

Richter's hernia in a 5-mm trocar site

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Angeliki Chorti, Samer AbuFarha, Antonios Michalopoulos
and Theodosios S Papavramidis 

Abstract

We present an unusual case of a trocar site incision hernia at a 5-mm trocar port occurring approximately 2 weeks post-operatively after a laparoscopic cholecystectomy. The patient, in her mid-60s, reported diffuse abdominal pain, constipation, nausea and vomiting. An abdominal X-ray demonstrated dilated small bowel loops with gas-fluid levels. Abdominal computed tomography revealed the small bowel herniation through the 5-mm port site. Laparotomy confirmed a Richter's hernia of the small bowel in the fascia defect. This case highlights the necessity to examine and investigate any complaint post-operatively and deliberate its possible significance. Furthermore, it demonstrates that, even during a normal recovery period for a patient without any underlying disease or risk factors, a rare complication could still develop in a delayed fashion multiple days post-operatively from a laparoscopic procedure. High clinical suspicion is essential in order to avoid further deterioration of the patient condition and optimal treatment.

Keywords

Hernia, trocar hernia, laparoscopic

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Introduction

Trocar site incision hernias (TSIHs) after laparoscopic surgery is a known, but rare, post-operative complication with an incidence that varies between 0.12% and 1.8% (mean 0.69%).^{1–3} It usually occurs at 10 mm or larger port sites. Herniation through 5-mm port site is extremely rare and only a few cases are reported in the international literature.

TSIHs are often Richter's hernias as the conditions for development of a Richter's hernia seem to be ideally fulfilled by the size of the insertion sites of laparoscopic instruments. In a Richter's hernia, the anti-mesenteric border of the intestine protrudes into the hernia sac, but never to the point of the entire circumference of the intestine. As a result, the symptoms may vary widely, depending on the amount of bowel circumference involved, making the diagnosis difficult. Obstruction is rarely complete and the first mild symptoms, such as vague abdominal pain, may not be considered correctly, resulting in late diagnosis. On the other hand, the strangulated bowel may easily become ischemic, increasing the morbidity of the patient. High clinical suspicion is crucial to avoid misdiagnosis and proceed with prompt therapy before ischemia is set.⁴

In this case, the patient was in her mid-60s presented with a Richter's hernia that developed in a 5-mm trocar site after laparoscopic cholecystectomy. Her hernia occurred as a

delayed immediate post-operative complication of fascia dehiscence, manifesting on the 15th post-operative day without any precipitating events during recovery.

Case

A 66-year-old woman was admitted to our department in order to have laparoscopic cholecystectomy for cholelithiasis. The patient had a body mass index (BMI) of 32 kg/m² and she suffered for no other underlying medical conditions. Four ports were inserted, two 10-mm ports one at the umbilicus and one at the epigastrium 5 cm under the xiphoid, and two 5-mm ports one at the mid-clavicular line subcostal and one at the anterior axillary line at almost the level of umbilicus. The specimen was removed through the umbilical port and a 14F drainage was placed through the right lateral anterior axillary line's 5-mm port (since this is the department's policy). The operation was characterized as of medium difficulty

1st Propedeutic Department of Surgery, AHEPA University Hospital, Aristotle University of Thessaloniki, Thessaloniki, Greece

Corresponding Author:

Theodosios S Papavramidis, 1st Propedeutic Department of Surgery, AHEPA University Hospital, Aristotle University of Thessaloniki, 6 Egeou Str., 54655 Thessaloniki, Greece.
Email: papavramidis@hotmail.com





Figure 1. Abdominal x-ray showing dilated small bowel loops with gas-fluid levels.

(without any particular manipulations) and her in-hospital post-operative course was uneventful. The patient was discharged after 24h. Two weeks after operation, the patient reported diffuse abdominal pain, constipation, nausea and vomiting. An abdominal X-ray demonstrated dilated small bowel loops with gas-fluid levels (Figure 1). Abdominal computed tomography (CT) revealed the small bowel herniation through the 5-mm port site placed at the anterior axillary line (Figure 2). During laparotomy, an incision over the 5-mm wound was made and confirmed a Richter's hernia of the small bowel with the anti-mesenteric border incarcerated in the fascia defect. The bowel was not ischemic so it was returned back to the peritoneal cavity and the fascia defect was closed with Maxon No1 (Figure 3). The patient was discharged on the second post-operative day.

Discussion/conclusion

Fear⁵ was the first to report a TSIH in a gynecological procedure in 1968. Since then many authors have published case reports describing TSIHs, most of them occurring in 10-mm trocar sites. The widespread use of laparoscopic surgery has led to a new possible site for development of a Richter's hernia as the conditions for development of a Richter's hernia seem to be ideally fulfilled by the size of the insertion sites of laparoscopic instruments.^{4,6} Although TSIH is an uncommon complication of laparoscopic surgery, it is significant as it requires an additional surgical procedure and may be a cause of significant morbidity due to the high risk of incarceration and strangulation.³ High clinical suspicion and



Figure 2. Abdominal CT showing the small bowel herniation through the 5-mm port site placed at the anterior axillary line (right lower quadrant).

prompt diagnosis are essential to avoid these complications. TSIH can develop from a few hours to several months after the laparoscopic surgery and Tonouchi et al.,⁷ in 2004, suggested a classification of TSIH into three groups according to the onset and the defect involvement: (1) the early onset type, presenting immediately post surgery, which indicates dehiscence of the anterior fascia plane, the posterior fascia plane and peritoneum; (2) the late onset type, presenting several months post-operatively, which indicates dehiscence of the anterior and posterior fascia plane only, as the peritoneum is the hernia sac; and (3) the special type (extremely rare) in which dehiscence of the whole abdominal wall results in easily recognized protrusion of the intestine without hernia sac, in the immediate post-operative period.

Commonly TSIHs present with symptoms of small bowel obstruction and the patient complains of abdominal pain, nausea, vomiting and inability to pass flutes and/or stools. Tumefaction in incision or a palpable mass above the incision may be discovered during the clinical examination. The most common imaging modalities used for the diagnosis of TSIHs are abdominal X-ray, ultrasonography and CT. Abdominal X-ray reveals air-fluid levels in the bowel while the exact site of herniation is shown with abdominal CT. When the diagnosis is set, the patient is led for surgery. Usually, the incision above the hernia is widened. Once the hernia is revealed, the bowel is checked for signs of ischemia and it is repositioned back to the peritoneal cavity. If the bowel is not viable, a resection is made to healthy limits. Afterward, the fascia defect is closed.

Many possible factors have been mentioned regarding the mechanism of appearance of TSIHs. The vast majority of TSIHs occur in the sites of ports of 10 mm or larger, so all sites

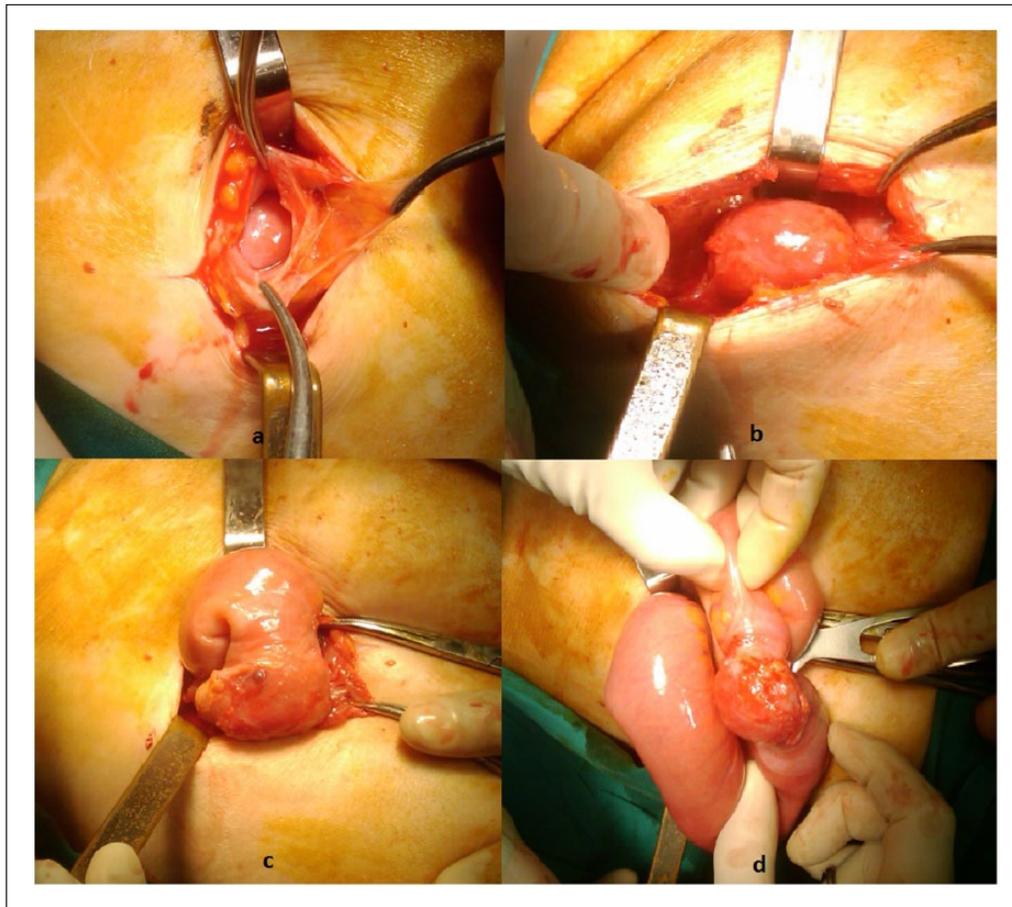


Figure 3. Images showing operative findings: (a) an incision over the 5-mm wound was made. (b, c) A Richter's hernia was found as the anti-mesenteric border of a small bowel loop was protruding into the fascia defect. (d) No signs of ischemia were found.

of 10 mm or larger must be sutured at the fascia level. The use of Veress needle (closed laparoscopy) for the establishment of pneumoperitoneum seem to be a predisposing factor for TSIH, relatively to Hasson trocar insertion (open laparoscopy), according to series by Mayol et al.⁸ Other factors that seem to correlate with TSIH are the duration of the surgery, the enlargement of the trocar's hole and extended manipulation of the trocar port sites. Regarding the patient characteristics, higher incidence of TSIH is observed in (1) obese patients,^{9–12} as the closure of the holes in obese patients is technically more difficult¹³ and the abdominal compartment properties are altered;¹² (2) age >60 years;¹⁰ and (3) wound infection¹⁰ and diabetes.¹⁰ Finally, we have to keep in mind that both chronically elevated intra-abdominal pressure and chronic alteration of the abdominal wall compliance¹⁴ may play a role in TSIH formation.

It is clear that trocar port's diameter plays a significant role in the development of TSIH. Although there is no consensus regarding the closure strategy of trocar holes, many authors agree that all holes ≥ 10 mm should be sutured.^{4,6,7} Regarding the <10 mm holes, several studies recommend the suture of the holes when predisposing factors exist.¹⁵

Conclusion

TSIH is rare but significant complication of laparoscopic surgery that needs prompt diagnosis and therapy. High clinical suspicion is necessary to avoid serious complications like strangulation and ischemic necrosis of the affected bowel. Most commonly, TSIH occurs at 10-mm port sites. However, herniation of the bowel may develop through 5-mm port sites if predisposing factors are present. In order to prevent this complication, all port holes more than 10 mm must be sutured. Fascia closure of all 5-mm holes is also recommended when predisposing factors exist. High clinical suspicion is essential in order to avoid further deterioration of the patient condition and optimal treatment.

Declaration of conflicting interests

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Ethical approval

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Informed consent

The patient described herein had given written consent to the use of de-identified patient data for use in research and education.

ORCID iD

Theodosios S Papavramidis  <https://orcid.org/0000-0002-7097-9889>

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