

Internal small bowel herniation through peritoneal defect following inguinal hernia repair with the TAPP technique

Hernia interna del intestino delgado a través de defecto peritoneal posterior a reparación de hernia inguinal con técnica TAPP

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ABSTRACT

Small bowel obstruction following inguinal hernia repair by transabdominal preperitoneal technique is rare. As procedures such as the transabdominal preperitoneal technique (TAPP) are performed more frequently, uncommon complications become more frequent and must be considered in perioperative and postoperative management. We present the case of a 26-year-old male patient who presented 10 hours after his discharge from inguinal hernioplasty by laparoscopy with preperitoneal transabdominal technique, with clinical symptoms suggestive of intestinal obstruction; an internal hernia of the small intestine was observed through the peritoneal defect, this being an uncommon complication after this procedure. Diagnostic laparoscopy was performed, and a small bowel loop herniated in the preperitoneal space through a peritoneal defect was identified as the origin of the obstruction without evidence of loop distress, so the hernia was reduced. Subsequently, the defect was closed with polyglactin 910 3-0.

RESUMEN

La obstrucción del intestino delgado posterior a reparación de hernia inguinal por técnica transabdominal preperitoneal es poco frecuente. A medida que se realizan con mayor frecuencia procedimientos como la técnica transabdominal preperitoneal (TAPP), las complicaciones poco comunes se vuelven más frecuentes y se deben tener en cuenta en el manejo perioperatorio y postoperatorio. Presentamos el caso de paciente masculino de 26 años que acude 10 horas posteriores a su egreso de hernioplastia inguinal por laparoscopia con técnica transabdominal preperitoneal, con cuadro clínico sugestivo de una obstrucción intestinal, se observó una hernia interna del intestino delgado a través de defecto peritoneal, siendo ésta una complicación poco común posterior a este procedimiento. Se realizó laparoscopia diagnóstica, se identificó como origen de la obstrucción un asa de intestino delgado herniada en el espacio preperitoneal a través de un defecto peritoneal sin evidencia de sufrimiento de asa, por lo cual se reduce la hernia y posteriormente se cierra el defecto con poli-glactina 910 3-0.

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INTRODUCTION

Obstruction of the small bowel following inguinal hernia repair by transabdominal preperitoneal technique (TAPP) is rare, with an incidence of 0.2 to 0.5%. Common causes of this are inadequate closure, port site herniation, and adhesions. Several risk factors that may

predispose to this complication's development must be considered to avoid it.¹

The cause of a hernia in the preperitoneal space can be attributed to insufficient closure of the peritoneal flap with loosening of the suture and subsequent displacement of the small bowel, or it can also herniate through a poorly closed peritoneal defect. Complications

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arising from failure to close peritoneal tears include exposure of the mesh to the bowel with a risk of bowel erosion, adhesion formation, internal herniation through the tear, and bowel obstruction.²

A literature review was done, and a few reported cases of this complication were found. The study's objective is to present the case of a 26-year-old patient postoperative of TAPP, who suffered from intestinal obstruction secondary to small bowel loop incarceration in the peritoneal flap of said hernioplasty. Likewise, a literature review was carried out since this complication is infrequent; it is essential to know about it and to take it into account within the differential diagnoses to solve it promptly.

CLINICAL CASE

The case of a 26-year-old male patient with no medical history of importance is presented. He started suffering 10 hours after his discharge from inguinal hernioplasty by laparoscopy with the TAPP technique with nausea and vomiting of gastro alimentary content on three occasions, associated with abdominal pain in the lower quadrants, cramping, and absence of bowel movements.

On physical examination, his vital signs were within normal parameters; the mucous membranes were underhydrated, the abdomen had decreased peristalsis, and was soft, depressible, and with mild pain on mid and deep palpation in a generalized manner, with no evidence of peritoneal irritation.

Labs were requested and revealed hemoglobin 17.2 g/dl, hematocrit 50%, leukocytes 12,800 cells/mm³, platelets 337,000 cells/mm³, C-reactive protein 6.51 mg/dl, serum creatinine 1.40 mg/dl, and BUN 23 mg/dl.

The patient was admitted for observation, intravenous hydration with lactated Ringer's solution was administered, and symptomatic medical management was instituted, persisting with symptomatology, for which the placement of a nasogastric tube (NGT) and a computed tomography (CT) scan of the abdomen with intravenous contrast was indicated. The abdominal CT scan demonstrated a small bowel obstruction with a suspected internal

hernia (*Figure 1*). Based on clinical and radiological findings, it was decided to perform an emergency diagnostic laparoscopy. A small bowel loop herniated into the preperitoneal space through a peritoneal defect was identified as the origin of the obstruction (*Figure 2*). No evidence of loop distress was identified, so the hernia was reduced, and subsequent closure of the peritoneal defect with polyglactin 910 2-0 cross-stitches was done.

In the postoperative period, with good evolution, he presented gas channeling and two bowel movements; the nasogastric tube was removed; he tolerated the oral route and was discharged 48 hours after surgery. The

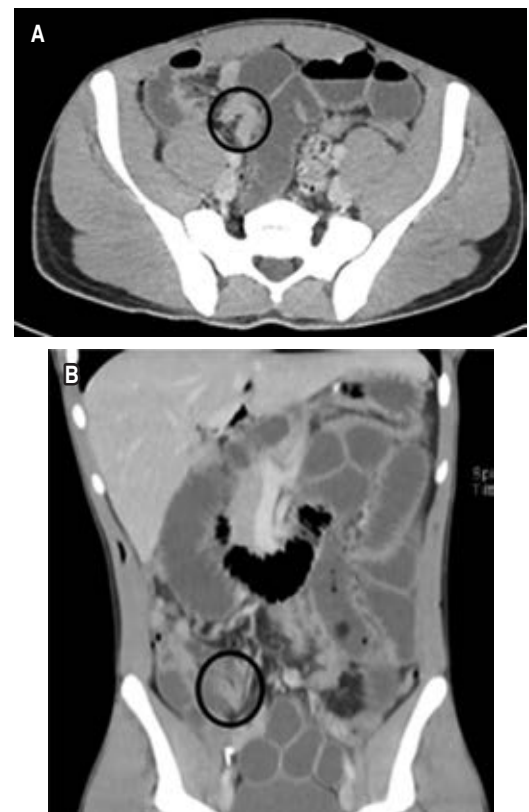


Figure 1: Computed axial tomography scan of the abdomen with intravenous contrast. Dilatation of intestinal loops up to 3.5 cm in caliber and formation of hydro-aerial levels are seen. Areas of decreased caliber in the distal ileum at the right iliac fossa (circle) level are shown. Distal to this transition zone is a decrease in the caliber of the colonic frame. There is free fluid in the pelvis region. **A)** Axial section. **B)** Coronal section.

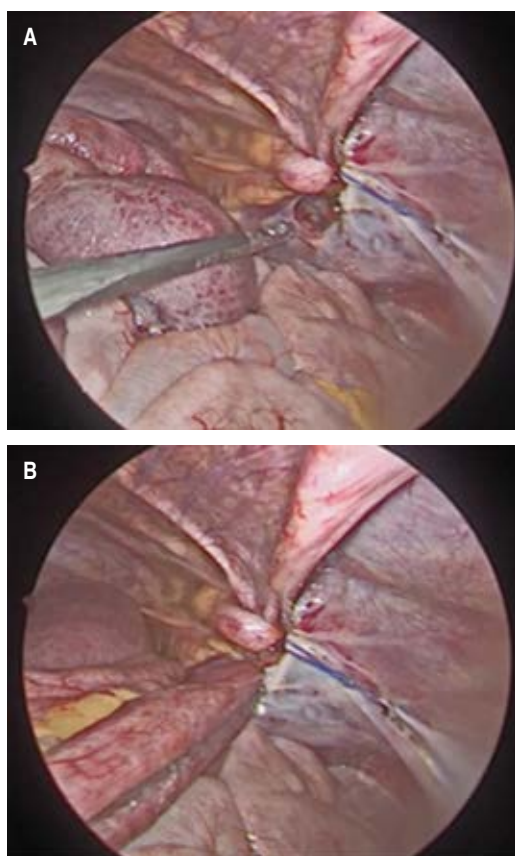


Figure 2: **A)** Peritoneal defect is observed after the reduced herniated small bowel loop. **B)** A herniated small bowel loop in the preperitoneal space through the peritoneal defect is shown.

patient was subsequently seen seven days after surgery. He had good evolution and tolerated the regular diet; he had no nausea, vomiting, or abdominal pain. Regular bowel movements were present without alarm data, for which he was discharged from the hospital.

DISCUSSION

This case represents a rare complication following inguinal hernia repair by TAPP. This technique is performed more frequently because it is a minimally invasive procedure, with less postoperative pain, better esthetics, and shorter hospital stay.³

Common causes of this complication are inadequate closure, port site herniation, and adhesions.¹ The presence of comorbidities

and the size of the hernia defect are factors correlated with postoperative complications that often require reoperation.⁴

Risk factors for early surgical management include closed-loop obstruction, CT evidence of intestinal ischemia, recurrent small bowel obstruction, evidence of peritoneal irritation, or systemic inflammatory response syndrome.¹

Good closure of the peritoneum during the initial procedure with particular attention to detail is essential to avoid preperitoneal hernias following TAPP. The cause of a hernia in the preperitoneal space can be attributed to insufficient closure of the peritoneal flap with loosening of the suture and subsequent displacement of the small bowel, or it can also herniate through a poorly closed peritoneal defect. The resulting small bowel obstruction that follows this causes symptoms of postoperative ileus.⁵

Many methods of closing the peritoneal flap include sutures, tacks, and staples. Fewer cases of a hernia in the preperitoneal space have been reported when using sutures for closure.⁶ A bowel obstruction complication of laparoscopic inguinal hernia repair can be divided into adhesive or herniated disease. The one caused by herniation can be subdivided into early, due to peritoneal defects, or late, because of herniation at the port site.² In the case presented here, we can see that the cause was an early herniation caused by a peritoneal defect. Complications that could arise from failure to close peritoneal tears include exposure of the mesh to the bowel with a risk of bowel erosion, adhesions, internal hernia through the tear, and bowel obstruction.²

In addition, other surgical details related to reducing peritoneal tension become essential. The pneumoperitoneal pressure can be reduced to 8-10 mmHg by closing the peritoneal flap. Also, more peritoneum can be dissected from the cord structures inferiorly to the peritoneal reflection. Finally, carbon dioxide should be released slowly to avoid a sudden pressure difference between the abdominal cavity and the preperitoneal space.⁷

In the literature, it was found that closing the peritoneal flap with sutures reduces the risk of a hernia appearing in the preperitoneal space, which in our case was how the peritoneal

flap was initially closed; even so, had this complication but was also the reason why we closed the peritoneal defect again with sutures and no other material to prevent it from tearing again was used, and with which we were able to have a favorable evolution of the patient and not present this complication again.

CONCLUSIONS

In conclusion, this case shows an infrequent complication, corresponding to a bowel obstruction caused by a preperitoneal hernia during the early postoperative period related to a failure to close the peritoneal defect during the TAPP procedure.

As procedures such as TAPP are developed more frequently worldwide, uncommon complications become more frequent and must be considered in perioperative and postoperative management. This differential diagnosis was considered in our case, so we intervened quickly and had adequate management.

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