

Port site herniation of the appendix - An unusual complication of laparoscopic surgery

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Abstract

The incidence of incisional hernia occurring at port sites after laparoscopic surgery is estimated to be between 0.02 to 3.6% and usually remains unreported until the development of complications. We present an unusual sequence of events leading to the herniation and incarceration of an appendix through a 5mm port site that eventually required an appendicectomy. To our knowledge this is the first incidence of an appendix herniating through a 5mm port site. Our practice had been not to close 5mm port site fascial defects routinely.

Introduction

In 1987 Mouret performed the first laparoscopic cholecystectomy, radically changing surgical practice so much so that by the 1990's laparoscopic surgery had become widespread¹. This led to the emergence of new operative complications. One of the serious complications is incisional hernias at the site of entry of a port² because most of these require further surgery³. Fear first reported a port site hernia in his large series on laparoscopy in gynaecological diagnosis⁴. Maio and Ruchman reported on the port site hernia with small-bowel obstruction occurring immediately after cholecystectomy⁵; the first report on port site hernias in gastrointestinal surgery. The incidence of incisional hernia occurring at the port sites after laparoscopic surgery is estimated between 0.02 to 3.6%⁶ and usually remains unreported until the development of complications⁷.

Such a case is reported here with a rare complication of laparoscopy in the form of the herniation and incarceration of an appendix through a 5mm port site. The patient required an appendicectomy. To our knowledge this is the first incidence of an appendix herniating through a 5mm port site.

Case report

A 53 year old woman was admitted to our unit with right upper quadrant abdominal pain and voluntary guarding. Abdominal ultrasound confirmed cholecystitis and she was treated with IV antibiotics and discharged a couple of days later. She was offered a laparoscopic cholecystectomy which was performed a few weeks after her emergency admission. There were no intraoperative complications and she seemingly had an uncomplicated procedure. The patient was discharged the following day. Twenty four hours post discharge she was readmitted with peritonitis, obstructive LFTs, a raised WCC and CRP. She had a diagnostic laparoscopy and was found to have a very small collection in the gallbladder fossa but the clips on the cystic duct were intact. She had a thorough washout and had a perforated silicone drain (Medasil) placed laparoscopically in the gallbladder fossa using a 5mm radial expanding trocar (Ethicon Endo-Path Excel Endo-Surgery) in the right lower quadrant (RLQ). Based on findings at laparoscopy and subsequent imaging and blood tests she was diagnosed with and treated for cholangitis and made a speedy recovery following the commencement of IV antibiotics. Five days post diagnostic laparoscopy the drain was taken out. The following day, just prior to discharge, the dressing was taken off only to find that her appendix had herniated through the drain site (Figure 1).



Figure 1.

She was then taken to theatre again for an open appendicectomy by transversely extending the drain site incision. A mass closure of the wound was performed using a polydioxanone (PDS) suture. The patient made an uneventful postoperative recovery and was discharged the following day.

Literature review and Discussion

Laparoscopic suturing and repairing of the fascial opening at 10 to 12 mm cannula puncture sites is well established; however, closing a 5-mm port site wound is controversial. Tonouchi et al. performed a comprehensive literature review on trocar site hernias⁸ and found that in several large series on digestive surgery the incidence of trocar site hernias ranged from 0.65% to 2.8%^{3,8,9,10,11,12,13,14}. Out of the 30 reported cases they looked at between 1992 and 2003, only five cases were at 5mm port sites. There has however been a reported case of omentum

herniating through a 2 mm port site in an infant undergoing laparoscopy for a gastrostomy¹⁵ and of omentum herniating through a 3 mm port site in a woman undergoing laparoscopic tubal ligation. However it was found that she had a pre-existing 1.5 cm fascial defect adjacent to the port site and that the sac herniated through that and found its way out at the 3 mm port site⁶. Wang et al¹⁶ reported an incarcerated hernia in a 5-mm cannula site. The patient, a nine year old girl, underwent laparoscopic surgery due to an 8cm ovarian mature teratoma. After seven days, she re-presented as an emergency, because of a protruding mass in the left port site wound. The mass was excised, and incarcerated fallopian tube torsion with necrotic change was diagnosed. Table 1 summarises the 5mm port site hernias that have been reported.

To our knowledge this is the first reported case of an appendix herniating through a 5 mm port site. However Goodwin et al²³ did report a

Table 1. Reported 5 mm port site hernias. SBO = small bowel obstruction

Original Surgery	Days after surgery	Symptom	Findings	Fascia of trocar site	Reference
Cholecystectomy	10	SBO symptoms	Richter Hernia	Left open	17
Fundoplication	5	SBO symptoms	Richter Hernia	Left open	18
Nissen	6	SBO symptoms	Richter Hernia	Left open	19
Fundoplication	2	SBO symptoms	SB incarceration	Left open	20
Ovarian teratoma resection	7	Pain with a mass	Incarcerated fallopian tube	Left open	16
Cholecystectomy	7	Bulging of abdomen	Omentum herniation	Left open	21
Laparoscopic hysterectomy and lymphadenectomy	6	SBO symptoms	SB strangulation, necrotic small bowel loop	Left open	22
Laparoscopic hysterectomy and lymphadenectomy	6	SBO symptoms	SB strangulation but viable small bowel	Left open	22

patient found to have a strangulated appendix. The patient presented with an irreducible lump underlying a right iliac fossa scar three years following bilateral laparoscopic hernia repairs. It is unclear whether this was a 5mm or larger port site hernia. More recently Menenakos et al²⁴ reported a strangulated appendix occurring in a 12 mm port site in a 63 year old man one year after his initial surgery. The treatment was again appendectomy followed by primary repair of the fascial defect. There have however been reported cases of herniation of the appendix from larger drain sites²⁵⁻²⁸. O'Riordan et al²⁵ reported a herniation of the appendix through a 14mm drain site 30 hours after the drain was taken out. The authors managed to reduce the appendix back into the abdominal cavity and the wound was closed. Kjossev et al²⁶ reported herniation of the appendix through a drain site 48 hours after removal of the drain. The patient underwent an appendectomy. Duraker et al in 1997²⁷ reported a patient requiring an appendectomy when the appendix was pulled out with the drain as it became adherent to the side hole of an 11 mm drain. Shoukris et al reported another similar case in 1984 where the appendix was withdrawn with the drain²⁸. The last was in Italy, a case report of a mucocele of the appendix herniating through the drain site²⁹.

Factors affecting the incidence of trocar site hernias include trocar size, closing fascial defects, stretching the port site for retrieval, longer surgery time, obesity, poor nutrition and wound infection. It is agreed that all 10 mm port sites should have the fascial defect closed. The management of 5mm port sites is unclear and opinions remain divided. Our routine practice has been not to close 5 mm ports sites. We believe that the drain may have widened the fascial defect at the port site. The appendix was then sucked into the drain and eventually migrated to the right iliac fossa. It was subsequently pulled through the defect with the drain. Once the drain was removed the appendix became

incarcerated. Laparoscopic placement of drains following cholecystectomy is an established and routine procedure and again these sites are not closed when the drains are taken out. A recent publication report by Moreaux et al²² describes two cases who underwent laparoscopic gynaecologic procedures where drains were left into 5mm port sites. In both cases, the patients re-presented with small bowel obstruction and were found to have small bowel incarcerated within the fascial defect. The authors had used a 10fr drain in the right iliac fossa in both cases. A simple solution would have been to place a purse string suture into the fascial defect and to tie it when the drain was removed.

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