CASE REPORT JSLS

Laparoscopic Management of Chemical Peritonitis Caused by Dermoid Cyst Spillage

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ABSTRACT

Background: Dermoid cyst is the most frequent benign ovarian tumor. Spillage of cyst contents during surgery is common and can rarely lead to chemical peritonitis.

Case Report: A patient presented 3 days after attempted laparoscopic removal of bilateral dermoid cysts. On examination, she had a low-grade fever, rebound tenderness with guarding, and a markedly elevated white blood cell count. A decision was made to proceed with laparoscopy with the presumptive diagnosis of chemical peritonitis. Laparoscopic findings included residual dermoid cyst contents and extensive filmy adhesions of the bowel and omentum to the peritoneal surface. The chemical peritonitis resolved after laparoscopic removal of residual dermoid cyst content including bilateral salpingo-oophorectomy and copious irrigation.

Conclusion: Early recognition and prompt treatment by repeat laparoscopic surgery with removal of the remaining cyst contents and peritoneal lavage can be a successful method for treating chemical peritonitis.

Key Words: Chemical peritonitis, Dermoid cyst, Laparoscopy.

INTRODUCTION

Benign cystic teratoma, or dermoid cyst, is a germ cell tumor of the ovary that accounts for 10% to 15% of all ovarian tumors[1] and has a peak incidence in a woman's reproductive years.[2] Dermoid cysts are often asymptomatic, but because of ovarian enlargement, they predispose the ovary to torsion, and this has been estimated to occur in approximately 3.5% of cases.[3] They have a low incidence of malignancy, reported as 1% to 3%.[1] For these reasons, dermoid cysts are managed surgically for some patients.

The traditional surgical approach for a dermoid cyst is cystectomy by laparotomy, although laparoscopic cystectomy is now widely accepted as another approach.[4] The laparoscopic approach is associated with a greater risk of spillage of cyst contents into the peritoneal cavity.[4] Although the cyst contents can usually be adequately removed by using careful technique and peritoneal lavage, remaining cyst contents are known to cause chemical peritonitis in some patients. Case reports have described severe chemical peritonitis following intraperitoneal spillage of dermoid cyst contents that has resulted in significant pelvic adhesive disease, bowel obstruction, abdominal wall abscesses, and enterocutaneous fistula formation requiring the need for multiple intensive medical management and repeat laparotomies.[5-8]

Here we present a case in which laparoscopic management consisting of bilateral oophorectomy and extensive peritoneal lavage led to a rapid resolution of severe chemical peritonitis, occurring several days following laparoscopic removal of bilateral dermoid cysts.

CASE REPORT

The patient is a 41-year-old, G2P2, who had completed childbearing and had been followed for presumed bilateral ovarian dermoid cysts detected by ultrasound examinations approximately 2 years earlier during the course of infertility treatments. An annual ultrasound examination showed that 1 of the ovarian cysts had moderately increased in size from approximately 2.5cm x 2.5cm to 3.5cm x 3.5cm. The contralateral cyst was 2.8cm x 2.3cm and was stable in size. The patient reported vague, inter-

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mittent pelvic pain and positional dyspareunia. She also had plans for international travel and was concerned about the rare complications of ovarian torsion and dermoid cyst rupture. After discussion, the patient and her primary surgeon decided to proceed with laparoscopic removal of the cysts.

During surgery, a Cohen's cannula was placed into the uterus for manipulation. The ovarian surface was incised adjacent to the bulk of normal ovarian tissue near the hilum of the ovary, bilaterally. The primary surgeon chose to use electrocautery with a cutting current, and a plane between the cyst and the normal ovarian capsule was developed. However, as dissection proceeded, the cyst wall was breeched, spilling cyst contents bilaterally. The cysts did not peel out easily and dissection was difficult. The primary surgeon reported that she believed she had removed all cyst wall contents and followed this with irrigation of the pelvis by using 2000cc of normal saline. The patient was discharged home after the surgery.

Three days later, the patient presented to the emergency department with excruciating abdominal pain, anorexia, and fever up to 100.4°F. On physical examination, her abdomen was diffusely tender with guarding, rebound tenderness, and absent bowel sounds. An abdominal X-ray including supine and upright positions showed no free intraperitoneal air. A CT scan showed ascites with no evidence of bowel perforation. Laboratory studies revealed a markedly elevated WBC count of 30.7k/mm^3, hemoglobin of 13.3gm/dL, and a normal electrolyte panel.

Because of her peritonitis, a decision was made to go to surgery. An open laparoscopy was performed in this thin patient, taking great care entering the abdominal cavity with sharp dissection, knowing that adhesions between bowel and the peritoneum were likely. Surgical findings included multiple loops of small and large bowel loosely adherent to the anterior wall of the abdomen **(Figure 1)**. These adhesions were taken down with blunt dissection. Cyst contents including hair and sebaceous material were found in several areas where the bowel was adherent. A portion of the omentum was indurated and thickened. The ovaries were friable and bled easily, and the continued presence of dermoid cyst material was noted in the cyst beds. Given these findings and severity of the peritonitis, we felt that removal of all cyst material was indicated. We therefore proceeded with a bilateral salpingo-oophorectomy, partial omentectomy, and removal of all visible dermoid material in the abdomen. We then copiously irrigated with 5000cc of warm normal saline.

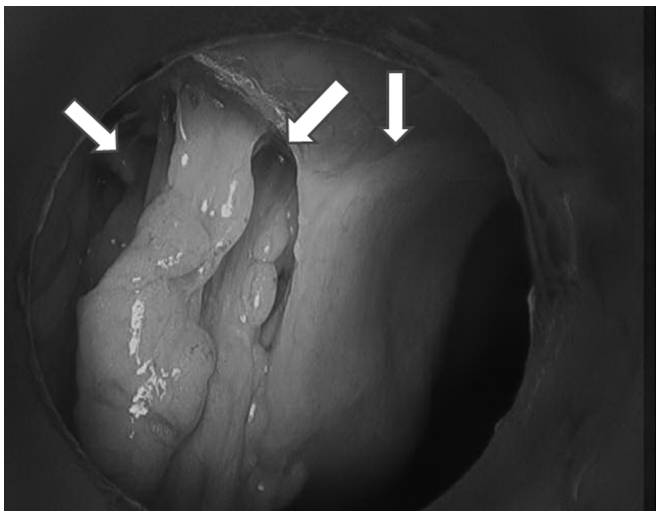

Figure 1. Loops of the small bowel adhesions to the anterior abdominal wall (arrows).

Postoperatively, the patient made an excellent recovery. She had nearly immediate relief of her abdominal pain and was afebrile on postoperative day 2 after her second surgery. Intraoperative cultures of peritoneal surface and fluid were negative. On postoperative day 4, her WBC count dropped to 10.7k/mm^3 and she was discharged home. She was seen 6 months after surgery and had no significant complaints and had resolution of the pelvic discomfort that she had been experiencing prior to the surgery.

DISCUSSION

Spillage of cyst contents into the peritoneal cavity has generated concern among many physicians due to the potential for postoperative chemical peritonitis. Spillage rates of dermoid cysts when removed by laparoscopy were 15% to 100% in several series, compared to only 4% to 13% via laparotomy.[4] In a review of the literature combining reports of 470 laparoscopic dermoid cystectomies, spillage occurred in 310 cases (66%). Major postoperative complications were seen in only 1 case, with chronic granulomatous peritonitis occurring 9 months postoperatively. The conclusion reached was that chemical peritonitis following dermoid spillage during laparoscopic surgery is a rare complication with an incidence of $<$1% if cyst contents are carefully and entirely removed.[4] However, with incomplete removal, as in this case, the incidence of chemical peritonitis is likely much higher as the body reacts to cyst contents. If a laparoscopic approach is chosen with the attendant higher risk of rupture,

the importance of laparoscopic surgical experience and skills is clear to minimize the risk of this complication.

When it occurs, chemical peritonitis following dermoid spillage can be a very serious complication, sometimes requiring a laparotomy to treat bowel obstruction that results from adhesion.[7] Others have reported initial exploratory laparotomy and peritoneal lavage, followed by subsequent surgical procedures including exploration of the laparotomy wound for drainage of abscesses.[6] One case report described treatment of chemical peritonitis with an initial attempt with laparoscopy that was converted to laparotomy for peritoneal lavage. Subsequent procedures were required including ultrasound-guided aspiration of peritoneal fluid collections 11 days following laparotomy and development of enterocutaneous fistula at the lower third of the laparotomy wound.[8]

Our case points to the fact that, at least in some patients, rapid reoperation by laparoscopy can lead to a quick recovery and allow the patient to avoid the more serious long-term sequela of chemical peritonitis.

To minimize spillage of the cyst's contents and subsequent complications, the surgeon should choose the technique that is more effective and less traumatic to the patient. One of the suggested techniques is combined ovarioscopy and laparoscopy with direct drainage of the cyst content and then cyst removal,[9] especially for large adnexal masses. If spillage occurs, complete removal of cyst contents and copious lavage should be performed to avoid peritonitis. Although peritonitis following rupture of a dermoid cyst is very rare, being aware of this complication is the key to diagnosis and appropriate management.

CONCLUSION

As demonstrated by this case, early recognition and prompt treatment by repeat laparoscopic surgery with removal of remaining dermoid cyst contents and peritoneal lavage can be a successful method of treating chemical peritonitis.

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