Small bowel volvulus with no malrotation after laparoscopic appendicectomy: Case report and literature review

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ABSTRACT

INTRODUCTION: Small bowel volvulus, as a complication of laparoscopic surgery, is a rarely reported clinical entity. We present a case of a young female who developed small intestinal volvulus after laparoscopic appendicectomy. She had this complication in the absence of malrotation or other previous abdominal operations.

PRESENTATION OF CASE: A 17-year-old woman presented with acute appendicitis. After an uneventful laparoscopic appendicectomy, she developed acute small intestinal obstruction on the second post-operative day. A prompt laparotomy showed small bowel volvulus, which was reduced, with no evidence of malrotation. She had an uneventful recovery and was discharged within 3 days of the second operation, in a stable condition.

DISCUSSION: This article presents a review of the literature of this rare cause of small intestinal obstruction after laparoscopic surgery, stressing the importance of early diagnosis and treatment. A discussion of the potential factors predisposing to this entity is presented, emphasising the need of a higher-evidence study as to its aetiology and prevalence.

CONCLUSION: Small bowel volvulus is a rare complication of laparoscopic surgery, but its early diagnosis and prompt treatment is essential to avoid morbidity outcomes. Surgery is the therapeutic mainstay.

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1. Introduction

Small bowel volvulus, related to congenital midgut malrotation, has long been reported as a cause of intestinal obstruction in the paediatric population. However, its occurrence in the adult population, in the absence of malrotation and in relation to laparoscopic surgery is a clinical rarity. In this article, we present the case of a 17-year-old girl who presented with small bowel volvulus on the second day after a laparoscopic appendicectomy. She was explored and the volvulus was reduced. There was no evidence of intestinal vascular compromise. After her second operation, she had an uneventful recovery. In reporting this case, we would like to emphasise the importance of a prompt diagnosis of this rare entity and the need of emergent surgical intervention as a therapeutic measure, shedding light on the potential factors predisposing to this diagnosis.

2. Report of a case

A 17-year-old woman presented to our care with a 36-h history of vomiting, anorexia and mid-abdominal pain that started to shift to the right lower quadrant. Upon examination, she looked unwell, with guarding and rebound tenderness over the right iliac fossa. A blood work-up showed a white cell count of 20,000/mm³. The patient was diagnosed with acute appendicitis and was promptly taken to the operating theatre for laparoscopic exploration. Intra-operatively, she showed a severely inflamed appendix. The appendiceal base was very friable and gangrenous. During dissection, the appendix was perforated and faecolith spilled into the peritoneal cavity. Otherwise, the operation continued smoothly, the appendiceal stump was secured and the spillage was controlled and cleared. The pneumoperitoneum was completely deflated at the end of the procedure and the patient’s recovery from anaesthesia was uneventful.

After a favourable course during the first post-operative day, the patient started to feel unwell, having had several episodes of vomiting. Physical examination showed a distended abdomen with no signs of peritonitis. Blood tests revealed a white cell count of 21,000/mm³ with neutrophilia. The diagnosis of paralytic ileus was suggested and supportive therapy, in the form of intravenous fluids, nasogastric intubation and bowel rest, was initiated. The third post-operative day did not show any clinical improvement. An
The occurrence of small bowel volvulus in the early post-operative period after laparoscopic surgery, and in the absence of malrotation or other previous surgery, is a rarely reported clinical entity with few cases noted in medical literature.

Caudra et al. presented the case of a 30-year-old man who developed midgut volvulus, 8 days after laparoscopic appendectomy. No evidence of congenital malrotation was found upon re-exploration. In 2008, Ferguson et al. published a literature review on intestinal volvulus following laparoscopic surgery. In this review, he postulated several factors including congenital malrotation, previous surgery and intra-operative factors, including pneumoperitoneum, bowel handling and patient positioning as possible aetiologies of intestinal volvulus after laparoscopic surgery. In a retrospective study conducted by Huang et al. on small bowel volvulus among adults, the importance of a low threshold for diagnosis and early surgical intervention were overemphasised to prevent vascular compromise, bowel gangrene and a subsequent high mortality rate. In another retrospective study by Gürleyik and Gürleyik, small bowel volvulus constituted 8% of all cases of mechanical intestinal obstruction and 13% of small bowel obstruction. In 48% of patients presenting with volvulus, no cause could be found.

Upon studying the aetiological factors leading to small bowel volvulus after laparoscopic surgery, no definitive cause-effect relations can be drawn. However, predisposing factors could include intra-operative handling of the bowel, patient positioning and lateral inclinations of the operating table, pneumoperitoneum and stasis and intestinal bloating related to anaesthetic agents and tissue hypoperfusion. Fast decompression of the pneumoperitoneum may also be a predisposing factor.

Stating the above factors, all of these would have well been at the basis of our case report. The severe bloating that the patient has experienced, early on after the procedure, could have resulted from paralytic ileus due to the pathology itself, anaesthetic agents and secondary to bowel handling. The resultant intestinal distension could have caused the twist. As mentioned previously; however, no solid conclusions can be made.

4. Conclusion

The possibility of small bowel volvulus after laparoscopic surgery as a cause of small bowel obstruction must be considered despite the rarity of the diagnosis, so as to avoid deleterious complications resulting in sepsis, short bowel syndrome and ultimately death. Adherence to sound laparoscopic surgical practices cannot be overemphasised, as excessive handling of the bowels in the roomy, CO₂-inflated abdomen and steep inclinations upon patient positioning may well be at the basis of this rare complication after laparoscopic surgery.

Conflict of interest

Nothing to declare.

Funding

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Ethical approval

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

**Author contributions**

Emad Sherkawi has operated on the patient. He provided necessary material to write the article. He reviewed the article. Osama S. Al Beteddini has written the article.

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