Hernia (2012) 16:585–587
DOI 10.1007/s10029-010-0776-7

CASE REPORT

Unusual clinical presentation of a preperitoneal hernia following endoscopic totally extraperitoneal inguinoscrotal hernia repair

C. R. Berney

Received: 20 September 2010 / Accepted: 25 December 2010 / Published online: 12 January 2011

Abstract Breach of the peritoneal cavity during totally extraperitoneal (TEP) inguinal hernioplasty is not an uncommon event. If left unclosed, it can potentially lead to bowel obstruction. Primary repair of such a defect can therefore be very beneficial to the patient, however it doesn't necessarily prevent it. I present the case of an incomplete small bowel obstruction following elective TEP repair of an inguinoscrotal hernia with primary closure of the divided hernia sac. The lesson learned from this patient is to remain suspicious of any unusual (even mild) post-operative abdominal symptom that could be the first sign of an early complication, especially when the initial repair was presumably satisfactory.

Keywords Endoscopic inguinal hernia · TEP · Bowel obstruction · Preperitoneal hernia

Introduction

Endoscopic totally extraperitoneal (TEP) inguinal hernia repair in adult patients is considered as safe as open mesh repair with respect to major vascular and visceral injury, when compared to the transabdominal preperitoneal (TAPP) approach [1]. This is due to the fact that TEP repair is performed without entering the peritoneal cavity. Nevertheless, this technique still carries a considerable risk of breach in the peritoneum that could potentially lead to small bowel obstruction if not properly closed. I present the case of an early post-operative incomplete small bowel obstruction following elective endoscopic inguinoscrotal hernia repair and failed primary closure of the divided hernia sac.

C. R. Berney (✉)
Department of Surgery, Bankstown-Lidcombe Hospital, Eldridge Road, Bankstown, NSW 2200, Australia
e-mail: berneycr@hotmail.com

Case report

A 62-year-old male patient was referred with a symptomatic reducible right inguinoscrotal hernia known for several years. His main symptoms were groin pain exacerbated by physical and sport activities. His past medical history was otherwise unremarkable. He had never had any previous abdominal surgery.

A TEP hernia repair was performed using a standard technique, as previously described elsewhere [2]. Due to the difficulty to completely reduce the hernia sac from the scrotum, a decision was made to divide it at the level of the deep inguinal ring and to close the proximal end of the peritoneum with a pre-tied loop of PDS (Endoloop Ligature PDS II, Ethicon Endo-Surgery, Somerville, NJ) while leaving the distal end open. A large size (10.8 × 16 cm) three-dimensional, anatomically formed polypropylene mesh (3DMax®, Bard, Warwick, RI) was used to repair the defect, and was fixed with 2 ml fibrin sealant (Tisseel, Baxter, Deerfield, IL). The patient had an uneventful postoperative recovery and was discharged home on the same day of surgery.

Five days later, he returned to hospital with abdominal bloating, nausea and vomiting. Physical examination revealed a slightly distended, but non-tender abdomen, no palpable mass and normal bowel sounds. His right groin was also soft and non-tender on palpation. An abdominal CT-scan showed dilatation of several small bowel loops down to a transition point in the right iliac fossa. There was

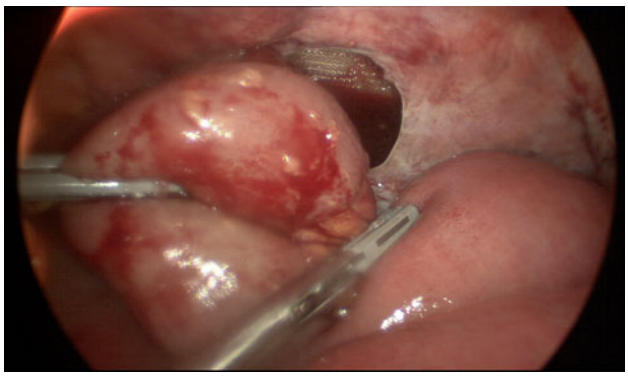

Fig. 1 Loop of herniated small bowel reduced from peritoneal defect

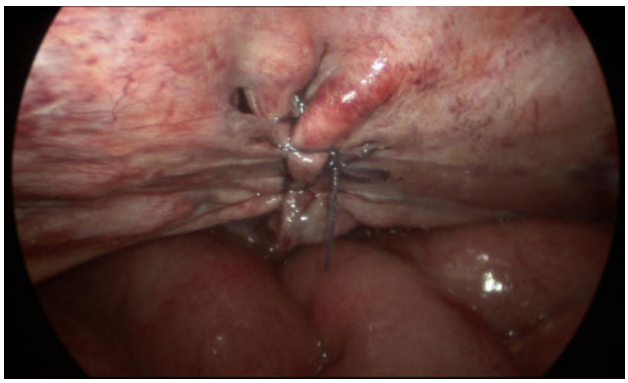

Fig. 3 Closure of peritoneal defect with a continuous suture

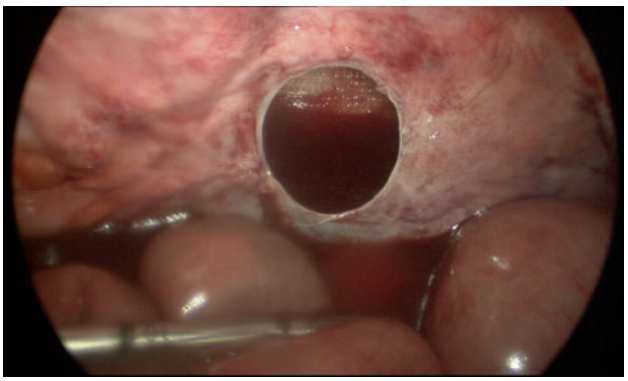

Fig. 2 Peritoneal defect showing part of the mesh in the background

Fig. 4 Repair reinforced with fibrin glue

no evidence of internal hernia formation. Under conservative management the patient's symptoms improved rapidly and he was able to resume almost normal bowel activities within 24 h of his admission. Despite noticeable improvement, a decision was made to perform a diagnostic laparoscopy the following day, motivated mainly by the previous CT-scan findings.

A loop of distal small bowel was found to be herniated through a peritoneal defect at the level of primary closure of his divided hernia sac. The Endoloop of PDS had detached completely and was found lying at the edge of the defect (Fig. 1). The congested small bowel was then reduced, showing part of the polypropylene mesh in the background still in place and adherent to the abdominal wall (Fig. 2); the peritoneal defect was then closed with a continuous absorbable suture of 3/0 Vicryl (Fig. 3) and reinforced with 2 ml fibrin sealant (Fig. 4). The patient made an uncomplicated recovery. At 2 and 6 weeks post-operative review, he was very well with no residual groin pain or discomfort. No physical limitation whatsoever was noted with his daily physical or sport activities.

Discussion

The reported rate of intra-operative peritoneal laceration during TEP repair of hernia ranges from 10% to 64% [3], most often during blunt dissection of the hernia sac and the peritoneum from the spermatic cord structures in males. This risk is increased considerably in the presence of adhesions from previous lower abdominal surgery or following appendicectomy [4]. Most laparoscopic surgeons would advocate routine closure of a peritoneal tear, especially a large one, based on the assumption that it may predispose to bowel herniation into the defect and/or adhesion formation between the bowel and the exposed mesh. The risk of small bowel obstruction after TEP repair has been evaluated at around 0.05% [5], which is comparable to open inguinal hernia repair.

There are two well defined clinical presentations where the peritoneum would be intentionally opened for adequate repair of the inguinal defect. Presence of an unclosed processus vaginalis in a congenital inguinal hernia, or a chronic inguinoscrotal hernia where reduction of the distal part of the peritoneal sac is a potential hazard to the

spermatic cord structures, such as in this report. In these cases, complete division of the hernia sac at the level of the deep ring is performed with primary closure of the proximal end. This can be achieved with placement of a pre-tied suture loop as previously described [6], extracorporeal knot, or by intracorporeal suturing of the defect. The main advantages of using a pre-tied suture loop as in this case are its simplicity and its safety.

A recent case report [7] described similar laparoscopic findings but the initial surgery and subsequent clinical presentation varied significantly. In his article [7], McKay performed a TAPP repair of a right indirect inguinal hernia. A small peritoneal hole noticed at the end of the procedure was subsequently apposed and closed with a single tack application. Within 48 h, the patient developed clinical signs of bowel obstruction with abdominal pain, and a CT-scan revealed the preperitoneal herniation of small bowel into the region of the TAPP repair. In my case, the peritoneal opening was performed deliberately and was closed easily with an Endoloop that I commonly use in identical situations. Five days later, the patient re-presented with only minimal abdominal symptoms; a CT-scan identified a transition point towards the right iliac fossa but no evidence of hernia formation and the patient spontaneously improved under conservative management.

Preformed loops (pre-tied knots) are commonly used in laparoscopy to ligate tissues such as the base of the appendix or cystic duct, to secure a divided vessel, or both ends of the sectioned round ligament during inguinal hernia repair in women. Slippage of such a widely used and efficient device is therefore very uncommon, but as it is not actually suture tied, this risk persists and should always be kept in mind following a straightforward procedure, especially if the patient does not make rapid and steady progress. Out of more than 500 TEP inguinal hernia repairs—which by definition carry a very small risk of bowel injury—that I have performed since early 2005, this is my first presentation of incomplete small bowel obstruction. The lesson learned from this case, therefore, is not to always assume that surgical devices such as the Endoloop will necessarily offer a perfect result.

We now understand that Endoloop slipping is a potential complication that may be a leading cause of intestinal obstruction. In order to minimize this risk, we should always aim for a bigger sleeve of peritoneal sac tissue on the cutting side of the Endoloop, and maybe secure the closure by double application of the device. Finally, depending on the surgeon's skills, intracorporeal suturing of the defect still remains the best option in terms of slippage prevention.

In conclusion, after every TEP repair of inguinal hernia, surgeons should be suspicious of any unusual, even mild, abdominal symptom as this could be the first sign of an early post-operative complication as clearly demonstrated in this case report. Diagnostic laparoscopy should be offered promptly to the patient as the procedure of choice due to its safety and the minimal risk that it carries in case of a negative finding.

References

1. Simons MP, Aufenacker T, Bay-Nielsen M, Bouillot JL, Campanelli G, Conze J, de Lange D, Fortelny R, Heikkinen T, Kingsnorth A, Kukleta J, Morales-Conde S, Nordin P, Schumpelick V, Smedberg S, Smietanski M, Weber G, Miserez M (2009) European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. Hernia 13:343–403
2. Khaleal F, Berney CR (2010) The role of fibrin glue in decreasing chronic pain in laparoscopic totally extraperitoneal (TEP) inguinal hernia repair: a single surgeon's experience. ANZ J Surg. doi: 10.1111/j.1445-2197.2010.05438.x
3. Muzio G, Bernard K, Polliand C, Rizk N, Champault G (2006) Impact of peritoneal tears on the outcome and late results (4 years) of endoscopic totally extra-peritoneal inguinal hernioplasty. Hernia 10:426–429
4. Ramshaw BJ, Tucker J, Duncan T, Heithold D, Garcha I, Mason EM, Wilson JP, Lucas GW (1996) The effect of previous lower abdominal surgery on performing the total extra peritoneal approach to laparoscopic herniorrhaphy. Am Surg 62:292–294
5. Tamme C, Scheidbach H, Hampe C, Schneider C, Kockerling F (2003) Totally extraperitoneal endoscopic inguinal hernia repair (TEP). Results of 5,203 hernia repairs. Surg Endosc 17:190–195
6. Lau H, Patil NG, Yuen WK, Lee F (2002) Management of peritoneal tear during endoscopic extraperitoneal inguinal hernioplasty. Surg Endosc 16:1474–1477
7. McKay R (2008) Preperitoneal herniation and bowel obstruction post laparoscopic inguinal hernia repair: case report and review of the literature. Hernia 12:535–537