

Instruments & Methods

LAPAROSCOPIC REMOVAL OF DERMOID CYSTS

Camran Nezhat, MD,
Wendy K. Winer, RN, BSN, and
Farr Nezhat, MD

Nine reproductive-age women underwent removal of unilateral or bilateral dermoid cysts via laparoscopy. Over a follow-up period of 12-42 months, there were no immediate or long-term complications. Four patients have had repeat laparoscopy for evaluation of possible pelvic adhesion formation; one had mild periovarian adhesions and the pelvis appeared normal in the other three. (*Obstet Gynecol* 73:278, 1989)

Approximately 15% of all ovarian tumors are of the germ cell variety, and of these, over 96% are benign cystic teratomas.¹⁻³ The majority of such lesions occur as asymptomatic adnexal masses. However, the incidence of torsion of dermoid cysts is as high as 16%,^{2,4} and occasionally the tumor may rupture, producing acute peritonitis.^{2,4,5}

The incidence of malignancy associated with ovarian teratomas is 1-3%.¹⁻⁵ In the review by Caruso et al² of 305 consecutive ovarian teratomas from a single unit, the average age for patients with malignant components was 60.8 years.

From the Fertility and Endocrinology Center, Atlanta, Georgia.

The advantages of laparoscopic treatment of ovarian cysts have been described for women younger than 35 with simple ovarian cysts,⁶ for whom the overall risk of malignancy is only 4.5 per 100,000 cases.⁷ In this group of patients, the benefits of definitive diagnosis and treatment by laparoscopy outweigh the remote risk of inadvertent puncture of a malignant neoplasm.⁸ However, in most clinical circumstances, a unilocular ovarian cyst does not require aspiration at all, and the risks of surgical management by laparotomy or laparoscopy may outweigh potential therapeutic benefits to the patient.⁸ This may not be the case with benign cystic teratomas or endometriomas, which may rupture or undergo torsion. We have previously reported our experience with endometriomas.⁹ In this paper, we report our experience in diagnosis and removal of benign cystic teratomas via laparoscopy in nine women.

Materials and Methods

Nine nulliparous women, ages 19-38, underwent resection of dermoid cysts via laparoscopy. Table 1 summarizes various data about these women, none of whom had sonographic patterns¹⁰ or symptoms or signs of advanced stages of ovarian malignancies. All patients were consulted extensively regarding the operation(s), and appropriate consents were obtained.

The procedure was performed under general anesthesia with endotracheal intubation. After induction of a pneumoperitoneum, we inserted the operating laser laparoscope (R. Wolf Medical Instruments, Rosemont, IL) intraumbilically. A 5.5-mm second-puncture trocar was inserted in the midline approximately 4 cm above the symphysis pubis, through which a Cabot (Cabot Medical) suction-irrigator probe was introduced to aspirate the plume and debris and to irrigate and cleanse the char created by the laser.¹¹ The irrigation fluid consisted of 5000 U of heparin (Ivenex Laboratories, Chagrin Falls, OH) in 1 L of lactated Ringer's solution¹² (Travenol Laboratories, Inc., Deerfield, IL). A third and fourth trocar were inserted 3 inches lateral to the second trocar. The CO₂ laser beam was delivered through the operating channel of the laparoscope. We used a 30-40-W setting of the super pulse mode of the CO₂ laser for all procedures.

We evaluated the pelvis and the abdominal cavity thoroughly. The ovaries were inspected carefully to ensure that the cyst wall was smooth and that there were no vegetations or other evidence to suggest malignancy. Peritoneal washings were sent for cytology.

In six cases, the cysts were first aspirated as much as possible using a 16-gauge needle. A superficial 0.5-cm

Table 1. Specifics Regarding Nine Patients With Dermoid Cysts

Patient	Age	Gravidity and parity	Symptoms and signs	Medication	Ultrasound findings
1	24	G0 P0	Pain and pelvic mass	Danazol 800 mg/d × 7 mo	Right adnexal 5.5 × 7.0-cm well-defined echogenic cystic mass; no fluid in posterior cul-de-sac
2	24	G0 P0	Pain and pelvic mass	Oral contraception pill × 2 yr	Left adnexal 4.8 × 6.3-cm cystic structure with no echo
3	18	G0 P0	Pain and pelvic mass	Oral contraception pill × 3 mo	Left cystic mass, 5.1 × 7.2 cm; no solid component seen
4	25	G0 P0	Pain and pelvic mass	Danazol 800 mg × 3 mo	Right 5 × 4-cm ovarian cyst with no internal echoes
5	18	G0 P0	Pelvic mass	Oral contraception pill × 6 wk	Right 5.8 × 5.2-cm cyst with no internal solid components
6	20	G0 P0	Pelvic mass and pelvic pain	Oral contraception pill × 8 mo	Right 5.1 × 7.2-cm well-defined adnexal mass with echogenic portions and an area of decreased echogenicity with calcification or possibly a tooth
7	38	G0 P0	History of pelvic endometriosis; pelvic mass	Oral contraception pill × 8 wk	Left cystic structure, 5.5 × 4.8 cm; no echo; no free fluid in posterior cul-de-sac
8	22	G0 P0	Pelvic mass	Danocrine 800 mg/d × 6 wk	Bilateral adnexal cystic mass with area suggestive of calcification; right 5.4 × 6.3 cm, left 4 × 3.2 cm
9	19	G0 P0	Pelvic mass	Oral contraception pill × 1 yr	Left adnexal cyst, 6.2 × 8 cm; no echogenicity seen and no free fluid in posterior cul-de-sac

incision was made on the cyst with the CO₂ laser. A Cabot suction/irrigator (Cabot Medical) was then used to aspirate thoroughly and irrigate the cyst. In all six cases, minimal spillage occurred and was managed with copious lavage. After aspiration and evacuation of the cyst content, we dissected the wall of the dermoid from the ovary. Once the cyst wall was removed, the edges of the ovary were overlapped by superficially lasering the base of the dermoid. No sutures were applied to the ovaries, to minimize postoperative adhesion formation.¹³ After enucleation from the ovaries, the cyst walls were grasped with the grasping forceps introduced through the operating channel of the laparoscope and removed from the abdominal cavity.

In the other three cases, the cysts were shelled out of the ovary intact, without aspirating any of the contents with the technique described above. Because of their large size, the cysts were removed subsequently from the peritoneal cavity through a colpotomy incision. One cyst leaked during removal; the spill was managed by copious lavage of the abdominal cavity.

We offered second-look laparoscopy to all nine women to ascertain the incidence of postsurgical pelvic adhesion formation. Of the four who accepted this second procedure, one had had bilateral ovarian dermoid cysts removed through a colpotomy incision; the other three had had unilateral dermoid cysts removed through the abdominal wall as described above. The

second-look laparoscopies were performed between 3–12 months after the original surgery.

The operating time ranged from 45–110 minutes, and the average hospital stay was 7.2 hours after the procedure. None of the patients had short- or long-term postoperative complications.

Results

Eight of the nine women treated had unilateral cysts and one had bilateral dermoid cysts (Table 1). Histologic examination confirmed the diagnosis of benign cystic teratoma in all cases.

Mild periovarian adhesions were found in only one of the four women who had repeat laparoscopy. Spillage of cyst contents had not occurred in this patient; however, spillage did occur in the other three women who had second-look laparoscopy. None of these three patients had adhesions at the time of their second procedure.

All of the women have been followed with clinical assessments and ultrasound scans every 6 months for a minimum of 12 months. All of the examinations have been negative for pelvic mass. Theoretically, removing the cyst through a puncture site could lead to ovarian remnant surviving in the abdominal wall. However, we have not observed this phenomenon during our 1–3-year follow-up in the six women in whom we used this technique.

Most of the patients received birth control pills for contraception. One patient recently stopped taking oral contraceptives and achieved pregnancy during her first month of attempts.

Discussion

The laparoscopic aspiration of unilocular, smooth-walled, translucent ovarian cysts remains controversial. The main concern is spillage of malignancy. Thorough preoperative evaluation of the patient, combining expert ultrasonography of ovarian tumors with measurement of tumor antigens (eg, CA 125), may improve greatly the accuracy of diagnosis of ovarian malignancy.^{10-14,15} Expert laparoscopic examination of the ovarian tumor for irregularity, vegetation, and excrescences; peritoneal washing for cytology; and careful examination for possible metastatic lesions aid greatly in excluding malignancy. In women under 40, laparoscopic treatment of benign cystic ovarian tumors offers distinct advantages over laparotomy.^{6-8,9}

However, the laparoscopic management of benign cystic teratoma raises still more questions. Ultrasound assessment may aid diagnosis, but malignancy is difficult to exclude.¹⁶ The finding of mixed solid-cystic components on ultrasound assessment of epithelial ovarian tumors is a potentially sinister one¹⁰ that would mandate against laparoscopic removal. Such an appearance is common on ultrasound examination of benign cystic teratoma.

Considering that malignancy is very uncommon in women under the age of 40,^{1-3,18} we believe that expert laparoscopic management in selected cases, with careful technique to minimize the chance of cyst content spillage, is a safe and beneficial alternative to laparotomy. As demonstrated in the cases presented in this study, the risk of cyst content spillage can be minimized, although considerable expertise with laparoscopic manipulation is required. This is the most important element of laparoscopic management of benign cystic teratomas.

In addition to the established benefits of laparoscopy, we have found that video augmentation obtained by the addition of a 19-inch video monitor allows the surgeon to operate in an upright position, thus eliminating the back strain often associated with prolonged laparoscopic procedures. Furthermore, the surgical team can provide much better assistance when following the procedure on the monitor.

Although use of the laser provides certain advantages⁹ in the treatment of benign pelvic disease, dermoid cysts may be excised equally well with scissors and electrocautery.

This small series suggests that laparoscopic surgery

with its associated advantages is safe and effective for the treatment of dermoid cysts. However, we recommend that this approach be used only by a very skilled endoscopist in younger women (under 40) when the risk of malignancy is very low, and only after appropriate preoperative investigation and detailed inspection at laparoscopy.

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Address reprint requests to:
Camran Nezhat, MD
Fertility and Endocrinology Center
5555 Peachtree-Dunwoody Drive NE
Suite 276
Atlanta, GA 30342

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