Germ cell tumors make up 15% to 20% of all ovarian tumors, 95% of which are dermoid cysts, also known as benign cystic teratomas.\(^1,2\) Primarily ectodermally derived, tissues can grow from any of the germ cell layers. Tumors occur bilaterally in 10% of cases, and there appears to be an increased rate of sterility in patients with cystic teratomas.\(^3\) These tumors are found in women of reproductive age, undergo malignant transformation only rarely (<1%), and are most conducive to surgical cure.

We report an unusual case of an asymptomatic, advanced benign cystic teratoma in a young adolescent.

**Case Report**

A 14-year-old girl, who was born at home, had her first interaction with the medical system when she arrived complaining of a possible abdominal tumor. During the previous 6 months she had noticed an increasing fullness in her abdomen, which had progressed to the point that it was difficult for her to take a deep breath. Other than a physically enlarged abdomen, there had been no dyspepsia or nausea, pain, constipation or diarrhea, fever, fatigue, or other constitutional symptoms. She reported no unusual weight gain or loss. Her menses had been regular, and she was not sexually active.

The patient was in no acute distress; she was alert and oriented, pleasant, with a full affect, and exhibited a more mature interaction than many adolescents her age. When examined, she had a distended abdomen consistent with a full-term pregnancy. Her abdomen was not tender and had normal bowel sounds. There was an equivocal fluid wave. Findings on examination of her heart and lungs were unremarkable. She had a normal vulva with an intact hymenal ring. Her cervix was nulliparous, and there was no cervical motion tenderness or discharge. Her adnexa were not tender, and her ovaries were not palpably distinct from a pelvic abdominal mass. A urine chorionic gonadotropin assay was negative for pregnancy, and an abdominal plain film (Figure 1) showed left-sided opacities consistent with Rokitansky nodules. The diagnosis of a large dermoid cyst was made.

The patient was subsequently admitted for surgical removal of her cyst. A low Pfannenstiel incision exposed a large intra-abdominal cystic mass attached to the left fallopian tube; there was no evidence remaining of the left ovary. A 1-cm incision, equipped with a 0-nylon purse-string suture, was made in the cyst, and a suction catheter was inserted with negligible spillage of the cyst contents. Five liters of fluid were aspirated before the mass could be removed through the abdominal incision. After the cyst was aspirated, the suction catheter was removed, and the incision into the cyst was closed with a purse-string suture. The right ovary and tube were of normal size and appearance. The mass was dissected to separate it from the fallopian tube, leaving the tube and fimbriae intact. Copious irrigation was used to minimize the risks associated with the introduction of dermoid material into the peritoneum.\(^4-6\) The wound was then closed, and the patient was transferred to recovery in good condition but having lost more than 10 kg from her preoperative weight (Figure 2). Her recovery was uneventful. She was released on postoperative day 3 and has been entirely compliant with scheduled follow-up care.

The cyst, which was opened in the operating room, was an exceptionally complex structure of multiloculation and cysts within cysts, each filled with fluids of differing colors, consistencies, and viscosities. There was more than 2.5 L of additional fluid. The cyst also contained a great amount of sebaceous material and hair (Figure 3). Several tooth-like structures were grossly apparent.

Histologically, this large dermoid cyst was composed of tissues derived from all germ layers: re-
spiratory mucosa with bronchial type cartilage, squamous mucosa, gastric mucosa, intestinal mu-
cosa, prominent skin and skin adnexal structures, fat, smooth muscle, tooth-like structures, and ma-
ture central nervous system-type tissue. There was
no evidence of immature elements or malignancy.

Discussion

The origin of dermoid cysts, originally blamed on
adultery with the devil, is currently believed to be a
primordial germ cell. All dermoid cysts have a
46,XX karyotype, and it has been suggested that
they arise from an ovum after the first meiotic
division.3,7 One report of a mother and her two
daughters, all with ovarian dermoid cysts, suggests
chromosomal instability might play a role in some
cases.8

Although dermoid cysts often cause abdominal
pain and mass, their symptoms occasionally include
gastrointestinal complaints and menstrual distur-
bances.3 Torsion has been reported in nearly 10%
of cases, and 13% to 66% are asymptomatic.9,10

This case is noteworthy for several reasons.
First, the size of the tumor was unusual. Seventy-
five percent of dermoid cysts are less than 10 cm in
diameter at the time of resection.3 Its massive di-

Figure 1. Abdominal plain film showing Rokitansky
nodules.

Figure 2. Patient’s abdominal profile (a) before and
(b) after excision of the dermoid cyst.
of the tumor and its treatment on the patient’s future fertility, another important consideration in this type of patient.

The complex architecture of this teratoma was also unusual. Characteristically, benign (mature) teratomas are unilocular, whereas malignant (immature) teratomas contain many small loculi or cystic spaces. Additionally, the tissues of benign teratomas are predominantly ectodermal; malignant teratomas contain a wide variety of tissues deriving from all three germ layers. Malignant teratomas are graded according to the degree of tissue immaturity and the presence of neuroepithelium. Although in our case all layers were represented, with a preponderance of central nervous system tissue, there was no evidence of immature neural elements. Benign cystic teratomas have a low malignant potential, which increases with an increase in the proportion of the solid component of the tumor. In postmenopausal patients, as opposed to younger patients such as ours, evaluation of tumor markers can be helpful as part of the preoperative workup.

We have described a case of a massive ovarian teratoma that, although predominately cystic and histologically benign, had gross features more commonly associated with immature teratomas. Despite its magnitude, we were able to remove the tumor through a low Pfannenstiel incision after intraperitoneal partial evacuation of cyst contents. The result was an improved cosmetic outcome while not compromising the patient’s safety.

Kyla Powell contributed technical assistance in obtaining the intraoperative photographs.

References


