

Research Letter

Laparoscopic adhesiolysis and marsupialization of a rapidly progressing pelvic pseudocyst

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Pelvic inflammatory cyst, also known as pelvic inclusion cyst, is usually caused by postsurgical pelvic adhesions [1]. Peritoneal fluid and adnexa are entrapped in adhesions and form a pseudocyst, without true cystic walls, with complex appearance. A large, complex pelvic inflammatory cyst can simulate ovarian malignancy and requires laparotomy for maximal debulking surgery.

Ultrasound-guided aspiration is the treatment of choice for minimally invasive management of benign cysts; however, recurrence is quite common and repeated aspirations are inevitable, causing considerable morbidity. Laparotomy can definitively resolve the problem of recurrence, but surgeons tend to avoid this procedure because of additional problems such as the need for a wide abdominal incision, wound infection, postoperative pain, postoperative ileus, and adhesion reformation [2]. Laparoscopic surgery is rapidly replacing laparotomy for many gynecologic surgical conditions because of less tissue reaction, better cosmetic results, and shorter hospitalization period. This approach reportedly yields good results for peritoneal and intra-abdominal adhesions [3]. Some authors have indicated a reduction in adhesion formation after laparoscopic surgery compared with open surgery [2].

Here, we present a case of a rapidly progressing pelvic pseudocyst mimicking ovarian malignancy in a 41-year-old nulligravida woman who was successfully managed by laparoscopic adhesiolysis and marsupialization. We specifically described our surgical procedures to offer a manner in laparoscopic approach to extensive pelvic cyst.

A 41-year-old nulligravida woman presented with poor appetite, abdominal distension, frequent urination, and intermittent fever up to 38 °C without chills for 5 days. Physical examination revealed tenderness without rebound in her left lower abdomen. She had undergone adenomyomectomy for adenomyosis 3 years ago. Transabdominal ultrasonography showed an irregularly shaped cystic lesion with thickened walls measuring 10.0 cm × 6.8 cm. Her serum CA-125 level was 347.9 U/mL. After treatment with antibiotics for 7 days, her fever subsided; however, the patient still had abdominal distension. Three weeks later, transabdominal ultrasonography showed that the cystic lesion had enlarged to 19.0 cm at its greatest cross-section (Fig. 1A). Abdominopelvic magnetic resonance imaging (MRI) with contrast revealed a lobulated cystic lesion without a solid part in the left lower abdomen extending from the cul-de-sac to the lower margin of the stomach; its dimensions were 10.3 cm (anteroposteriorly) × 16.4 cm (transversely) × 19.0 cm (craniocaudally) (Fig. 1B). Pelvic inflammatory cyst with pelvic adhesions was suspected; however, the possibility of ovarian malignancy was not completely excluded.

After counseling, the patient opted for conservative treatment with diagnostic and operative laparoscopy. Under general anesthesia with endotracheal intubation, the patient was placed in the dorsolithotomy position. We performed videolaparoscopy as the following procedures (Fig. 2A): First, a 5 mm trocar was introduced through Palmer's point (3 cm below the left costal margin at the midclavicular line) to reduce the risk of direct intestinal injury during adhesiolysis [4]. Three 5 mm ancillary cannulas were carefully placed under laparoscopic visualization: one was placed in the right lower quadrant lateral to the inferior epigastric arteries, another was inserted in the left lower quadrant, and the third was placed in the lower abdomen

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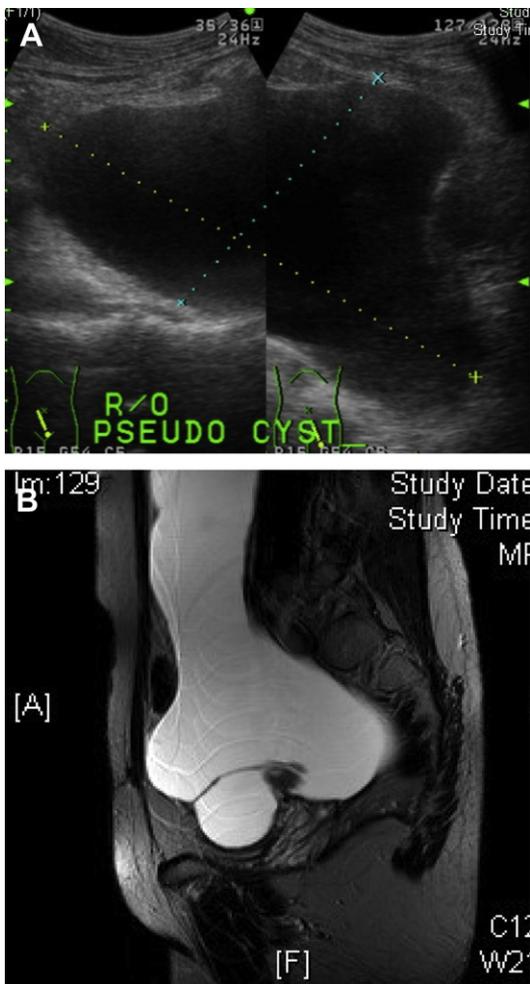


Fig. 1. Pelvic pseudocyst. (A) Transabdominal ultrasonographic image showing an irregularly shaped cystic lesion with thickened walls. (B) Sagittal T2-weighted MR image showing a large pelvic inflammatory cyst in the lower part of the abdomen.

along the paramedian line at the level of the umbilicus. After the subumbilical adhesions were lysed, a 5 mm cannula was introduced through the umbilicus as for the principal trocar.

Operative laparoscopy revealed severe pelvic adhesions and a large pseudocyst embedded in the omentum and bowels on the left side of the pelvis (Fig. 2B). The adhesions were lysed and the pseudocyst was ruptured. The pseudocyst contained 1200 mL of serous yellow fluid. The margins of the pseudocyst were formed by adjacent structures such as the uterus, adnexa, bowels, and omentum. Meticulous laparoscopic adhesiolysis and marsupialization were performed (Fig. 2C). The left adnexa had normal size and shape. Histopathologic examination of the pseudocyst revealed a mesothelial lining and connective tissue with inflammatory cell infiltration. The patient was discharged without any sequelae 3 days after the operation. She showed no cystic symptoms or recurrence 12 months postoperatively.

Pelvic adhesion formation is a natural healing process after trauma and has an incidence ranging from 82% to 93% after pelvic surgery. Pelvic adhesions have been found in various

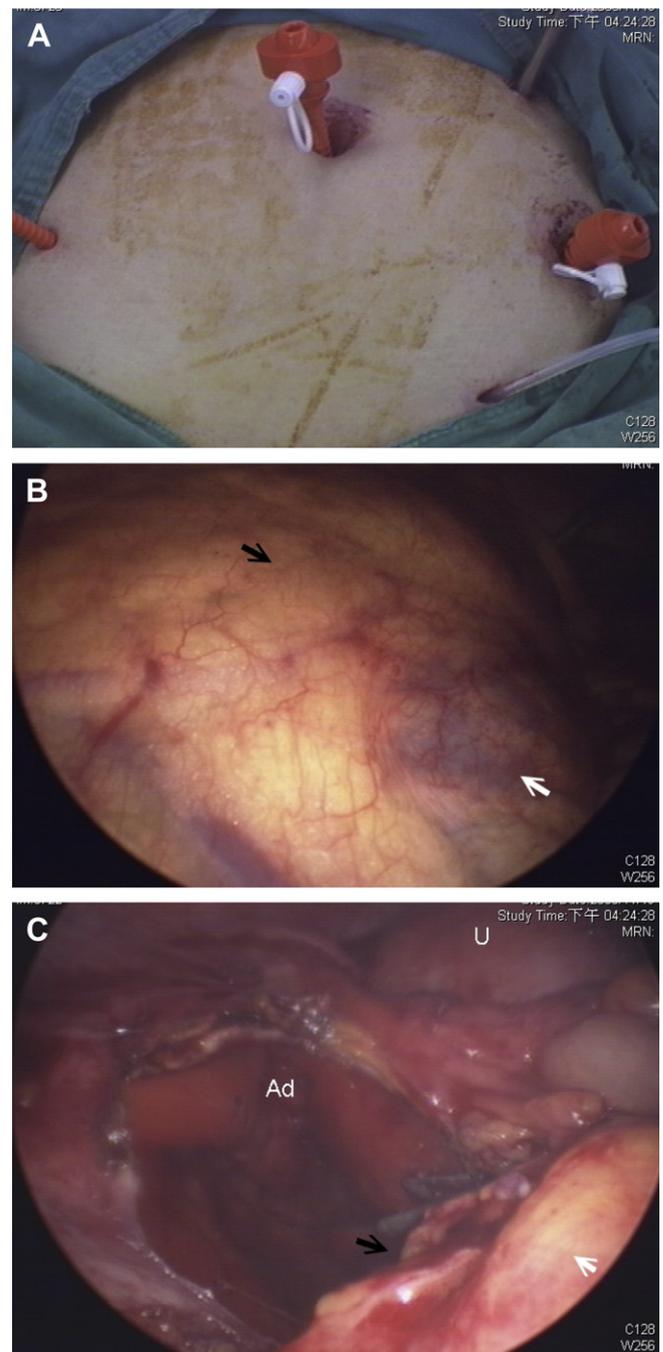


Fig. 2. Operative laparoscopy procedures. (A) Abdominal port placements during laparoscopic surgery. (B) Laparoscopic view demonstrating the large pelvic inflammatory cyst (white arrow) embedded in the omentum and bowels (black arrow) on the left side of the pelvis. (C) Marsupialization of the cyst after surgery. U = uterus; Ad = left adnexa; white arrow = omentum and bowels; black arrow = cul-de-sac.

conditions such as infertility, abdominal pain, bowel obstruction, and complicated repeat surgery [5]. Functioning ovaries with Graafian follicle development release follicular fluid into the pelvis during ovulation. This fluid is usually completely absorbed; however, pelvic adhesions may trap the fluid and form pelvic inclusion cysts.

In this report, the pseudocyst presented as a rapid progressing, lobulated, cystic pelvic tumor, mimicking ovarian

malignancy. Careful investigations of such tumors are mandatory to exclude malignancy. Ultrasound is a feasible and valid diagnostic tool for pelvic masses; however, differentiation of benign tumors from malignancy is quite difficult by ultrasonography alone [6]. On the other hand, compared with ultrasonography and CT, MRI provides not only multidimensional images of pelvic masses but also high-contrast resolution of soft tissues, enabling differentiation of pelvic inclusion cysts from true ovarian tumors [7].

In order to solve inflammatory cyst and its discomforts, certain management procedures were reported earlier. Ultrasound-guided aspiration has a variable recurrence rate [8]. Recently, laparoscopic aspiration combined with sclerotherapy, which destroys the cystic epithelial lining, has been attempted to reduce recurrence [8,9]. Tsai et al [9] reported the mean interval between aspiration and recurrence of pelvic pseudocysts as 30.8 months; the recurrence rate after 12 months from aspiration was around 30%. Granberg et al [10] reported a series of 60 women with pelvic cystic tumors treated by ultrasound-guided cystic punctures: eight of 13 women (61.5%) required repeated aspirations and 12 of the 60 women (20%) required further surgical intervention. Although minimally invasive management of pelvic inclusion cysts is the preferred alternative to laparoscopy or laparotomy, surgeons should consider the possibility of repeated aspirations after ultrasound-guided percutaneous aspiration and the ultimate need for surgery.

Surgical intervention enables definitive resolution and histopathologic diagnosis of pelvic inclusion cysts but requires a large vertical incision. Szomstein et al [5] reported that 63% of the length of a laparotomy incision is involved in adhesion formation to the abdominal wall and 11–20% of the patients develop ventral hernia after laparotomy. Operative laparoscopy is a minimally invasive alternative for evaluating and managing pelvic pathologies, and has a presumably lower risk of postsurgical adhesion formation. The success rate of laparoscopic adhesiolysis is between 46% and 87% [5]. When performed by a well-trained surgeon, the laparoscopic approach allows evaluation of the nature of pseudocysts and lysis of adhesions intraoperatively.

In conclusion, if malignancy is excluded, operative laparoscopy performed by a well-trained surgeon enables histopathologic evaluation of pseudocysts and adhesiolysis in a minimally invasive manner as well as yields a favorable outcome for the patient.

Acknowledgments

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