Laparohernioscopic right colectomy for bowel ischaemia within a strangulated inguinal hernia

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ABSTRACT

Visual inspection of the content of the hernia sac is a crucial step of the emergency repair of strangulated inguinal hernias, to rule out the presence of bowel ischaemia which would need resection. Occasionally the content of the hernia sac reduces spontaneously into the abdomen after the induction of general anaesthesia and cannot be assessed. We present a case where hernioscopy (i.e. laparoscopy through the hernia sac) has been used to confirm the ischaemia of the strangulated bowel and perform a hybrid laparohernioscopic right colectomy with intracorporeal anastomosis without the need for a formal laparotomy. Hernioscopy is an easy and reliable method to assess the viability of the content of the hernia sac in strangulated hernias that have spontaneously reduced before it could be visually inspected. It can also be associated with a laparoscopic access in a hybrid laparohernioscopic technique to perform complex procedures.

KEYWORDS

Hernioscopy–Strangulated inguinal hernias–Right colectomy

Accepted 23 February 2019

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Introduction

Strangulated inguinal hernias still represent surgical emergencies mainly for the risk of bowel ischaemia. Occasionally, the strangulated hernia can reduce spontaneously into the abdomen at the induction of the anaesthesia, thus making it impossible to explore the content of the sac. Hernioscopy, that is the laparoscopic exploration of the abdominal cavity through the hernia sac, allows the surgeon to assess the viability of the herniated bowel without a formal laparotomy.^{1,2} We hereby report a case of laparoscopic right hemicolectomy performed via a combined hernioscopic and laparoscopic approach.

Case history

A 70-year-old man was admitted with a tender and non-reducible right inguinal lump, nausea, vomiting and bowels not opened for five days. At the time of admission he was pale and dehydrated, his abdomen was distended and moderately tender in all quadrants, and there was a firm and tender lump of the size of an orange at his right groin. Bowel sounds were hyperactive. He reported the occasional presence of a right inguinal lump for some years, always easily reducible with pressure and position. Blood tests showed increased white blood cell count, C-reactive protein and lactate. Computed tomography (Figure 1)

confirmed the presence of a strangulated right inguinal hernia causing small bowel obstruction.

The patient was offered an emergency inguinal hernia repair and was informed of the possibility of conversion to laparoscopy, laparotomy and hernioscopic exploration. He was prepared for surgery and received general anaesthesia and myorelaxants. When he was transferred to the surgical table, it was clear that the strangulated hernia had spontaneously reduced into the abdomen.

An oblique incision of the right groin was made; the spermatic cord was completely mobilised and the now empty hernia sac was dissected free from its adhesions to the cord. A 12-mm trocar was inserted into the sac and secured with a purse-string, and pneumoperitoneum was obtained. The patient was tilted to the Trendelenburg position to move the bowel off the pelvis and a 30-degree scope was introduced into the abdomen through the sac.

The exploration of the abdomen showed free fluid in the pelvis and extensive ischaemia of the last 20 cm of the terminal ileum and of the right colon up to a point 5 cm below the hepatic flexure. Warm water and observation for 10 minutes did not change the appearance of the bowel, so resection was warranted.

Unfortunately, the inguinal access did not allow a good control on the vessels, so another 10-mm trocar was inserted at the umbilicus and two 5-mm trocars were inserted in the left hemiabdomen.

Figure 1. Computed tomography showing strangulated hernia and bowel obstruction.

A right hemicolectomy was performed without central vascular ligation. The specimen was inserted into a bag and temporarily placed within the hernia sac and later on retrieved from there. A side-to-side double-layer manual and stapled ileotransverse anastomosis was performed and the enterotomy was closed with a double layer vicryl suture. No drain was used. The operation was concluded with a mesh repair of the hernia after the sac was closed with vicryl and buried. The patient recovered well, was allowed to eat and drink and fully mobilise on day one, and was considered to be fit for discharge on postoperative day 4. At the three-month follow up, he was in good health, his bowels were working normally and there was no local complication of his hernia repair or recurrence of the hernia.

Discussion

The optimal surgical access for the emergency repair of a strangulated inguinal hernia is still a matter for debate. The general agreement nowadays is that surgery should start with an inguinal access that would allow the

exploration of the sac in the vast majority of cases. Unfortunately, sometimes the content of the hernia slides back into the abdominal cavity at the induction of general anaesthesia or during the surgical preparation of the spermatic cord, thus making it impossible to confirm the viability of the strangulated bowel.

Traditionally, a limited midline or transverse laparotomy was considered to be the gold standard to access the abdomen, but at the expense of increased morbidity related to the laparotomy itself. The advent of laparoscopy has changed this paradigm and laparoscopy has been extensively used to rule out ischaemia of the spontaneously reduced bowel.⁵

Hernioscopy, that is laparoscopy through the hernia sac, was proposed over 20 years ago but surprisingly it never gained wide popularity.^{1,2} In fact, to date relatively few reports have been published. The 2018 international guidelines on the treatment of inguinal hernias by the Hernia-Surge Group are very cautious, owing to the absence of clear evidence, despite acknowledging a potential value for diagnostic hernioscopy.⁴ It must be admitted that obtaining an adequate sample size and arranging a proper randomised controlled trial may not be straightforward, because of the very specific and uncommon indications for hernioscopy; thus, the lack of statistically significant evidence is not unexpected. The preliminary results of a small randomised trial of hernioscopy compared with no hernioscopy in patients with spontaneously reduced strangulated hernias reported 20% morbidity, 10% mortality and 10% unnecessary laparotomies in no hernioscopy group compared with no mortality, morbidity or unnecessary laparotomies in the hernioscopy group.⁵ However, this study has not been followed up with the definitive results and its statistical and clinical significance is quite low. Romain *et al* demonstrated that exploratory laparotomy in strangulated hernias is unnecessary in about 50% of cases and is itself a major cause of complications.⁶ They performed an abdominal exploration on 12 patients whose hernia content reduced spontaneously into the abdomen at the induction of the anaesthesia. The exploration was performed by laparotomy in eight patients, by laparoscopy in one patient and by hernioscopy in three patients. Six of the eight patients who underwent laparotomy had a postoperative complication, whereas no complication was recorded in the laparoscopy/hernioscopy group.⁶

The majority of the studies on hernioscopy deal only with the diagnostic phase of this technique and do not explore its interventional possibilities. For example, Morris-Stiff and Hassn reported five cases of hernioscopy, four with negative results and one followed by open splenectomy due to a lesion not related to the hernia repair.⁷ The authors claim that in the latter case the exploration of the upper abdomen was not feasible from the hernioscopic access, so they decided to perform a formal laparotomy. Piccolo *et al* published their series of four patients who had hernioscopy, but only one of them needed small-bowel resection.⁸ To our knowledge, the case presented here is the first report of a laparohernioscopic right hemicolectomy following a positive hernioscopy.

In fact, while simple hernioscopy allows the exploration of the abdominal cavity without the need for an additional abdominal access, a complex procedure such as a bowel resection may need a mixed laparohernioscopic approach, with additional trocars being inserted through the abdominal wall.

In our case, after hernioscopic access, we introduced a 10-mm trocar into the umbilicus for the camera and two 5-mm ports in the left hemiabdomen, and the groin access was used for retraction and to pass the stapler. The ensuing surgical resection followed the classical rules of a non-cancer right colectomy, where the surgical margins were decided on the basis of the extension of the ischaemia. The anastomosis was a classical double layer intracorporeal anastomosis, which was chosen to avoid an extensive mobilisation of the proximal transverse colon. The extraction of the specimen was performed through the groin and within a bag to avoid contamination of the wound. No additional mini-laparotomy was needed, making this a truly minimally invasive procedure.

Conclusion

Hernioscopy allows the exploration of the abdominal cavity and the full assessment of the bowel in cases of strangulated inguinal hernias where the content of the sac has

spontaneously reduced into the abdomen before it could be visually assessed by the surgeon. A combined herniolaroscopic approach may allow complex procedures to be performed without the need for a formal laparotomy in case of bowel ischaemia.

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