

Rare Late Onset Port Site Hernia at a 5 mm Lateral Trocar Following Laparoscopic Surgery: A Case Report

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Abstract: ***Background:** Port-site hernia (PSH) through trocar sites smaller than 10 mm is an uncommon but surgically significant complication of laparoscopic surgery. This report describes a rare case of late-onset PSH at a 5-mm lateral trocar site in an obese patient, highlighting the need for heightened clinical suspicion and timely management in this underreported clinical scenario. **Case Presentation:** A 63-year-old obese female with a body mass index (BMI) of 35 kg/m² presented with a bulge on the left lateral abdominal wall. She had undergone a laparoscopic hysterectomy and intraperitoneal onlay mesh (IPOM) repair for an umbilical hernia one year prior. Clinical examination revealed a 5x5 cm palpable mass in the left lateral abdominal wall. A computed tomography (CT) scan of the abdomen demonstrated a 3.1 cm defect in the anterior abdominal wall in the left lateral lumbar region. The patient was planned for laparoscopic repair of the hernia. Intraoperatively, the previous mesh was found to be in situ with omental adhesions overlying it. A defect in the left lateral abdominal wall was identified, with herniation of the omentum. Adhesiolysis was performed, and the lateral wall defect was repaired using V-Loc sutures. A 15x15 cm composite mesh was placed, and the port site was re-approximated with 2-0 Ethilon sutures. The skin was closed with absorbable continuous subcuticular sutures. **Conclusion:** PSH at a 5-mm trocar is exceedingly rare but can occur in high-risk patients. Surgeons should maintain clinical suspicion when patients present with delayed abdominal wall swelling after laparoscopy. This case underlines the importance of considering fascial closure even at smaller port sites in obese patients.*

Keywords: Port-site hernia, Hysterectomy, Laparoscopy, Lateral 5-mm port, Trocar-site hernia

1. Introduction

Port site hernia (PSH), often referred to as port-site incisional hernia (PIH) or trocar site hernia (TSH), is characterized by the formation of a hernia at the sites of cannula insertion, with these names often used interchangeably in several publications. Published literature mentions the prevalence of PSH to be between 0.65% to 6.0%.¹ Numerous authors have acknowledged this as the inaugural report on trocar site hernias. Crist and Gadacz defined trocar site hernia as the occurrence of a hernia at the cannula insertion site.² Hitoshi et al. categorized trocar site hernias into three kinds based on documented instances.³ Early-onset type signifies dehiscence of the anterior fascial plane, posterior fascial plane, and peritoneum. The early-onset variant was identified in several case reports as commencing shortly after surgery, frequently manifesting as a small-bowel blockage. The late-onset type signifies dehiscence of the anterior and posterior fascial planes. The hernia sac of the late-onset kind is comprised of the peritoneum. The late-onset form has frequently been associated, in several extensive studies, with problems arising after trocar implantation. Late-onset type hernias typically manifest in the latter phases, some months post-surgery. Furthermore, the literature review indicated that almost all trocar site hernias occur at sites >10 mm, with only a limited number of instances documenting herniation at 5 mm sites.

We report a case of a patient who developed a late-onset incisional hernia at the lateral 5 mm trocar insertion site following elective laparoscopic total abdominal hysterectomy for symptomatic uterine fibroid. This work has been reported in line with the CARE criteria.

2. Case Report

A 63-year-old obese female patient with a body mass index (BMI) of 35 kg/m² presented to our centre with a bulge in the left lateral abdominal wall, first noticed approximately two months prior. The patient had undergone an elective laparoscopic total abdominal hysterectomy with IPOM repair for an umbilical hernia via the most lateral left 5 mm trocar port site, one year previously. On abdominal examination, a palpable mass was identified in the left lateral lumbar region, just above the lateral 5 mm port-site scar. All haematological and biochemical parameters were within normal limits. All procedures were performed in accordance with the ethical standards of the Declaration of Helsinki 2013 and its later amendments, as determined by the Ethics Committee of Apollo Hospitals, Sector 23, Parsik Hill Road, CBD Belapur, Navi Mumbai, Maharashtra 400614, India. Written freely-given informed consent was obtained from the patient prior to submission.

A plain CT scan of the abdomen revealed a 3.1 cm sized defect in the anterior abdominal wall along the left lateral lumbar region with omentum and bowel loops as hernial contents. A diagnosis of trocar site incisional hernia (TSIH) was made, and the patient was planned for laparoscopic IPOM for the left lumbar hernia. The patient was placed in the supine position with a slight right tilt arms tucked by the side. Pneumoperitoneum was created using a Veress needle at the palmer's point. Optical view entry using a 5mm optical trocar was done at the right hypochondrium, then a right iliac 5mm port and another 10mm port in the right lumbar region were placed under vision for instrumentation (figure 1). Adhesions were noted over the previous mesh and

Volume 15 Issue 5, May 2026

Fully Refereed | Open Access | Double Blind Peer Reviewed Journal

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adhesiolysis was performed. A defect in the left lumbar region was identified, and it was approximated using absorbable barbed sutures in a continuous fashion. A 15x15 composite mesh was placed over the defect with a margin of 5 cm on either side. The defect was seen to be overlying on the previous mesh. Mesh was sutured using absorbable barbed sutures and inner crowning of the mesh was done using absorbable tacks. TAP block was given laparoscopically and proper haemostasis was achieved. 10mm port site was closed using a non-absorbable figure-of-8 stitch. The patient was shifted to the ward, and she was managed with intravenous

analgesics, antibiotics as well as antacids. Visual analogue scale (VAS) score for pain on post-operative day-1 was 3 out of 10. The patient recovered well after the procedure and was discharged in a hemodynamically stable state on post-operative day 2.

3. Timeline

Table 1 summarises the key clinical events in this case in chronological order.

Table 1: Timeline of key clinical events.

Time Point	Clinical Event	Details
~1 year prior to presentation	Index laparoscopic surgery	Elective laparoscopic total abdominal hysterectomy for symptomatic uterine fibroid + IPOM repair for umbilical hernia. 5 mm lateral left trocar used at the port site in question.
~2 months prior to presentation	Onset of symptoms	Patient first notices a bulge in the left lateral abdominal wall.
Day of presentation	Clinical assessment and investigation	Clinical examination: 5x5 cm palpable mass in the left lateral lumbar region. CT abdomen: 3.1 cm anterior abdominal wall defect with omental and bowel herniation confirmed. Diagnosis of trocar site incisional hernia (TSIH) established. All haematological and biochemical parameters within normal limits.
Day of surgery	Surgical intervention	Laparoscopic IPOM repair performed: adhesiolysis, V-Loc absorbable barbed suture fascial closure, and 15x15 cm composite mesh placement with 5 cm margins. TAP block given laparoscopically. 10 mm port site closed with non-absorbable figure-of-8 stitch.
Post-operative Day 1	Post-operative recovery	VAS pain score 3/10. Managed with intravenous analgesics, antibiotics, and antacids. No adverse or unanticipated events.
Post-operative Day 2	Discharge	Patient discharged in haemodynamically stable condition. Uneventful recovery.

IPOM, intraperitoneal onlay mesh; CT, computed tomography; TSIH, trocar site incisional hernia; TAP, transversus abdominis plane; VAS, visual analogue scale.

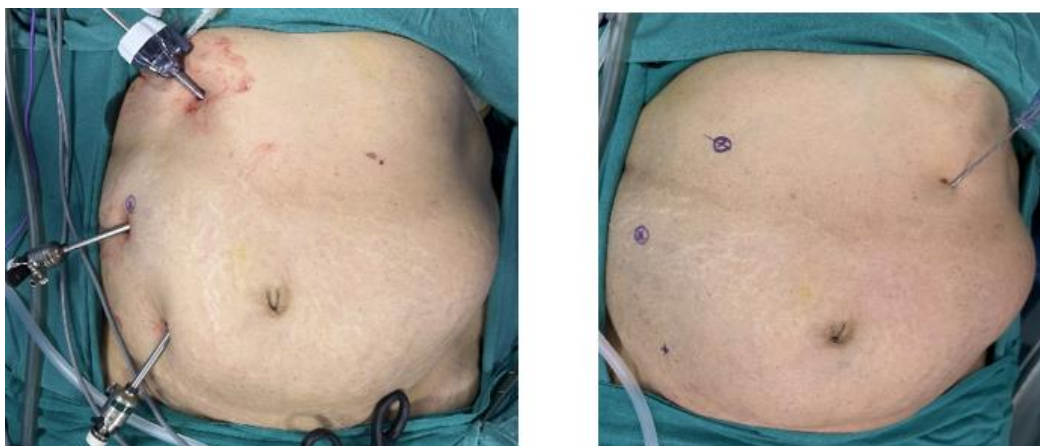


Figure 1: Port position- 5mm optical trocar at right hypochondrium, 10mm at right lumbar, 5mm at right iliac regions respectively.

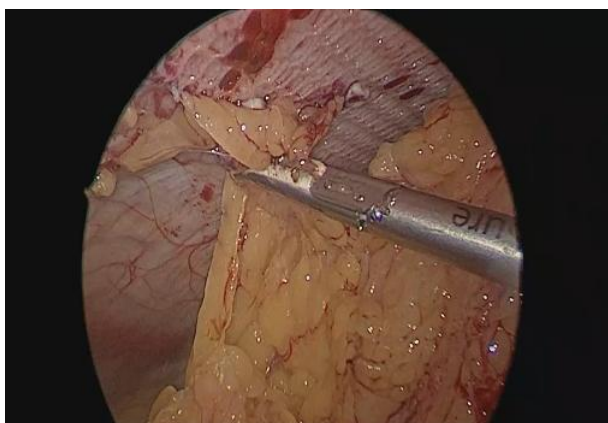


Figure 2: Omental adhesions over the previous mesh

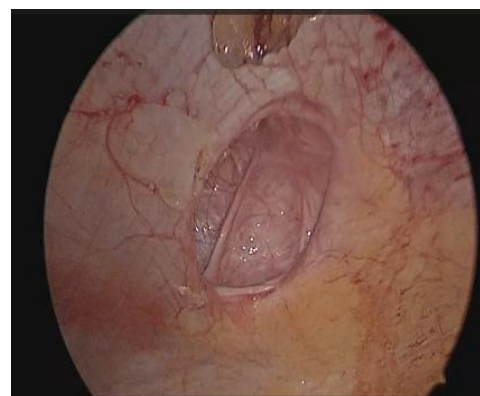


Figure 3: Defect in the left lumbar region



Figure 4: Defect closure with absorbable barbed continuous sutures

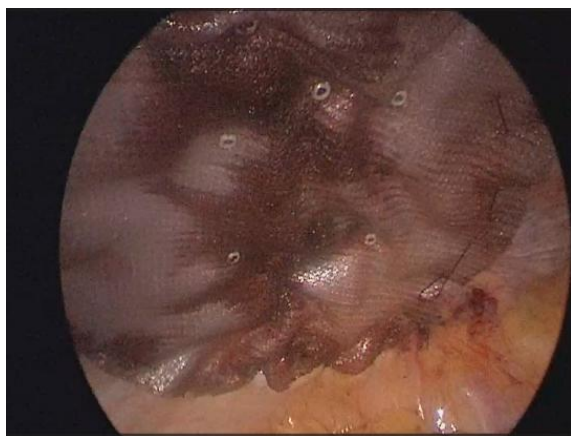


Figure 5: Mesh placement over the defect

4. Discussion

We present a case of PSH arising in a 5 mm port, contributing to the continuing discourse over the requirement of fascial closure for ports less than 10 mm.⁴ The uncertainty stems from the infrequency of PSH in smaller ports lacking fascia closure; this instance is the authors' first encounter with PSH in a port measuring less than 10 mm.

The actual frequency of PSH, encompassing every type, is probably greater than what is documented in current research, due to patients either failing to disclose symptoms or being lost to follow-up.⁵

A widely accepted classification system categorized PSH into three types³:

- 1) **Early-onset type** – Characterized by dehiscence of the anterior and posterior fascial planes as well as the peritoneum, typically presenting within days of surgery. This type frequently manifests as small bowel obstruction and may require urgent surgical intervention.
- 2) **Late-onset type** – Involves dehiscence of fascial layers with an intact peritoneum forming the hernia sac. Presentation may occur months or years after surgery and is often less acute.
- 3) **Special type** – Represents complete abdominal wall dehiscence with immediate postoperative evisceration.

Most reported 5-mm trocar-site hernias belong to the late-onset category, often presenting as a localized swelling rather than acute obstruction.

Late-onset PSH frequently presents without symptoms, with recent reports revealing an incidence rate of up to 23.7%, evaluated either physical examination of incision sites or imaging techniques.⁶ While we present a case of late-onset PSH, it seems to be less alarming because to the infrequent incidence of bowel imprisonment, in contrast to the early-onset variant.⁷

The incidence of PSH in port sizes lower than 10 mm is presumed to be very low, but it is important to understand the pathogenesis behind the same. Several risk factors linked to PSH have been documented, including obesity, age over 60 years, diabetes, extended surgical time, trocar manipulation force, the requirement for fascia augmentation during specimen extraction, and single-port incision laparoscopy (SILS).^{8,9}

In our case report, laparoscopic method was used to repair the PSH successfully. The laparoscopic technique facilitates the examination of the herniated intestine for viability, thus enabling intra-peritoneal onlay mesh repair. In the presence of gangrenous alterations in the strangulated gut, resection and anastomosis of the colon with primary repair must be performed. Late onset type PSH requires minimum expansion of the port site to facilitate the decrease of contents, followed by precise fascial closure using either an open or laparoscopic method. However, the laparoscopic method may be scrutinized due to the establishment of additional ports for the repair of the PSH, which may potentially serve as prospective locations for hernia development. This point is up for debate, but for now, laparoscopic method remains the best viable option for PSH repair.

Preventing trocar site hernias necessitates the closure of all port sites above 10mm at the fascial level. Certain authors advocate for the fascial closure of 5mm openings as well.³ Many authors have advocated for the deflation of pneumoperitoneum prior to port extraction to prevent the omentum and intestines from being pulled into the fascial defect. Additional methods to avert herniation encompass fascial closure with a fascial closure device, suture carrier, and Deschamps needle.¹⁰ Several publications have documented a reduced incidence of hernias associated with the utilization of a paramedian incision and non-bladed trocars featuring a conical tip.¹¹

Key Takeaways

Port-site hernia through a 5-mm trocar is exceedingly rare but can occur in obese patients even after years. Surgeons should suspect PSH in any patient presenting with delayed abdominal swelling at a prior laparoscopic port site, regardless of trocar size. Preoperative CT scanning is essential for diagnosis and operative planning. Laparoscopic IPOM repair is safe and effective. Consideration should be given to fascial closure of all port sites in high-risk patients such as those with obesity, as a preventive measure.

Data Availability Statement

No datasets were generated or analysed during the current study.

Funding Declaration

The authors declare that no funding was received for the conduct of this study or preparation of this manuscript.

Conflict of Interest Disclosure

The authors declare that they have no conflicts of interest.

Author Contributions

Monika Joshi: Conceptualization, Investigation, Data Curation, Writing- Original Draft, Writing- Review and Editing, Final Approval. Nitish Jhavar: Conceptualization, Methodology, Supervision, Writing- Review and Editing, Final Approval. All authors read and approved the final manuscript.

Ethics Approval Statement

Ethical approval was not required for this single patient case report as determined by the Ethics Committee of Apollo Hospitals, Sector 23, Parsik Hill Road, CBD Belapur, Navi Mumbai, Maharashtra 400614, India, in accordance with institutional policy. All methods and procedures were performed in accordance with the ethical standards of the Declaration of Helsinki 2013 and its later amendments, and in accordance with the International Committee of Medical Journal Editors (ICMJE) recommendations for the conduct, reporting, editing and publication of scholarly work in medical journals.

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