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Trocar-site evisceration of the vermiform appendix following laparoscopic sigmoid colectomy: A case report



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ABSTRACT

INTRODUCTION: There is an ongoing debate whether prophylactic drainage or incidental appendectomy should be performed in patients undergoing colorectal surgery. On the other hand, it has been shown that the placement of drains through former trocar sites as well as the use of large (≥ 10 mm) trocars, incomplete fascial closure or closed laparoscopy technique all predispose for the occurrence of trocar site hernias.

PRESENTATION OF CASE: We report the case of a 59-year-old male patient who underwent laparoscopic sigmoid colectomy with primary anastomosis for recurrent sigmoid diverticulitis. Preoperative diagnostics revealed no abnormalities other than multiple diverticula in the sigmoid colon. The subsequent surgery was conducted without any complications. Due to inconspicuous intraoperative appearance of the vermiform appendix, no incidental appendectomy was performed. On the 4th postoperative day, the Easy Flow drain – which had been placed prophylactically through the 12 mm trocar site in the right lower abdomen – was removed. Four hours after drain removal, trocar-site evisceration of the vermiform appendix occurred, requiring emergency surgery.

DISCUSSION AND CONCLUSION: The present case is yet another argument for restricting the use of prophylactic drains in colorectal surgery as well as closing port sites of ≥ 10 mm diameter. Furthermore, incidental appendectomy may be considered since it is able to prevent this type of complication and can be performed with minimal cost and morbidity.

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1. Introduction

Trocar-site evisceration of intestinal structures following laparoscopic surgery is a rare complication with considerable morbidity and mortality. An incidence rate of up to 1.8% is reported in the current literature [1,2]. For colorectal surgery for cancer and colectomy for sigmoid diverticulitis incidence rates are 0.6% and 0.9%, respectively [3,4]. Trocar site hernia occurs later rather than immediately after laparoscopic surgery and the umbilical area seems to be the most frequent site for trocar herniation [5]. Risk factors include the use of large (≥ 10 mm) trocars, incomplete fascial closure, closed laparoscopy technique as well as the positioning of drains through former trocar sites [6]. The most serious complication is small bowel obstruction caused by incarceration of the intestine. Here, we report the case of a patient who developed a trocar-site evisceration of the vermiform appendix following drain removal 4 days after laparoscopic sigmoid colectomy. The present case is reported in line with the SCARE criteria [7].

2. Case report

We report the case of a 59-year-old male patient with an uneventful past medical history who underwent elective laparoscopic sigmoid colectomy for recurrent sigmoid diverticulitis. Apart from light left lower quadrant abdominal pain the patient was otherwise asymptomatic. Laboratory tests including leukocyte count and C-reactive protein were within normal range. Preoperative diagnostics, carried out with computed tomography and colonoscopy, revealed no abnormalities other than multiple diverticula in the sigmoid colon. Laparoscopic sigmoid resection using 4 radially expanding trocars (infraumbilical and right lower abdomen: 12 mm diameter; right upper abdomen and left lower abdomen: 5 mm diameter) was performed without complications. The intraoperative appearance of the vermiform appendix was inconspicuous, so no incidental appendectomy was performed. At the end of the surgery, an Easy Flow drain was placed into the small pelvis through the 12 mm trocar channel in the right lower abdomen. The immediate postoperative course was uneventful. On the 4th postoperative day, the Easy Flow drain was removed. Four hours after drain removal, evisceration of the vermiform appendix through the former trocar site in the right lower abdomen occurred (Fig. 1). Open appendectomy was subsequently performed by

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Fig. 1. Evisceration of the vermiform appendix through the trocar site in the right lower abdomen four hours after drain removal on the 4th postoperative day after laparoscopic sigmoid resection.

extending the trocar incision. Additional diagnostic laparoscopy did not reveal any signs of peritonitis. The further postoperative course was uneventful and the patient was discharged on the 10th postoperative day in good clinical condition. Of note, pathohistological examination of the appendix revealed chronic appendicitis.

3. Discussion

Drain-site evisceration is a rare complication after abdominal surgery. It usually involves small bowel or omentum, while only a few cases of evisceration of the vermiform appendix have been reported in the literature [8–12]. Most of these cases occurred after open surgery, with the exception of one case that was observed in a patient who had undergone robotic prostatectomy. To the best of our knowledge, the present case is the first report of a drain-site evisceration of the vermiform appendix after laparoscopic sigmoid colectomy.

According to Tonouchi et al., trocar-site hernias can be classified into three categories: Early-onset type, late-onset type and special type [6]. The latter type constitutes a dehiscence of the whole abdominal wall, i.e., peritoneum, fascial plane(s), subcutaneous tissue and skin. Special-type trocar-site hernias typically occur at sites where drains have been inserted during surgery. The hernia becomes apparent shortly after the drains have been removed, with intestinal structures or omentum herniating through the former trocar channel and generally requiring emergency surgery.

In the past decades, there has been a heavy debate on the use of prophylactic drains in colorectal surgery. Key points in this debate have been the usefulness of drains to act as an early indicator of anastomotic leak or even a means to prevent anastomotic leak through localised drainage. Arguments against prophylactic drainage have been possible drain-related complications such as drain-site wound infection, pain, bleeding and herniation/intestinal evisceration. Importantly, a recent Cochrane Review has found no clear evidence for the prophylactic use of drains in preventing anastomotic leak after colorectal surgery, even though the authors also concluded that there seems to be no significant contraindication to their use [13]. The present case illustrates that the decision to place a prophylactic drain after colorectal surgery should also integrate whether the vermiform appendix has previously been removed or not since the latter seems to be a predilection organ for drain-site evisceration, particularly if the drainage is to be inserted through a trocar channel in the right lower abdomen.

An alternative strategy to eradicate the risk of postoperative drain-site evisceration of the vermiform appendix is to perform incidental appendectomy. Work from our institution and others has previously shown that up to 76.05% of specimens removed during incidental appendectomy display abnormal findings upon

pathohistological analysis [14]. Moreover, 1.84% of patients in the series of Exner et al. and up to 4.1% in the series of Khan et al. harboured an appendiceal neoplasm, despite a regular intraoperative appearance of the appendix [15]. Importantly, final pathohistologic analysis revealed an appendiceal pathology (i.e., chronic appendicitis) also in the present case (which had initially not been suspected at the time of the primary operation). Therefore, performing an incidental appendectomy during colorectal surgery may be justified for several reasons: 1) To detect a possible underlying appendiceal pathology (or even neoplasm), 2) to prevent the need for future surgery for appendicitis which may be more costly and complicated and 3) to prevent appendiceal drain-site evisceration as in the present case.

Importantly, cost and time of adding an incidental appendectomy to a colorectal procedure are low, compared to performing a separate operation at a later stage. Also, the vast majority of available reports suggest that there is virtually no complication rate, particularly in patients undergoing colorectal surgery [14,16].

4. Conclusion

In conclusion, we have learned our lesson from the present case and are now performing incidental appendectomy in the vast majority of patients undergoing colorectal surgery. Moreover, we have limited our use of prophylactic drains after colorectal procedures and aim to close all fascial defects (particularly at sites where trocars larger than 10 mm have been placed) in order to minimize the risk of postoperative trocar-site herniation. Finally, our case illustrates once more that a regular intraoperative appearance of the vermiform appendix does not reliably rule out the presence of a diseased appendix that would otherwise be considered an indication for appendectomy.

Conflicts of interest

There are no conflicts of interest, sources of financial support, corporate involvement, patent holdings, etc. involved in the research and preparation of this manuscript.

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Ethical approval

None required.

Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Authors' contribution

Bhangu JS, Exner R and Bachleitner-Hofmann T equally contributed to conception, design, acquisition and interpretation of data. All authors have revised the article and have approved of its final version.

Guarantor

Thomas Bachleitner-Hofmann is the guarantor of this paper.

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