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Case Report

An individualised approach to reduce trocar site hernia

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ABSTRACT

In systematic reviews, the calculated pooled prevalence of trocar site hernia (TSH) has been estimated at 0.5%. Increasing age, high body mass index, smoking, and wound infection potentially influence the incidence. Increasing trocar size, retrieval of specimens through trocar sites, excessive force used in manipulation of the trocar and frequent re-insertion of the trocar may also play a role in the enlargement of the muscolofascial defects. This paper reports a case of a Richter's hernia within a 5 mm abdominal port site occurring in the early post operative period following laparoscopy. This is significant because it is an uncommon complication of a common procedure. We highlight that various factors may increase the likelihood of this uncommon condition, and provide a brief overview of TSHs.

Keywords: TSH, Port site hernia, Richter's hernia

INTRODUCTION

Trocar site hernia (TSH) remains an uncommon complication of laparoscopic surgery. While TSH has been investigated and described since the widespread introduction of laparoscopic surgery, it is particularly infrequent at 5 mm port sites and even more so since the introduction of bladeless/non-cutting, musculo-fascial splitting trocars.[1-4] TSHs can occur either early or late in the post operative period. When TSH are complicated, generally these are a Richter's type hernia (about half of early onset cases). Computed tomography (CT) is generally used to locate complicated TSH. Intervention is usually possible with laparoscopy thereby alleviating need for laparotomy.[3]

CASE REPORT

A 73-year-old female underwent laparoscopic appendicectomy following diagnosis by CT of perforated appendicitis and associated pelvic collection.

Laparoscopy involved an umbilical 12 mm port using Hassan technique and under vision, two bladeless, muscle splitting 5 mm optical ports inserted in the standard configuration. The findings were perforated appendicitis with faecal contamination and presence of intra-abdominal pus. Appendicectomy was performed and the pus drained. The abdomen was lavaged generously. No drains were placed. The appendix was removed using a specimen retrieval bag through the umbilical port. The umbilical fascial defect was closed with braded absorbable suture. Skin was closed at all port sites with monofilament absorbable suture.

The patient remained on intravenous antibiotics post operatively with slow clinical improvement. On post-operative day seven, the patient had vomiting and colicky abdominal pain. A repeat CT suggested a mechanical small bowel obstruction with a mid-small bowel transition point at the lower left anterior abdominal wall (Figure 1). On relook laparoscopy via the original umbilical and supra-pubic port sites, a Richter's hernia involving small bowel at the 5 mm left lower abdominal port site was found (Figure 2). The hernia was reduced revealing viable small bowel. The left iliac fossa and supra-pubic 5 mm port site fascial defects had full thickness closure using synthetic absorbable

monofilament suture with a trocar site closure device (Figure 3). The umbilical site was closed with braded absorbable suture. Thereafter the patient had an uneventful recovery.

Figure 1: Axial slice CT abdomen showing dilated loops of small bowel with a left sided abdominal wall defect with bowel wall herniation (indicated by red arrow).

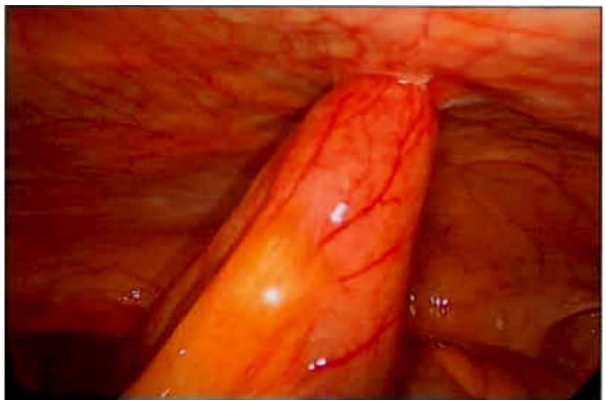

Figure 2: Laparoscopic camera photo demonstrating tenting of small bowel through the previous lower left abdominal trocar site peritoneal defect.

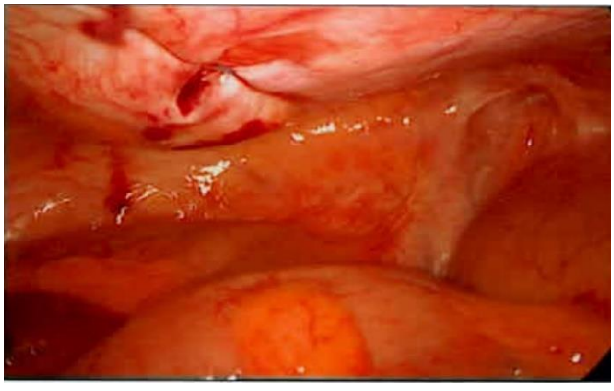

Figure 3: Laparoscopic camera photo demonstrating the left lower abdominal trocar site defect post small bowel reduction and fascial defect repair with absorbable suture.

DISCUSSION

The purpose of this case report is to highlight an uncommon complication with the potential of significant sequelae. Furthermore, to impress that the decision of fascial closure of trocar sites may need to be individualized with thought given to both technical and patient factors implicated in the pathogenesis of TSH.

In systematic reviews, based largely on cohort studies the calculated pooled prevalence of TSH has been estimated at 0.5% ranging from 0 to 5.2% within the individual studies.[1,2] In a review by Helgstrand et al of the 129 TSH identified, 5 (4%) involved 5 mm trocar sites.[2]

The majority of reported TSH have involved trocar sizes of at least 8 mm mostly in the midline.[2,3] The location of 5 mm TSH however, appears to predominate in off midline ports. Khurshid et al described 12 cases of 5 mm TSH in which 11 were located off midline.[4]

TSH can occur either early or late in the post operative period. Early TSH is described as herniation of intra-abdominal contents through a peritoneal defect to any layer of the abdominal wall. Early TSH has been defined as occurring within two weeks of surgery.[3] Late TSH is within a sac of peritoneum and protrudes through fascia.[1]

Clinically, early onset TSH is more likely to present with symptoms of obstruction, and Richter's type hernia is more common.[3] Late onset TSH is more likely to present as an abdominal wall bulge without clinical signs of obstruction. Hernia repair is usually possible with laparoscopy in the acute setting, thereby alleviating the need for laparotomy.

Increasing age, high body mass index, smoking, nutritional status and post-operative wound infection may play a role in increasing the likelihood of TSH.[1-3]

A direct relationship between trocar size and the risk of TSH has been described. Retrieval of large specimens through trocar sites, excessive torque or force used in manipulation of the trocar, frequent re-insertion of the trocar and prolonged surgery may also play a role in the enlargement of the muscolo-fascial defect.[3]

Trocar design may influence TSH incidence. Several studies have investigated the musculo-fascial defect characteristics resulting from the use of different trocar designs.[5-8] Shafer et al demonstrated significantly smaller fascial defects were created with the use of dilating trocars in preference to bladed or cutting trocars.[5] Munro and Tarnay achieved similar results, demonstrating no significant difference in fascial defects produced by a 12 mm blunt conical trocar when compared to an 8 mm cutting pyramidal trocar.[7,8] Bladeless muscle splitting and dilating trocars create have also been shown to create significantly smaller defects when compared with traditional cutting types.[5]

Although not necessarily preventing TSH, fascial closure is proposed as a method of reducing its incidence. It is generally recommended that 10 mm or larger ports should have full thickness abdominal wall closure with slowly absorbable suture.[1,9] In certain circumstances, use of mesh repair may be preferred, particularly in the case of obese and co-morbid patients.[7] Some authors have advocated the closure of 5 mm port sites where significant manipulation has occurred with long operations.[3]

CONCLUSION

The purpose of this case report is to highlight an uncommon complication with the potential of significant sequelae. Furthermore, to impress that the decision of fascial closure of trocar sites may need to be individualized with thought given to both technical and patient factors implicated in the pathogenesis of TSH.

In summary, current evidence for TSH is limited by methodological considerations and its infrequent incidence.[1] Accounting for the factors that have been identified, an individualised approach to the closure of small port site fascial defects should be considered.

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