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## Strangulated intestinal hernia through a drain site

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## ABSTRACT

**INTRODUCTION:** Intra-abdominal drains have been widely used in order to prevent intra-abdominal fluid accumulation and detection of anastomotic leakage.**PRESENTATION OF CASE:** We herein report a case of small bowel herniation followed by strangulation in an 82 year old woman who had undergone sigmoidectomy for colorectal cancer.**DISCUSSION:** Although several complications related to drain usage such as drainsite infection, hemorrhage and intestinal perforation may occur, intestinal incarceration through drain site is rarely reported.**CONCLUSION:** Drains must be used with caution and only if indicated. Careful insertion, regular post-operative or post-removal inspection is strongly recommended.

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## 1. Introduction

Intra-abdominal drains have been widely used in order to prevent intra-abdominal fluid accumulation and detection of anastomotic leakage. Although several complications related to drain usage such as drain site infection, hemorrhage and intestinal perforation may occur, intestinal incarceration through drain site is rarely reported. We herein report a case of small bowel herniation followed by strangulation in an 82 year old woman who had undergone sigmoidectomy for colorectal cancer.

## 2. Case presentation

An 82 year old woman underwent sigmoidectomy for colorectal cancer. She had no history of abdominal surgery, she was not obese and she did not receive corticosteroids during the 6 months prior to surgery. Preoperative laboratory findings, tumor markers as well as nutritional status were within normal limits. An end-to-end anastomosis was carried out. The procedure was uneventful, however, intra-operative retroperitoneal oozing was observed. A flat drain (16 mm large), was inserted and positioned in the left paracolic space. The patient was mobilized 10 h after the operation and during that time, she did not complain of post-operative pain. However, two episodes of vomiting were reported by the relatives and successfully treated with intravenous administration of granisedron. Intense cough was also observed. Both symptoms were attributed to the effect of the anesthesia. On decubitus

position (15 h after the operation) the nurse reported that 'something was protruding through the drain'. A herniated 20–25 cm segment of small bowel was evident. The intestinal segment seemed to be ischemic and normal peristalsis was absent (Figs. 1 and 2). Emergency surgery was performed. A 30 cm of small bowel was resected followed by an end-to-end anastomosis. Post-operative course was uneventful and she was discharged 13 days later. No other complications occurred.

## 3. Discussion

The use of drains has been debated for a long time. In the last two centuries, abdominal drains have been used to prevent fluid accumulation such as peritoneal fluid, blood or inflammatory fluid due to sepsis, biliary or anastomotic leakage.<sup>1</sup> Several studies demonstrated the correlation of drains with intra-abdominal and wound infections, adhesions, intestinal erosion, increased abdominal pain, decreased pulmonary function, bleeding and anastomotic ruptures.<sup>2</sup> Lately, large meta-analysis revealed that the indications of prophylactic drains should be minimized in cases of non complicated operations such as laparoscopic or open cholecystectomy, gastric and gynecologic surgery.<sup>3–5</sup> On the other hand, there is insufficient evidence showing a clear indication for routine drainage in colorectal surgery.<sup>6</sup> Drain site evisceration after abdominal surgery has rarely been reported. Most of the reported cases concern drains with an external diameter of more than 10 mm. Small bowel loops and appendix are the most common herniated abdominal viscera through drain sites with subsequent obstruction or strangulation. Gallbladder herniation through a drain site has also been reported.<sup>7</sup> Hernias through drain site usually occur 3–8 h after drain removal. In our case, herniation occurred 15 h after surgery. Predisposing factors include poor nutritional status, obesity, increased intra-abdominal pressure

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**Figs. 1, 2.** Intestinal incarceration through a drain site.

(constipation, cough, vomiting), co-morbidities (e.g. diabetes mellitus) and steroid therapy that further delays wound healing and fibrosis.<sup>8</sup> Investigators recommend the usage of drains measuring less than 10 mm in diameter, a 'Z' (non-symmetric) insertion method, a purse-string suture for closure of the site after removal and a gradual removal of the drain.<sup>9</sup> In our case, evisceration was attributed to the excessive diameter of the drain site (>10 mm) and the flat type of drain. Vomiting and cough post-operatively were important contributing factors to the small bowel herniation development through the drain site.

#### 4. Conclusion

Drains must be used with caution and only if indicated. Careful insertion, regular post-operative or post-removal inspection is strongly recommended.

#### Conflicts of interest statement

None.

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None.

#### Ethical approval

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written is available for review by the Editor-in-Chief of this journal.

#### Author contributions

EF and SM participated to the sequence alignment, researched sources for the reference and drafted the manuscript. KVL, EP took the photographs and drafted the manuscript. CV helped in the interpretation of the photos and helped draft the final version of the manuscript. All authors read and approved the final manuscript form.

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