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Case Report

Removal of an atypical ovarian dermoid cyst: a case report[☆]

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ABSTRACT

Ovarian dermoid cysts, also known as mature teratomas, are benign embryonal tumors with a slow growth rate. They are the consequence of ectodermal components becoming trapped along with their closure sites and account for the most common germinative ovarian tumor in reproductive-aged women. These patients may have a reduced risk of morbidity if they receive an accurate diagnosis and extensive follow-up care. These cysts are often evaluated using one of the following imaging techniques: computed tomography, magnetic resonance imaging, pelvic ultrasonography, or transvaginal ultrasound. Laparoscopy and laparotomy are the 2 surgical procedures typically used to remove persistent or exceptionally large cysts. Leakage of cyst contents during surgery is a common postoperative complication that can seldom, but occasionally, results in chemical peritonitis. We discuss a case of a significant dermoid cyst that developed in an older woman and was successfully removed via laparoscopic surgery. This instance is instructive for other physicians who may encounter a similar pathology.

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Introduction

A dermoid cyst is a benign cutaneous developmental anomaly that arises from the entrapment of ectodermal elements along the lines of embryonic closure [1]. Dermoid cysts make up 15%–20% of all ovarian tumors. They are most common in

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women of reproductive age, generally between the ages of 20 and 40 [2]. An individual cyst can span from less than 1 centimeter (cm) to 10 cm, equating to approximately half an inch (") to roughly 4", respectively [3]. Despite some misconceptions, the size of a cyst does not indicate whether it is cancerous. There has been limited literature on dermoid cysts of the ovary that are equal to or larger than 15 in diameter and are pretty rare in women of reproductive age [4]. In general, many women with dermoid cysts are asymptomatic. However, there is a high risk of torsion and rupture of dermoid cysts, leading to sebaceous material spilling into the abdominal cavity, but these are relatively rare [4]. Shock and hemorrhage are the immediate rupture complications; a granulomatous reaction can develop and cause dense adhesions [5]. Diagnostic imaging is crucial for the diagnosis of ovarian cysts. Dermoid cysts are often diagnosed by computed tomography scan (CT), magnetic resonance imaging, pelvic ultrasound (US), or transvaginal ultrasound [5]. Treatment differs based on the signs and manifestations of the mass. Asymptomatic ovarian cysts mostly disappear without treatment in a few months, whereas considerable, symptomatic, or persistent cysts are typically removed via laparoscopy or laparotomy [4]. Therefore, an accurate and timely diagnosis with adequate follow-up may decrease morbidity for these patients. We talk about a rare case of a large dermoid cyst that was successfully removed by laparoscopic surgery. This case may serve as a reference point for physicians who are faced with a similar pathological presentation.

Case presentation

A 75-year-old female reported to the emergency department with a 3-year history of progressive, significant abdominal enlargement. The patient denied having genitourinary or digestive problems. There was no accompanying pain, fever, or vomiting, and her vital signs were normal. Her physical examination was unremarkable without cyanosis, pallor, clubbing, lymphadenopathy, or edema. The abdomen was distended and dull to percussion, while the hepatic and splenic organs could not be palpated. The US showed that there was a large cystic mass in the abdomen as well as an echogenic mass that covered the whole abdomen. We performed a contrast-enhanced abdomen-wide CT scan (Fig. 1). The scan revealed a sizable, well-defined, hypodense pelvic abdominal cystic region that measured 12 cm anteroposteriorly, 22 cm transversely, and 25 cm craniocaudally and contained a prominent intrinsic fluid level. This appeared to confirm the echogenic mass found on US. The mass was displacing the liver and spleen superiorly, the kidneys posteriorly, and the intestinal loops laterally. In addition to the cystic region lesion, a right ovo-fallopian component was attached and tent-shaped on the superior surface. In addition to the displacement of bowel loops on either side, the lesion revealed a planar surface with surrounding structures bordering the inner lining of the anterior abdominal wall, adjoining the posteriorly situated aorta, inferior vena cava, and iliac vessels, bilateral psoas muscles, as well as abutting the urinary bladder and uterus. The uterus was inspected independently, and there was no free fluid in

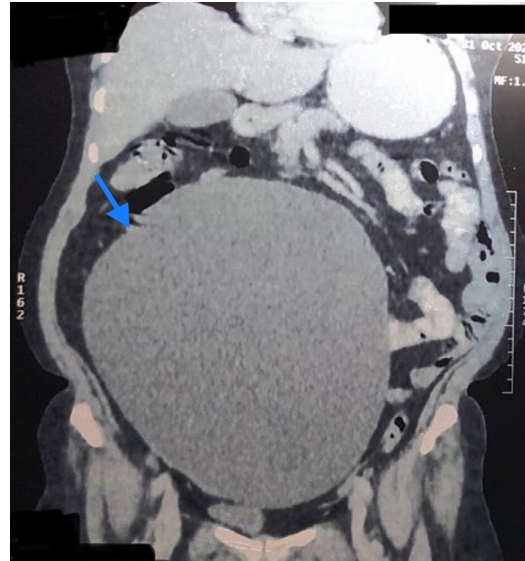


Fig. 1 – CT scan of the abdomen showing a large ovarian cyst (sagittal view).

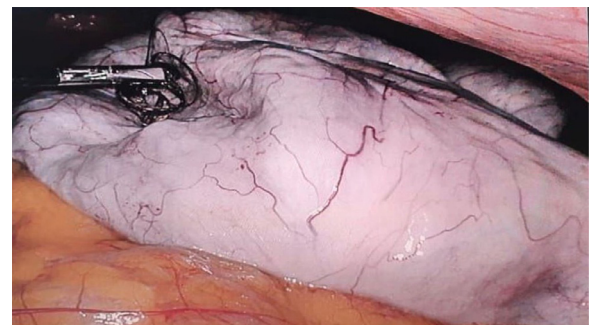


Fig. 2 – Large ovarian cyst is seen during laparoscopic excision.

the peritoneal cavity. We established the finding to be a right-sided ovarian cyst and recommended evaluating the tumor marker CA125 for malignant potential, which was confirmed to be within normal limits. The hematological and biochemical parameters of the patient were within normal limits.

The right ovarian cyst was removed laparoscopically under general anesthesia. The growth was so massive that it necessitated a wide abdominal incision to be removed (Fig. 2). By punching a small hole in the mass, we were able to drain a significant amount of intracystic fluid (3 liters), and then extracted the mass. The histology of the excised right ovarian cyst was investigated, and gross examination of the specimen revealed an assembly of material packed with solidified material of a dirty color, with a tuft of hair lodged within a part of the paper-thin wall. Multiple segments of the cystic ovarian mass revealed a cystic cavity lined by the mature epidermis and including skin adnexa and glial tissue within the wall. In addition, foci of mature adipose tissue, cartilage, and respiratory tissue were seen. A substantial section of the wall was comprised of compacted ovarian stroma with corpus albicans.

These findings revealed a dermoid cyst, often known as a mature cystic ovarian teratoma. The surgical period was uncomplicated, and the patient was started on a 1-week medication regimen of Uroxime, BT PLUS, and Acera-D. The patient was discharged 4 days after admission.

Discussion

A dermoid cyst can range in size from a few mm to 157 cm, however, Comerchi et al found a mean tumor size of 6.4 ± 3.5 cm in their investigation [6]. Roughly 60% of individuals with dermoid cysts were asymptomatic, according to a study of 517 patients where the mean age of the patients was 32 ± 11.3 years [6]. Despite the fact that our patient was similarly asymptomatic, her case exemplified a marked divergence from the usual at 75 years of age with a massive 25 cm mass. Al Rayyan et al stated in their study that the size of the tumor and the patient's age are more important than the kind of cancer in determining the patient's likelihood of survival [7]. For adults over 45, especially if the tumor is more than 10 cm, a high index of suspicion for malignancy is essential for treating the disease. Malignancy of a dermoid cyst is uncommon, occurring in only 1-2% of mature teratomas, with squamous cell carcinoma constituting approximately 90% of them [8]. The patient's cyst comprised, in addition to hair and teeth, epidermis, adipose tissue, cartilage, and respiratory tissue. Due to their accelerated development rate and inflated capsule, gigantic ovarian teratomas are susceptible to torsion and abdominal distension, similar to our case. Torsion of the pedicle interrupts the blood flow and is the most prevalent complication, occurring in 16.1% of cases [9]. Only 1% of instances are mature teratomas related to an infection. Despite reports of actinomycosis, brucellosis, and schistosomiasis, coliforms continue to be the most common infecting organism [10]. Even while laparoscopy remains the standard treatment for ovarian dermoid cysts over laparotomy due to its less invasiveness, the former has a higher risk of inducing peritonitis due to the possibility of cyst contents spilling into the abdominal cavity [11]. A 2011 study found that if a cystectomy was performed, the laparoscopic procedure had a 60.32% risk of rupture and a 42.9% risk of rupture if an adnexectomy was performed [12]. Additionally, 80% of ovarian dermoid cysts larger than 60 mm burst, whereas only 51.17% of cysts smaller than 60 mm ruptured [12]. Eisenberg et al. examined the link between these characteristics in a separate trial (relative risk [RR] 0.75; 95% confidence interval [CI], -0.33 to 1.83), which assessed postoperative complications of spillage. Reoperation (RR 1.16; 95% CI, 0.39-3.48), infertility (RR 0.73; 95% CI, 0.15-3.63), transitory fever (RR 3.22; 95% CI, 0.83-12.51), and readmission (RR 1.00; 95% CI, 0.33-2.51) were not linked with intraoperative benign ovarian cyst rupture. However, spillage was related to an increased likelihood of the benign condition recurring (RR 3.1; 95% CI, 1.05-9.14). The subgroup analysis of dermoid cysts in the same study revealed a significant association between rupture and postoperative peritonitis (RR 9.36; 95% CI, 1.28-73.28) [13]. Other sources indicate that the recurrence rate is between 3% and 4% [14]. Introducing unique techniques, such as using a single port laparoscopy as opposed to a 3-port la-

paroscopy, will have a substantial effect on the risk of rupture (3.0 vs 22.2%). However, there is no difference in overall hospital cost, time till gas passing or postoperative problems among the various surgical procedures [15]. Using a laparoscopic endobag for the treatment has produced impressive outcomes, as it has shortened the average operating time by 18 minutes and eliminated 43.3% of potential spillage [16].

Conclusions

Diagnosing and managing a massive dermoid cyst in an atypical population comes with its own set of challenges. The size of the cyst has a significant relationship with survival over the malignancy of the condition. Modifying the traditional laparoscopic procedure to accommodate an endobag and single port will reduce spillage of cyst contents, an occasional postoperative complication that can periodically lead to peritonitis.

Patient consent statement

Signed consent for a case report was obtained from the patient's legally authorized representative (LAR). The IRB approval was taken from Ganesh Shankar Vidarthi Memorial Medical College Ethics Committee (Approval number: EC/BMHR/2022/72).

REFERENCES

- [1] Shareef S, Etefagh L. Dermoid cyst. StatPearls, Treasure IslandFL: StatPearls Publishing; 2022. [Internet]. [cited 2022 May 3]. Available from <http://www.ncbi.nlm.nih.gov/books/NBK560573/>.
- [2] Benign rapidly growing ovarian dermoid cysts: a case series. Qurieno Deguchy, Ghaneh Fananapazir, Michael Corwin, Ramit Lamba, Eugenio Gerscovich, John McGahan, 2017 [Internet]. [cited 2022 May 3]. Available from: <https://journals.sagepub.com/doi/full/10.1177/8756479316664313>.
- [3] Patient education: ovarian cysts (beyond the basics) - UpToDate [Internet]. [cited 2022 May 18]. Available from: <https://www.uptodate.com/contents/ovarian-cysts-beyond-the-basics/print>.
- [4] Uyanikoglu H, Dusak A. A huge ovarian dermoid cyst: successful laparoscopic total excision. *J Clin Diagn Res* 2017;11(8):QD03-5.
- [5] Dermoid cyst: causes, symptoms and treatment [Internet]. [cited 2022 May 3]. Available from: <https://my.clevelandclinic.org/health/diseases/21864-dermoid-cyst>.
- [6] Comerchi JT, Licciardi F, Bergh PA, Gregori C, Breen JL. Mature cystic teratoma: a clinicopathologic evaluation of 517 cases and review of the literature. *Obstet Gynecol* 1994;84(1):22-8.
- [7] Başığül A, Gökaslan H, Kavak ZN, Güdücü N, Eren F. Squamous cell carcinoma developing in a huge dermoid cyst of the ovary in an 80-year-old woman—case report. *Eur J Gynaecol Oncol* 2007;28(1):63-6.
- [8] Allam-Nandyala P, Bui MM, Caracciolo JT, Hakam A. Squamous cell carcinoma and osteosarcoma arising from a dermoid cyst—a case report and review of literature. *Int J Clin Exp Pathol* 2010;3(3):313-18.

- [9] Khoo CK, Chua SYI, Siow YMA, Chern SBM. Extragonadal dermoid cysts: a review and case report. *Singapore J Obstet Gynecol* 2008;39:17–20.
- [10] Turner RJ, Day PL. Torsed infected dermoid cyst with concurrent ectopic pregnancy. *Military Med* 1986;151(3):179–80.
- [11] Clement D, Barranger E, Benchimol Y, Uzan S. Chemical peritonitis: a rare complication of an iatrogenic ovarian dermoid cyst rupture. *Surg Endoscop* 2003;17(4):658.
- [12] Godinjak Z, Bilalović N, Idrizbegović E. Laparoscopic treatment of ovarian dermoid cysts is a safe procedure. *Bosnian J Basic Med Sci* 2011;11(4):245.
- [13] Eisenberg N, Volodarsky-Perel A, Brochu I, Tremblay C, Gorak E, Hudon E, et al. Short-and long-term complications of intraoperative benign ovarian cyst spillage: a systematic review and meta-analysis. *J Min Invasive Gynecol* 2021;28(5):957–70.
- [14] Hoffman JG, Strickland JL, Yin J. Virilizing ovarian dermoid cyst with leydig cells. *J Pediatr Adolesc Gynecol* 2009;22(3):e39–40.
- [15] Wang X, Li Y. Comparison of perioperative outcomes of single-port laparoscopy, three- port laparoscopy and conventional laparotomy in removing giant ovarian cysts larger than 15 cm. *BMC Surg* 2021;21(1):1–9.
- [16] Campo S, Garcea N. Laparoscopic conservative excision of ovarian dermoid cysts with and without an endobag. *J Am AssocGynecol Laparoscop* 1998;5(2):165–70.