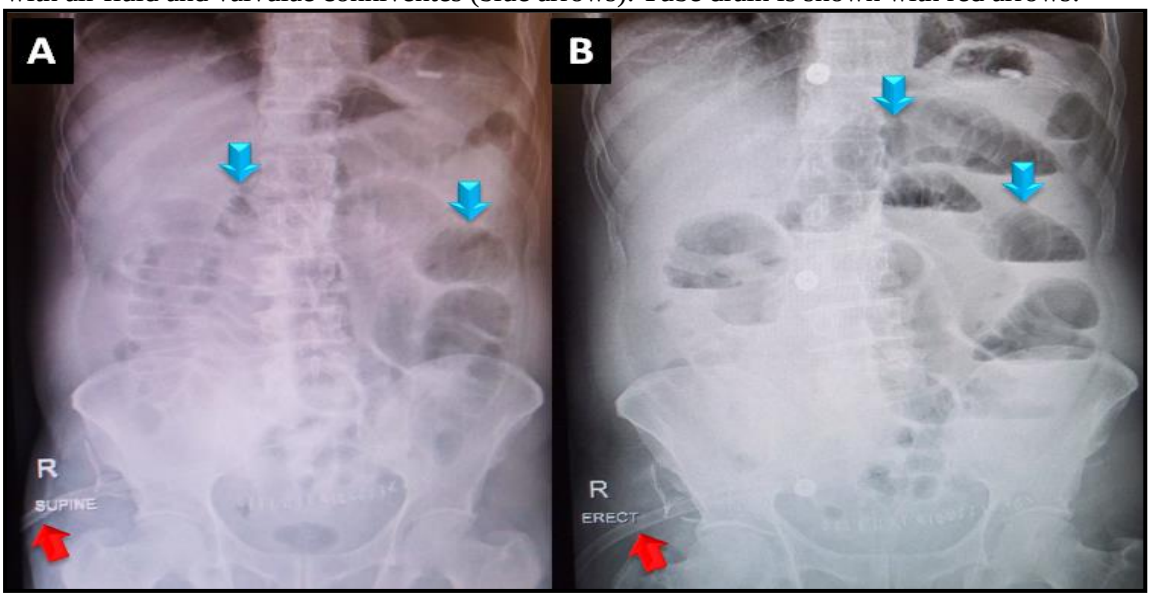
The patient underwent re-laparotomy through the previous incision. The drain was found to be causing mechanical bowel obstruction owing to compression of distal ileal loop 120 cm from ileo-ceacal junction. The site of compression revealed sero-muscular erosion of bowel wall (Figure 3) that was repaired using absorbable suture. The postoperative period was uneventful except a few bouts of loose stools on the first postoperative day. At six months follow-up, the patient was well without any residual symptoms.

DISCUSSION

Early postoperative small bowel obstruction (EPSBO) is a distinct clinical entity with wide range of causes; adhesion bands being the most frequent reason [1, 2]. The incidence has been reported to be up to 9.5% [3]. However, mechanical postoperative gut obstruction due to drainage tubes is rarely reported in literature, although drains are associated with a range of complications including visceral perforation [4], bleeding and drain site hernia [5].

The foremost recoded usage of drains in surgery is attributed to Hippocrates (466-377 BC) who had used hollow tubes for the management of empyema thoracis [6]. The indications and effectiveness of drains has always been a subject of debate, particularly in view of the reported complications. As far as the mechanical obstruction due to abdominal drains is concerned,

Figure 1: Plain abdominal radiograph (A) Supine (B) Erect depicting dilated small bowel loops with air fluid and valvulae conniventes (blue arrows). Tube drain is shown with red arrows.



the literature available is in the form of case reports depicting various modes of small bowel compression. In 1973, Nehme DA reported a case of small bowel obstruction after one week of ileal conduit urinary diversion [7]. After having ruled out volvulus or vascular catastrophe in the form of mesenteric artery thrombosis, the complication was attributed to the compression of loops of the intestine by negative suction rubber drain. No surgical re-exploration was conducted and drain was pulled out at the bedside resulting in immediate relief of the small bowel obstruction. Roger M et al in 2007 reported a case of EPSBO due to a loop of bowel twisting around the abdominal drainage catheter [8]. Poon CM and Leong HT in 2009 [1] reported EPSBO on second day after laparoscopic anterior resection in an 82-year-old man. Emergency re-laparoscopic intervention documented herniation of the small bowel mesentery into the side holes of the silicon intra-abdominal drain, leading to a 90-degree acute turn of the small bowel and resultant mechanical obstruction. In retrospect, authors believe that the bedside removal of drain should have been attempted in the above presented case, before embarking upon surgical re-exploration as the obstruction was similar to the one managed successfully without re-exploration by Nehme DA [7] and Roger M [8]. The superficial sero-muscular injury caused by pressure of the drain could have potentially healed spontaneously without any sequelae and re-exploration should have been undertaken only in case of failure of relief of bowel obstruction after drain removal or appearance of features of other serious conditions such as vascular compromise, peritonitis, or volvulus.

About a century ago, a noted surgeon William Stewart Halsted had opined that "no drainage at all is better than the ignorant employment of it" [6]. The recent concept of "enhanced recovery after surgery (ERAS)" endorses Halsted's view and advocates avoidance of or minimal usage of drains. ERAS is a multimodal, comprehensive, peri-operative plan aimed at attenuating the stress response to surgery thereby achieving early recovery for patients undergoing major surgery [9, 10]. This concept is based on re-examination of traditional practices and application of best practices based on evidences. Application of the ERAS pathway has been to reduce hospital stay by more than 30% and postoperative complications rate by up to 50% [9].

From the experience of the case mentioned above and the review of available literature, it is concluded that:

1. Drains should only be used when deemed necessary and when potential benefits outweigh the risks.
2. Drains should be considered as potential cause of early postoperative bowel obstruction, early in the course, to decrease the incidence of re-exploration.
3. In the absence of indications mandating surgical re-exploration, the obstruction due to compression of bowel loops by drains can be managed by simple removal of drain.

Figure 2: Contrast CT scan showing dilated small bowel loops (blue arrows) proximal to tube drain (red arrows)

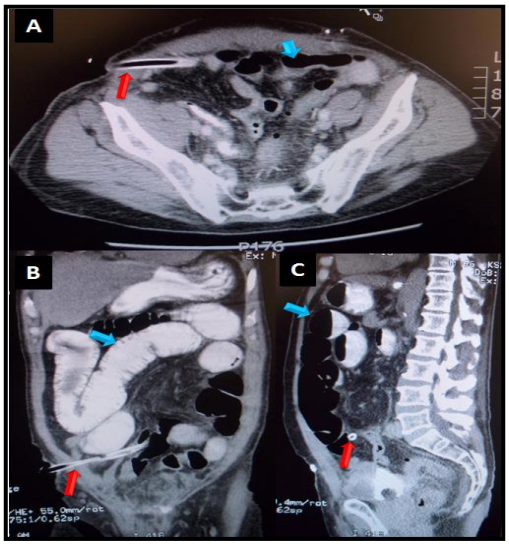


Figure 3: Sero-muscular injury at the site of obstruction of small bowel (black arrow)

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