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Case Report

Totally Laparoscopic Repair of an Ileal and Uterine Iatrogenic Perforation Secondary to Endometrial Curettage

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Small bowel perforation is a unique, serious complication during endometrial biopsy. The authors report a case of a double uterine-ileal perforation totally managed by primary laparoscopic repair. A 63-year-old female was admitted with acute abdomen 2 days after an endometrial curettage. Abdominal X-ray shows signs of pneumoperitoneum. Emergency diagnostic laparoscopy was performed and a uterine-ileal perforation was identified. Repair was accomplished by a totally laparoscopic intracorporeally suturing of the 2 breaches. Postoperative course showed only a delayed ileus and the patient was discharged after 5 days with no complications. When acute abdomen arises following uterine biopsy, a potential iatrogenic intestinal laceration always has to be ruled out. Laparoscopic approach is a quick and safe technique in these cases. Totally laparoscopic primary closure of the iatrogenic ileal laceration may be accomplished with low morbidity.

Key words: Small bowel perforation – Primary laparoscopic repair – Endometrial curettage – Uterine puncture

Endometrial biopsy is a routinely and generally safe surgical procedure. Even if they are not commonly described, complications might occur. Uterine puncture is a rare but feared event.[1] In literature, iatrogenic small bowel perforation following endometrial biopsy has not been reported so far. Suspicion and identification of an intestinal perforation are important so as to decide for a quick surgical treatment. Signs and symptoms of acute abdomen associated with positive abdominal X-ray and computed tomography (CT) will confirm the diagnosis[2] and prompt the surgeon to choose the most suitable surgical approach.[3] Although not unanimously accepted, minimally invasive technique is feasible and effective in solving small bowel perforations even in emergency conditions.[4]

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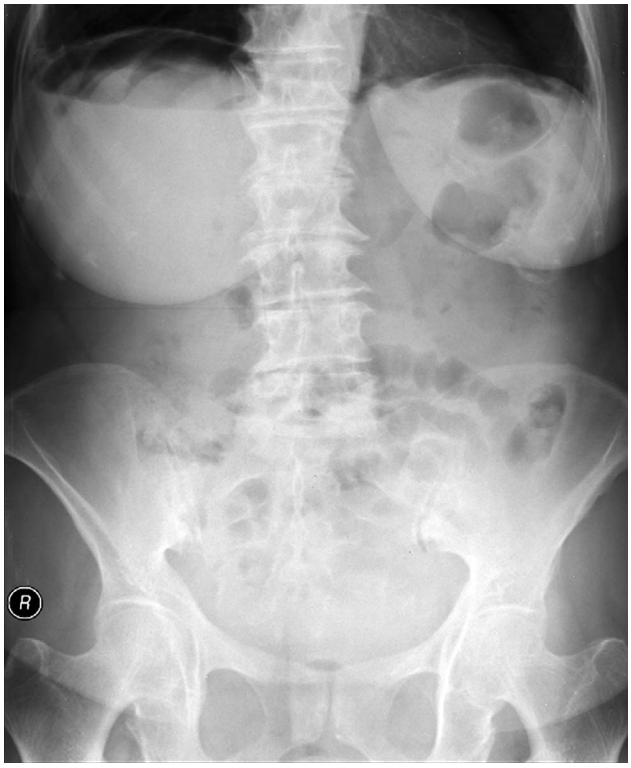

Fig. 1 Abdominal X–ray showing pneumoperitoneum with free air under the diaphragm.

We report a unique case of ileal laceration associated with uterine perforation following endometrial biopsy, successfully treated by primary laparoscopic approach. Diagnostic identification and therapeutic options of this complication are discussed. Benefits of laparoscopy as surgical choice are emphasized.

Case Report

A 63-year-old female was admitted to our university hospital from the Gynecological Unit where 2 days earlier she had undergone an endometrial curettage for abnormal uterine bleeding.

Clinical history reported that the patient had a stenosis of the cervix and the dilatation by Hegar series was particularly difficult during curettage. The patient complained of progressive abdominal distension associated with pain and fever (39°C). She was also suffering from nausea, vomiting, and constipation.

At physical examination rebound tenderness was detected. In addition, the patient had tachycardia and dyspnea. Abdominal X–ray was indicative of pneumoperitoneum with free air evident under both hemidiaphragms (Fig. 1). After informed consent regarding procedure was acquired from the patient, she underwent an emergency laparoscopic exploration.

With the patient in the supine position, a Hasson trocar was inserted in the umbilical region. Two additional 5-mm trocars were then inserted under laparoscopic vision in the left and right flank. A complete abdominal exploration was accomplished. Intraperitoneal fluid was detected and a uterine perforation associated with ileal laceration was confirmed. Uterine puncture was repaired with single-layer polydioxanone 3–0 interrupted sutures (Fig. 2). Ileal perforation was also fixed in the same fashion, with the suture line perpendicular to the long axis of the bowel (Fig. 3). Repeated irrigations/aspirations of the peritoneal cavity, using sterile saline solution, were finally accomplished. Two drains were placed inside abdominal cavity. The fascial defect at the umbilicus was closed with nonabsorbable sutures.

The patient was transferred to the intensive care unit and stabilized. An aggressive antibiotic treatment was administered. Postoperative course was uneventful, except for a delayed ileus. A CT scan, carried out 4 days after the operation was regular with no evidence of peritoneal fluid collection. The patient was discharged from the hospital without complications 5 days after surgery. Pathology on uterine biopsy revealed a diagnosis of endometrial atrophy.

Fig. 2 Uterine perforation repair with full-thickness interrupted sutures.

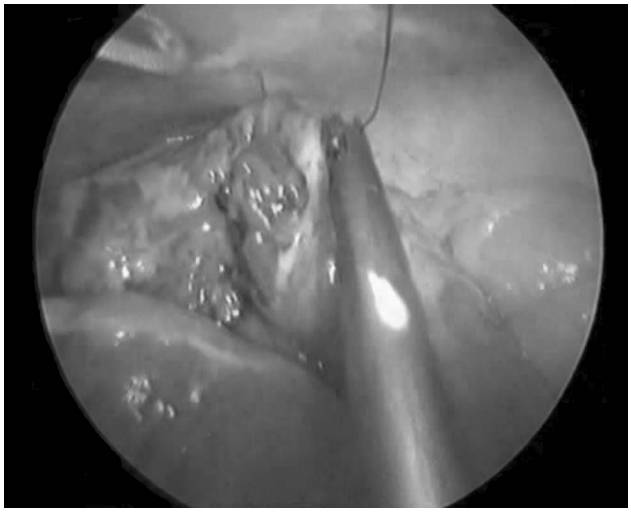

FIG. 3 Primary laparoscopic intracorporeal repair of small bowel laceration.

Discussion

Perforation is a catastrophic complication associated to all surgical procedures. In obstetric and gynecologic field, uterine iatrogenic lacerations are mainly a consequence of procured abortion (especially if illegally practiced), gynecologic curettage and intrauterine device (IUD) insertion with subsequent abnormal migration of the device.[5] Incidence is certainly underestimated and not analytically reported in literature. Case reports are the only single evidences of this event. Clearly, there is reluctance in reporting such a complication, which might increase the bias if guidelines in its diagnosis and treatment management were suggested.

Uterine perforation occurs often during mechanical cervical dilation by means of Hegar's instruments. Stenosis of the uterine orifice, distortion of cervical axis, scarring of the endocervical mucosa, uterine malposition, and alteration of uterine anatomy are the main causes of perforation during this step, making difficult the introduction of the uterine dilators. Perforation occurs also during the scraping of the uterine cavity as a consequence of myometrial weakness or during IUD positioning;[6] besides, energetic maneuvers may cause this sort of risk. If perforating uterus is a mistake, a greater one is to fail in recognizing it. When the lesion is treated properly, the patient may heal completely.

Uterine perforation during endometrial curettage is not common (0.6–1.3%) but it represents the most serious complication of the procedure. In this case a hole, or puncture, is created in the wall of the uterus and may lead to bleeding (0.4%) or infection (0.3–0.5%) within the abdomen.[1,7] At best the lesion will heal asymptomatically.[6] The patient may experience transient increased pain, and the hole will usually heal within a couple of weeks. However a uterine puncture may sometimes be associated with a severe injury to the surrounding blood vessels or viscera such as bladder or intestine.[1] In this last event, small bowel and sigmoid colon are mostly involved.[5] In our case iatrogenic intestinal perforation seemed to be related to a risky gynecologic maneuver. Lesion of the intestinal wall was probably secondary to an attempt of biopsy without having recognized uterine perforation. If bowel perforation is not promptly treated, a seriously life-threatening peritonitis may develop. Number and size of perforations have no relationship with severity of clinical conditions.[3]

Once suspicion is raised, an abdomen X–ray is requested and, if hemodynamic conditions are stable, a CT scan is advisable. The presence of free air under the diaphragm is a specific sign of perforation in an intact abdomen.[2] Once the diagnosis is made, small bowel perforation must be corrected quickly. Surgery is always required. A surgical repair in such cases may be accomplished by completely inspecting abdominal organs through a laparotomy or recently through a laparoscopy. No other approaches, either endoscopic or radiologic, may be proposed at the present time.

In literature it remains controversial which type of surgical option is recommended for ileal perforation: primary repair or segmental resection with end-to-end anastomosis. Relevant factors that may interfere with the choice are the number of perforations and the distance of the laceration site from the ileocecal valve. In this latter the hypertension above the valve will be a concrete risk factor for dehiscence. Therefore, in our opinion, in case of short distance from ileocecal valve, a prophylactic hemicolectomy always should be considered. In literature the number and size of perforations seem to cause much more concern than the site in the decision-making process. A single ileal perforation should be primary sutured whereas in the case of multiple or large perforations close together, segmental resection with anastomosis seems to be a more reasonable choice, regardless of the site and the distance from ileocecal valve.[3]

In Caronna *et al* comparative analysis of 104 patients with typhoid ileal perforations[3] the incidence of dehiscence was greater in the group with intestinal anastomosis than in that with primary

repair ($P = 0.032$), considering although that resection-anastomosis was decided mainly in patients with multiple perforations. Similar results revealed in Ayite *et al* article[8] in terms of complications rate, which was higher in the resection-anastomosis group, even if in this case surgeon experience was criticized. Primary repair, whenever possible, is thereby the simplest, quickest and safest technique.[3]

In contrast to colon injuries in the small bowel lesions, sutures or resections may be performed even in cases of contaminated peritonitis, providing that surgical repair is carried out early after the traumatic injury; repeated peritoneal irrigations/aspirations are mandatory to avoid postsurgical abdominal infection. Intestinal resection with temporary ileostomy should be performed only in selected patients with adverse conditions.[7,8] As far as isolated uterine perforation is concerned, either waiting or conservative treatment is advocated, unless hemorrhagic complication is associated.[9] In our cases, however, since an associated intestinal lesion should have been surgically repaired, concomitant suturing of the uterine wall revealed a successful treatment choice.

Although perforated peptic ulcers and large bowel perforations have been repaired laparoscopically since the early 1990s, small bowel perforation repair by the minimally-invasive approach has not yet gained acceptance among the surgical society at large. Only 1 study reported small bowel perforations, secondary mainly to medical conditions, being managed totally by laparoscopic surgery.[4] Apart from recognized benefits of shorter hospital stay, postoperative comfort, quicker recovery and better cosmesis, advanced laparoscopic surgery offers other specific advantages, which may decrease both morbidity and mortality.[10,11] However, laparoscopic approach has its own limitations mainly consisting in a challenging technique when a concomitant occlusion with dilatation of small bowel is associated. Moreover, laparoscopic approach may be limited by the inability to localize the perforation site. Conversion to laparotomy in these cases might be necessary.[12]

Primary laparoscopic repair of small bowel perforation may be accomplished by totally intracorporeally suturing or by a hand-assisted technique.[13] In our opinion in cases of small laceration of the ileum, intracorporeal suturing is preferred, providing that the surgical team is experienced in advanced laparoscopic surgery.[14,15] Just in cases of large holes or if the perforation was recognized many hours after the injuries, a hand-assisted laparoscopic approach might be indicated.

Time interval from iatrogenic perforation, like in open surgery, is also important in laparoscopic repair. Early diagnosis before patients' conditions deteriorate, will decrease mortality and morbidity rates.[16] Small bowel perforation is associated with fewer complications when it is treated earlier than 24 h after injury. Delay in surgical treatment beyond this deadline will not significantly increase the mortality, although the complication rate will be dramatically higher. Additionally, hospital stay and time to resume oral intake will increase significantly.[17] In conclusion, patients presenting within a range of 96 h from the perforation are more easily manageable with laparoscopic technique.[4]

Although the minimally invasive approach by reducing surgical trauma could offer an advantage in critically ill patients, a comparison between open and laparoscopic surgery for the management of intestinal perforated patients with peritonitis is difficult to evaluate. Some historical experimental studies have argued that pneumoperitoneum during laparoscopy might increase bacterial translocation, systemic cytokine release, and distant organ complications,[19] but in other studies these assertions have not been confirmed.[20] In our opinion laparoscopy might be performed whenever surgery is indicated also in case of patients' severe conditions, provided that the surgical team is experienced and well-trained in minimally-invasive surgery and that there are absolutely no contraindications to the laparoscopic approach.

Conclusion

In case of uterine perforation during endometrial biopsy, whenever acute abdomen is observed, a potential iatrogenic intestinal laceration always must be ruled out. If a single site of intestinal perforation is identified, primary intracorporeal suturing represents the treatment of choice. Laparoscopic approach is effective and offers numerous benefits even in these emergency conditions, also in critically ill patients.

This unusual case of iatrogenic uterine perforation and intestinal lesion successfully treated with primary laparoscopic surgery has not been reported so far.

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