

Sneeze-induced transvaginal small bowel evisceration and obstruction nine months after iatrogenic vaginal vault laceration: a case report

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Abstract

Transvaginal evisceration (TE) is the extrusion of intra-abdominal viscera through the vagina. According to the literature, few cases have been reported, most of them involving elderly women who underwent previous pelvic surgery. Here we present the case of a 72-year-old woman who was admitted to our hospital due to the sensation of vaginal obstruction that appeared after a sneeze nine months after a repair of a vault laceration following prior complex pelvic surgery. A clinical diagnosis of small bowel transvaginal evisceration with obstruction was quickly made. In this case, adhesions, bowel obstruction, and the presence of a fibrotic scar on the vaginal vault were the main obstacles to the repair. However, a multidisciplinary evaluation and a combined laparoscopic-transvaginal minimally-invasive approach proved to be safe and effective in achieving good surgical outcomes in the treatment of this condition.

Introduction

TE is the extrusion of intra-abdominal viscera through the vagina; it is a rare condition and the small bowel is the most commonly involved organ.¹⁻³ According to literature, few cases have been reported mostly regarding elderly women who underwent previous pelvic surgery.^{1,4} Moreover a sudden raising of the intra-abdominal pressure (IAP) could trigger a vaginal vault dehiscence and the subsequent organ prolapse.^{1,2,5} No definitive data about the management and surgical approach to this condition are available, but different surgical strategies have been reported.^{1,2,4,6-9} Here we present the case of a 72-year-old woman with a previous history of pelvic surgery who presented to our emergency department (ED) due to the sensation of vaginal obstruction that appeared after a sneeze. A clinical diagnosis of a small bowel obstruction (SBO) due to TE was quickly made. Laparoscopy plays an arising role in the emergency setting: although in the presence of an ongoing SBO, adhesions, and frail fibrotic tissue, a combined laparoscopic-transvaginal approach proved to be safe and effective for the treatment of TE.

Case Report

A 72-year-old woman was admitted in April 2023 to our ED due to the sensation of vaginal obstruction following a sneeze. She had a past medical history of hypertension, urinary tract infections, atrial fibrillation, and constipation. About 1 year before ED admission the

patient underwent a hysterectomy and radical cystectomy with ureterostomy for an urothelial carcinoma. Moreover, nine months before symptom onset, a laparoscopic lysis of adhesion was performed due to an intestinal occlusion, and, intraoperatively, an iatrogenic laceration of the vaginal vault was repaired. On admission, the patient was hemodynamically stable and complained of pain in all abdominal quadrants. Physical examination showed a mildly distended abdomen with valid peristalsis and no signs of peritonitis, but approximately 30 centimeters of oedematous ileum were protruding from the patient's vagina. An immediate manual reduction was not possible due to bowel incarceration. Blood tests showed a white blood cell count of $9.96 \times 10^9/L$, a CRP of 35 mg/L, and a lactate level of 1,23 mmol/L. An abdominal X-ray was performed showing a gaseous distension of the bowel without free air in the abdominal cavity (Figure 1).

After a multidisciplinary clinical evaluation with both the general surgeon and gynecologist on call, an urgent exploratory laparoscopy was proposed. In the operating theater, abdominal compliance arose after curarization (Figure 2), and the evisceration was manually reduced transvaginally; a gauze was placed in the vagina to prevent gas loss through the vaginal tear during laparoscopy.

The pneumoperitoneum was induced with an open technique. After careful lysis of peritoneal adhesions, a 3 cm tear in the vaginal vault was identified where the ileum was passing through (Figure 3).

A first attempt to close the defect was made by a running trans-abdominal suture (Figure 4A). However, the laceration edges were so oedematous, fibrotic, and frail due to the previous repair that the tissue began to break under tension. A debridement of the edges and subsequently a laparoscopic-checked double-layer colporrhaphy were performed transvaginally by the gynecologist, obtaining an almost complete obliteration of the tear (Figure 4B).

An additional layer of running suture was applied by laparoscopy to fully close the defect. The recovery was uneventful, and the patient was discharged on postoperative day 7 with the advice to avoid physical efforts in the first month after surgery. During subsequent outpatient follow-up, performed up to six months after surgery, the patient reported clinical and subjective well-being.



Figure 1. Abdominal X-ray performed on admission showing distension of bowel loops.



Figure 2. Vaginal examination in the operating theater after induction of anesthesia.

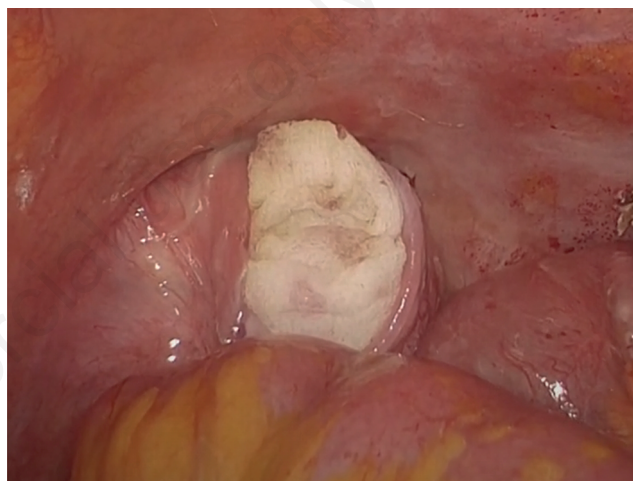


Figure 3. Laparoscopic view of the pelvis following small bowel evisceration reduction.

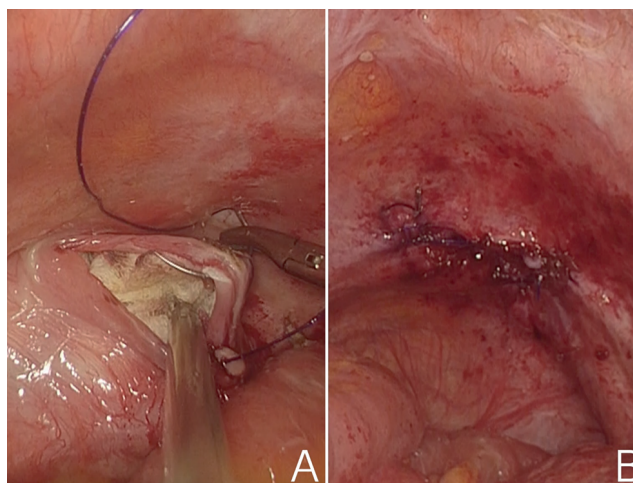


Figure 4. A) First trans-abdominal laparoscopic running closure to partially close the vaginal vault defect. B) End result after transvaginal double layer colporrhaphy and closure completion with a trans-abdominal laparoscopic suture.

Discussion

TE is a very rare condition and it seems to be associated with aging and previous hysterectomy;^{3,5,10} the loss of the estrogenic trophic effect and the history of previous pelvic surgery can weaken the connective tissue of the vaginal vault that can subsequently tear as a result of a sudden increase of intra-abdominal pressure.^{2,4,5,8,11} This occurrence can lead to the escape of abdominal viscera through the vaginal canal: a surgical emergency that needs to be promptly recognized and treated to avoid further complications.^{2,4,10,12} When performing a hysterectomy some intraoperative risk factors can lead to the development of a future vaginal evisceration.² For this reason some authors recommend the use of electrocautery on cutting mode, the use of sutures instead of electrocoagulation to obtain vaginal hemostasis, and a two-layer cuff closure suture with polydioxane.¹³ Additionally, a large number of risk factors for TE have been identified such as multiparity, enterocele, vaginal trauma, and chronic exposure to IAP rising (e.g. coughing, constipation, physical exertion).^{2,4,5,8,12} Moreover, different general and medical conditions that interfere with wound healing (e.g. poorly controlled diabetes, malignancy, pulmonary disease, smoking, malnutrition, tissue radiation, steroid use) could be addressed as contributing factors to TE.^{2,6,11} In our own experience, we faced a TE in a patient who had undergone open pelvic surgery with a hysterectomy and a subsequent minimally invasive intervention for SBO with iatrogenic intraoperative laceration of the vaginal vault repaired with an intra-abdominal laparoscopic suture. The presence of a vaginal scar in a post-menopausal, constipated woman represents a weak point where a sudden increase of the IAP can determine a small bowel breaking through, as happened in this case following a sneeze.

Patient status and bowel viability need to be evaluated on admission to assess the proper management and prompt surgical approach.^{1,2,8} Past medical history, intraperitoneal presence of a foreign body, possibility to reduce the prolapsed viscera, and surgical exposure are also to be considered.^{2,4,7,13} According to the literature, in a hemodynamically stable patient, an attempt to reposition the bowel intraperitoneally should be performed on admission to alleviate pain and symptoms and to prevent small bowel ischemia.^{1,7,10} Despite what other authors suggest, an immediate surgical repair is preferable to prevent discomfort, pain, and complications related to reducing maneuvers such as bowel perforation.⁸ Furthermore, surgical abdominal exploration is mandatory in the presence of hemodynamic instability, bowel incarceration, or any signs of bowel ischemia.^{1,10} In our case, the herniated bowel was pink and viable, the patient was hemodynamically stable and the blood tests did not reveal a significant elevation of both lactate and inflammatory markers. However, surgery was performed straightaway because of the impossibility of fully replacing the bowel in the abdominal cavity and the need to prevent the development of further complications.

Although a rare condition, the treatment of TE via both abdominal and vaginal approaches has been described.^{1,2,4,8,10,14} To date the development of minimally invasive surgery allows to perform of laparoscopic and robotic abdominal approaches even in the emergency setting for the treatment of selected patients.^{7,9,15} The less invasive vaginal approach allows the necessary debridement of the tear edges and the direct repair of the defect,^{1,2} but the absence of a complete exposition of the bowel could be considered a major limitation for this approach.^{1,2} As frequently reported in the literature, bowel viability and perfusion assessment are mandatory in case of incarceration or suspected ischemia.^{1,7,10,12} The abdominal approach, which could be laparotomic, laparoscopic, or even robotic, allows a safer abdominal repositioning of the herniated bowel into the abdomen and prevents further damage to the viscera.⁸

Another advantage of the abdominal exploration is the possibility to assess the real-time bowel perfusion with the use of Near-Infrared (NIR) angiography with intravenous injection of Indocyanine Green (ICG).¹⁶ In this case such evaluation was not performed due to the absence of any sign of bowel vascular suffering. The combined approach allows a complete exploration of the abdomen and a transvaginal colporrhaphy with transabdominal direct control to avoid possible complications related to blind vaginal suturing.^{6,8} We chose a combined laparoscopic-transvaginal approach to enhance the advantages of both approaches. Laparoscopy allows for a better view thanks to the magnified image, has a lower rate of morbidity compared to open surgery, and allows fast postoperative recovery.¹⁷ Contrariwise, abdominal distension, and peritoneal adhesions could be limitations to laparoscopy in the emergency setting,¹⁸ but careful access to the abdominal cavity and the expertise of the operating surgeon could overcome these obstacles. The robot in this case would have granted a better view thanks to a 3D image, safer manipulation of intestinal loops, and easier suturing in a relatively small space such as the female pelvis.⁹ A disadvantage related to the use of a robotic platform is represented by the docking time, but when treating a hemodynamically stable patient, this does not represent a big issue, especially if the surgery is conducted by a well-trained surgical team.^{15,19} Unfortunately surgical robot is not currently available at our institution.

In this case, the use of laparoscopy in an emergency setting has proven to be safe and effective, allowing appropriate exploration of the abdominal cavity with bowel viability assessment, minimally invasive reduction of eviscerated viscera, and repair of the vault defect under direct inspection. These factors, combined with multidisciplinary management, therefore played a crucial role in ensuring not only the resolution of the condition but also a faster recovery and a reduction of the risk of complications and recurrence. Our experience may be helpful to emergency surgeons in better understanding the complexity of the clinical approach to a relatively rare condition such as transvaginal evisceration.

Conclusions

TE is a rare condition, mostly occurring in postmenopausal women who previously underwent pelvic surgery. The two main goals of the surgical treatment are a prompt identification of the condition and a proper repair to prevent any further recurrence. In the emergency setting, the laparoscopy-transvaginal combined approach has proven to be safe and effective in the treatment of TE, even if dealing with multi-operated patients. This combined approach and the multidisciplinary management of the patient are the key factors in achieving good surgical outcomes in the treatment of this urgent condition.

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