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Case Report

Strangulated umbilical hernia following laparoscopy

Mamadou Windsouri[1], Yamba Elie Sawadogo[2]*, Adama Zébango[3], Moustapha Ouédraogo[2], Aristide Sam[3], Roch Kafando[3], Edgar Ouangré[1]

[1]Department of General Surgery, Joseph KI-ZERBO University, Ouagadougou, Burkina Faso
[2]Department of Surgery, Yembila Abdoulaye Toguyeni University, Fada N'Gourma, Burkina Faso
[3]Department of General Surgery, CHU Yalgado Ouédraogo, Ouagadougou, Burkina Faso

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***Correspondence:**
Dr. Yamba Elie Sawadogo,
E-mail: elicomfr@yahoo.fr

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ABSTRACT

Post-laparoscopic herniation at a trocar site is a rare late complication with serious, potentially life-threatening consequences. In this case report, we describe the case of a 33-year-old nulliparous woman who presented with a painful, irreducible umbilical swelling over a trocar scar, with the overlying skin appearing blackish in colour. We made a diagnosis of strangulated hernia at the trocar site, which was confirmed by abdominal computed tomography. We performed a simple hernia repair, given the presence of viable ileal loops, using X-shaped sutures in the fascia. The post-operative course was uneventful. On this occasion, we review the aetiopathogenesis and closure of trocar orifices.

Keywords: Laparosopy, Strangulated hernia, Complication, Burkina Faso

INTRODUCTION

The development of laparoscopic surgery since the 1980s has been accompanied by the emergence of specific post-operative complications.[1,2] Trocar-site herniation remains one of these complications, with an estimated incidence of 1–3 per cent.[1,3] This complication is characterised by the protrusion of a viscera or part of a viscera through a hole created by the trocar during laparoscopy.[1] Its occurrence raises important questions regarding techniques for closing surgical incisions, particularly those with a diameter of 10 mm or greater.[3]

Herniation can occur either early or late, and its diagnosis is sometimes straightforward and obvious at the site of the incision.[4] The risk factors are well established: the size of the opening, extensive manipulation through the trocar, failure to close the fascia, and patient-specific factors (obesity, smoking, diabetes).[3] It constitutes a reason for reoperation and results in significant morbidity for the patient.[5] We present here the case of a patient admitted to the Yalgado Ouédraogo University Hospital (CHU-YO) who developed an incarcerated hernia through the orifice of a 10 mm optical trocar following a laparoscopy, in order to describe how it was detected and managed.

CASE REPORT

Clinical presentation

A 33-year-old married female was admitted to the visceral A&E department at CHU-YO with a painful, irreducible umbilical mass, without any obstruction of stool or gas, which had appeared 48 hours previously. On admission on 12 January 2026, the patient was in good general condition, fully alert, with a normal temperature of 37.30 and presented with an umbilical mass over a scar

from a laparoscopic trocar site; the mass was painful, irreducible and did not expand when the patient coughed. This umbilical swelling measured 5 cm in diameter, with the overlying skin appearing blackish. The remainder of the abdominal examination revealed a soft, depressible and painless abdomen. The gynecological examination revealed no particular abnormalities. Her gynecological history included a laparoscopy performed to investigate endometriosis in May 2025. The patient had never been pregnant or given birth. Her last menstrual period was three months ago.

Imaging and laboratory investigations

An emergency abdominal and pelvic CT scan revealed an umbilical defect measuring 21 mm × 25 mm, intestinal contents (Figure 1) and a moderate amount of haemoperitoneum. The complete blood count showed a haemoglobin level of 11 g/dl, a white blood cell count of 8,180 cells/ml and a platelet count of 233,000 cells/ml. The blood electrolyte levels were normal.



Figure 1: CT scan showing the defect with intestinal contents (orange arrow).

Surgical management

The diagnosis of a strangulated umbilical hernia through an optical trocar port was confirmed. Pre-operative resuscitation was carried out with the intravenous administration of saline solutions, analgesics (paracetamol and nefopam) and antibiotics (amoxicillin and clavulanic acid).

Repair of the hernia was performed within 8 hours of the patient's admission. During general anesthesia, spontaneous reduction of the strangulated bowel was observed (Figure 2). A midline incision was made above and below the umbilicus, bypassing the umbilicus on the left, followed by dissection and opening of the hernial sac, which was found to be empty. Exploration of the abdominal cavity revealed two lateral strangulations of the ileum, located 200 cm from the ileocecal junction; these appeared ecchymotic but viable (Figure 3), an enlarged uterus with several myomas and a sero-hematous effusion of 500 ml. The procedures performed consisted of aspiration of the intraperitoneal effusion, resection of the hernial sac and the excess prolapsed skin, and abdominal irrigation with isotonic saline solution. Repair of the umbilical hernia was carried out by suturing the aponeurosis with X-shaped stitches using non-absorbable No. 1 suture material and creating a neo-umbilicus.



Figure 2: Umbilical hernia (red arrow) and 5 mm trocar scars (yellow arrow).



Figure 3: Intraoperative finding of an incarcerated ileum with an ecchymotic appearance (blue arrow).

Post-operative course

The post-operative course was uneventful and the patient's hospital stay lasted four days. The patient was scheduled three months later for a Pfannenstiel myomectomy in the Department of Obstetrics and

Gynecology. Her recovery was uneventful. The patient is currently being treated for her desire to become pregnant.

DISCUSSION

A hernia at the trocar site is a complication of laparoscopic surgery, the incidence of which varies between 0.14 and 6 per cent depending on the study and patient characteristics.[1,2,4,6] Despite its low incidence, it poses a serious post-operative threat, particularly in its strangulated form, which can lead to acute intestinal obstruction and, in some cases, acute peritonitis due to necrosis of the incarcerated bowel loop. This observation demonstrates that, despite technical progress and advances in minimally invasive surgery, significant challenges remain.[7] Strangulated post-laparoscopic incisional hernia is one of the life-threatening complications that can lead to emergency reoperation.[1,7]

Laparoscopy is rapidly expanding in Burkina Faso. The rarity of such cases at the CHU-YO may be explained by the fact that several healthcare facilities manage this type of complication.[3,8,9] Preventing this iatrogenic complication is becoming a major safety issue.[9] Several authors agree that there are a number of general risk factors for incisional hernias of the abdominal wall: diabetes, severe renal failure, chronic obstructive pulmonary disease, ascites, HIV/AIDS infection, constipation, obesity, the postpartum period, smoking, malnutrition, abdominal wall infection and treatment with corticosteroids or chemotherapy.[1,3,7]

In our patient's case, we found that she was being treated for endometriosis and had a polymyomatous uterus. The increase in intra-abdominal pressure caused by a space-occupying lesion such as myomas is thought to be the cause. Once the diagnosis has been made, urgent re-operation is required, often via laparoscopy, to reduce the hernial contents and close the fascial defect. In severe cases such as this one, where the delay in consultation exceeded 48 hours, a laparotomy may be required, particularly if bowel resection proves necessary following necrosis. The closure technique used during the laparoscopy in this patient involved placing a 'U'-shaped suture through the fascia using slow-absorbing suture material. Despite the systematic closure of the fascia, ideally using the 'small bites' technique, the occurrence of herniation is likely linked to intra-abdominal hypertension resulting from uterine fibroids and peritoneal effusion.

In Africa, the risk factors for herniation at trocar sites are consistent with international standards, whilst also presenting specific characteristics linked to the local context, notably the level of technical facilities and the prevalence of certain comorbidities.[3,6,7,9] These various techniques recommend layer-by-layer suturing.[3] It is now routinely recommended to close the fascia at orifices 10 mm or larger, whilst orifices of 5 mm generally do not require routine closure unless there has been excessive manipulation or a prolonged operative time.[2,7] However, greater caution is advised for 10 mm orifices located along the midline or in patients with risk factors, where closure may be warranted.[3,4] The increasing use of visually guided closure devices (specialised closure needles) helps to improve the reliability and reproducibility of this essential procedure.

In the case of an uncomplicated hernia or eventration, it is recommended that the parietal repair be reinforced by the insertion of an abdominal prosthesis. In our case, it was an eventration that had been strangulated for several days, which contraindicated the insertion of prosthetic material.[10]

The prevention of post-laparoscopic parietal complications therefore relies on identifying patients at risk and ensuring that trocar sites are closed meticulously.[3] The intra-abdominal hypertension caused by uterine fibroids and peritoneal effusion was the factor leading to the herniation at a navel already weakened by the 10 mm trocar.

CONCLUSION

This case of an incarcerated hernia at the site of an optical trocar port serves as a reminder that laparoscopic surgery, whilst minimally invasive, is not without serious parietal complications. The evolution of laparoscopy towards more complex procedures has led to the use of larger and more numerous trocars. However, complications associated with their use remain insufficiently documented. All clinicians must bear this in mind when faced with abnormal parietal signs or a picture of intestinal obstruction. Prevention relies on simple measures aimed at avoiding the worsening of the parietal defect or premature tension on the scar, as well as the systematic suturing of any trocar port that has created a significant defect, and the identification and management of comorbidities. A robust closure technique, particular attention to the umbilical orifice, and clear patient information form the cornerstones of preventing this complication, which can, as in this case, transform a routine elective procedure into a potentially severe surgical emergency.

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