

Bilateral Dermoid Ovarian Cysts in a Young Woman – A Case Report and Literature Review

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Abstract. *Background/Aim:* Ovarian tumors are a common type of neoplasm in women, with mature cystic teratomas being the most frequent variant. These tumors occur bilaterally in approximately 10% of cases. However, bilateral and multiple occurrences are rarely reported. *Case Report:* A 22-year-old nulliparous woman presented with amenorrhea and sudden, generalized, dull lower abdominal pain. *Diagnostic imaging, including ultrasound and computed tomography (CT) scans, revealed large solid-cystic lesions in both ovaries, with internal hyperechoic foci consistent with fat and calcification, along with thin internal septations. A laparoscopic cystectomy was successfully performed, preserving ovarian function. Histopathological examination confirmed the presence of stratified keratinized squamous epithelium, sebaceous glands, hair follicles, mature adipose tissue, blood vessels, and lymphatic vessels within the resected cysts, with no evidence of malignancy. Conclusion:* This unique case provides valuable insights into

the understanding and management of bilateral dermoid cysts, highlighting the importance of preserving ovarian function in young women.

We present a rare case of bilateral dermoid cysts in a 22-year-old female patient. Dermoid cysts, also known as mature cystic teratomas, arise from totipotent germ cells and contain a variety of tissues derived from all three germ layers (1-3). These cysts predominantly affect women of reproductive age, with incidence peaking during the second and third decades of life. Bilateral occurrences are uncommon, constituting only approximately 10% of cases (4). While dermoid cysts can develop in various body locations, ovarian dermoid cysts are the most common. Less frequently, they may occur in the brain, spinal cord, or mediastinum (5, 6). The bilateral presentation of these cysts introduces unique diagnostic challenges.

Common symptoms include lower abdominal pain, reported in 70% of cases, and the presence of a palpable pelvic mass (7). Diagnostic imaging techniques, such as ultrasound and magnetic resonance imaging (MRI), are essential for confirming the presence of bilateral dermoid cysts and assessing their characteristics. In our case, laparoscopic cystectomy was successfully performed, preserving ovarian function, and histopathological examination confirmed the diagnosis.

This report provides valuable insights into the clinical characteristics, diagnostic process, and management of bilateral dermoid cysts.

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Key Words: Mature cystic ovarian teratoma, bilateral dermoid cyst, dermoid cysts, histopathology, laparoscopic cystectomy.

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Case Report

A 22-year-old woman, married for 4 months, presented with amenorrhea for 1.5 months, along with sudden, diffuse, dull lower abdominal pain that had persisted for 15 days. Her

menstrual history was previously regular, with painless bleeding lasting 5 to 6 days every 28 to 30 days, and a moderate flow. The patient reported no bowel or bladder disturbances, weight loss, appetite changes, or menstrual irregularities. She had no significant medical or surgical history and no family history of cancer or ovarian cysts. The general physical examination was unremarkable. Abdominal examination revealed a soft abdomen with no tenderness. The patient also provided an ultrasound scan from a different diagnostic center. After a thorough review of the reports, the patient was admitted, and routine blood tests, including tumor markers, were repeated, all of which returned normal results.

Abdominal ultrasound examination (Figure 1 and Figure 2) revealed a significant solid-cystic lesion in the left ovary, measuring approximately 32×41×46 mm (anteroposterior × transverse × craniocaudal). The right ovary measured approximately 44×54×56 mm (anteroposterior × transverse × craniocaudal). Both ovaries showed an absence of internal vascularity, with a few internal hyperechoic foci casting a posterior acoustic shadow, suggesting the presence of a fat component with calcification. The cystic component exhibited subtle thin internal septations. These findings were suggestive of a possible dermoid cyst.

A laparoscopic cystectomy was subsequently performed under general anesthesia. A 10 mm supraumbilical incision was made to insert a scope for visualizing the abdominal cavity. During inspection, distinctive dumbbell-shaped cysts were observed on both the right and left ovaries. A 7×5 cm dermoid cyst was identified in the right ovary, while the left ovary contained a 3×4 cm cyst with normal fallopian tubes. Strategic incisions were made to precisely isolate the planes of separation. The cyst capsule was meticulously separated from the right ovary, followed by a similar procedure on the left. No instances of torsion or adhesions were found, and the fallopian tubes appeared healthy. The right and left dermoid cysts were then secured within an endo bag, and the cyst walls were carefully incised to facilitate the extraction of the excised material. The procedure concluded with thorough peritoneal irrigation using normal saline.

Sections extracted from the cyst were subjected to histopathological analysis, revealing a cyst lined with stratified keratinized squamous epithelium (Figure 2A), along with adnexal structures, such as sebaceous glands (Figure 2B) and hair follicles. Additionally, the specimens contained keratinized squamous epithelium, sebaceous glands, blood and lymphatic vessels and mature adipose tissue (Figure 3). Notably, lymphoplasmacytic infiltrates were present, and a corpus luteal cyst was identified.

The postoperative period was uneventful, and the patient was discharged after a 10-day hospital stay. She has been followed for a year, during which she experienced irregular menses for two months post-surgery. Combined contraceptives were prescribed to help regulate her cycles, and she has since

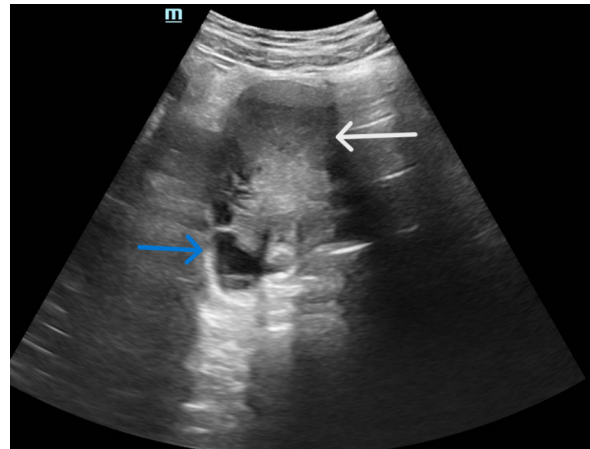


Figure 1. Pelvic ultrasound – Blue arrow denote ovary and white arrow denote ovarian mass.

maintained regular menstruation. No recurrence of the cyst has been detected in her regular ultrasound follow-ups.

Discussion

Dermoid cysts are non-cancerous growths originating from germ cells that include tissues from all three germ layers, with approximately 15-20% occurring in the ovaries (1-3). These cysts primarily consist of ectodermal tissue, but they also contain endodermal and mesodermal components. Typically, dermoid cysts present as smooth, single-chamber cysts and may contain various elements, such as sebaceous glands, hair, bone, cartilage, teeth, thyroid tissue, and bronchial mucous membranes within their walls. The first case of a mature cystic teratoma was documented by Johannes Scultetus in 1659 during the autopsy of a young woman who had died from an ovarian tumor, later identified as a "dermoid cyst of the ovary" (8). These cysts are most diagnosed in women aged 20 to 40 (9). Our patient, being 22 years old, falls within this age group. While unilateral presentation is typical, it is the bilateral presentation that makes our case unique, a rarity seen in only 10% of cases (10).

Mature cystic teratomas, the most common type of ovarian tumor, are slow-growing and predominantly benign, with a prevalence of up to 20% (11, 12). These tumors often remain asymptomatic unless complications arise. In our patient, the mature cystic dermoid cyst led to dull abdominal pain and amenorrhea. In contrast, immature teratomas are less commonly associated with abdominal pain and more likely to present as a palpable abdominal mass. They are rare, primarily occurring in the first two decades of life, with a prevalence of less than 1% and a higher potential for malignancy (13). Possible complications of these cysts include torsion, rupture, infection, and autoimmune hemolytic anemia.

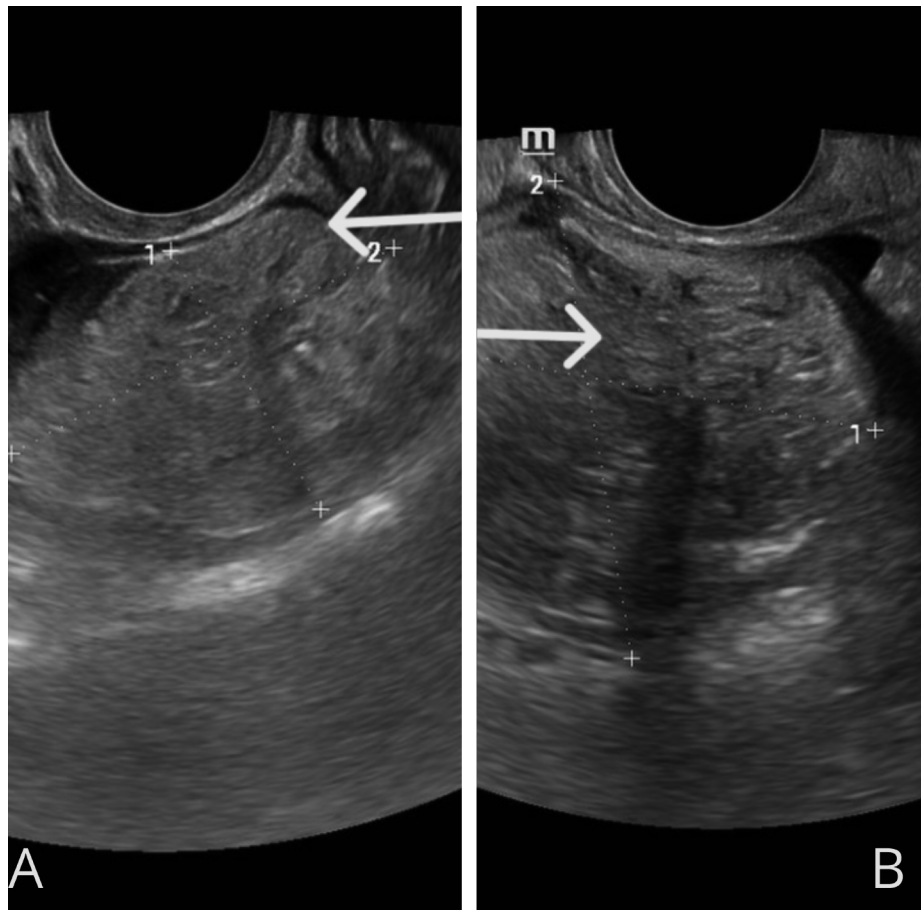


Figure 2. Imaging of the pelvic region using ultrasound – Arrows point out the ovary and a mass in the ovary.

Ultrasonography is the primary diagnostic tool, primarily used to confirm the presence and origin of a mass. Computed tomography (CT) scans, however, are highly sensitive for diagnosis, particularly in detecting fat. When ultrasound results are inconclusive, CT scans can help identify fat, subtle calcifications, and assess the mass's impact on nearby structures (14). In our case, both ultrasound and CT scans provided evidence suggestive of bilateral teratomas, indicated by the presence of fat and calcifications. These findings were later confirmed through histopathology, which revealed sebaceous glands, hair follicles, and mature adipose tissue.

Various surgical procedures are available for the removal of ovarian dermoid cysts. Operative laparoscopy is often preferred over laparotomy due to its advantages, including reduced blood loss, less postoperative pain, and a more favorable cosmetic outcome (15). In our patient, we were able to successfully preserve ovarian function following laparoscopy, which is crucial given her young age and desire to conceive in the future. In a retrospective review, we identified only approximately 13 case reports over the past 24 years that focused on preserving

ovarian function after surgery in young women with bilateral ovarian dermoid cysts, all of whom experienced no postoperative complications (Table I). Preserving ovarian function in young patients is not only essential for future fertility but also plays a vital role in supporting the psychological well-being of those who aspire to parenthood.

It is important to note that laparoscopy can involve a longer surgical duration and a higher risk of cyst rupture, which increases the likelihood of recurrence. Although rupture is rare due to the cyst's strong wall, it can lead to chemical peritonitis, presenting a significant treatment challenge if it occurs. However, if such an event does happen, laparoscopy generally offers a more manageable approach for resolution. When choosing between ovarian cystectomy and oophorectomy, the patient's fertility status is typically the primary consideration. Cystectomy is usually preferred for younger women unless patient preferences suggest otherwise, while oophorectomy is more commonly recommended for postmenopausal and perimenopausal women (16). The overall recurrence rate for ovarian dermoid cysts is approximately 3-4%, but factors such

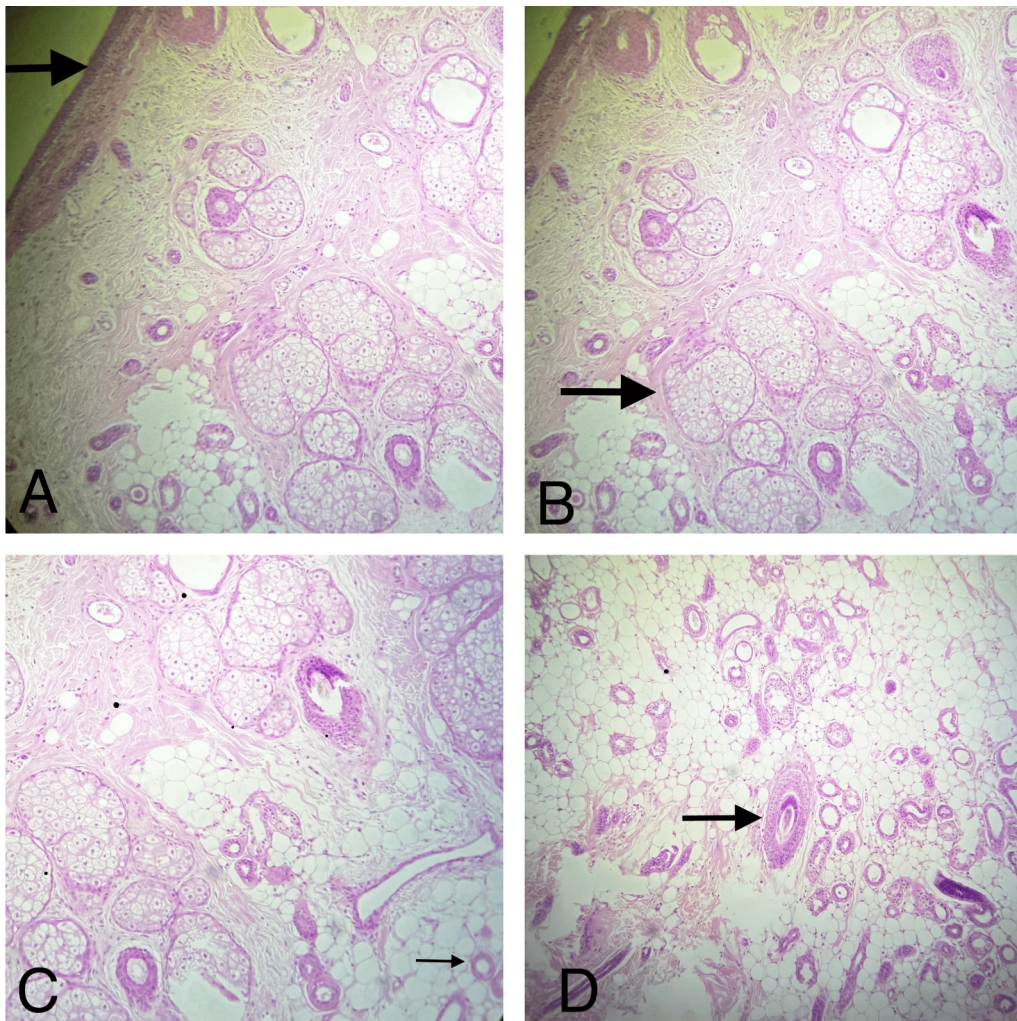


Figure 3. Hematoxylin and eosin-stained section (10×). A) Stratified keratinized squamous epithelium. B) Sebaceous glands. C) Blood vessel. D) Mature adipose tissue.

as young age, large cyst size, and bilaterality can increase the recurrence rate to 21% (17). Ovarian cancer is the eighth most common cancer in women, following endometrial and cervical cancers and currently new targeted therapies, adjusted to the different types of ovarian cancer, are available (18). However, malignancy in dermoid cysts is rare, with a higher incidence in women over 40, accounting for approximately 1-2% of cases. The most common malignancy arising from dermoid cysts is squamous cell carcinoma (19). Accurate estimation of prevalence can be challenging due to potential misdiagnoses, as symptoms can mimic those of benign ovarian cysts, such as vaginal bleeding and abdominal pain. Alarmingly, up to 70% of these tumors are diagnosed at advanced stages. Treatment typically involves a combination of surgical intervention, radiotherapy, and chemotherapy, with a five-year survival rate of 30%. Early detection significantly improves

the survival rate to approximately 90%, highlighting the importance of follow-up assessments, even for asymptomatic lesions discovered incidentally during imaging (20).

Conclusion

Our case report underscores the rarity and diagnostic challenges of bilateral dermoid cysts in a 22-year-old female patient. Early detection through diagnostic imaging, such as ultrasound and magnetic resonance imaging, is crucial for confirming the presence of these cysts and guiding appropriate management. Given the potential life-threatening consequences of complications like rupture or torsion, thorough evaluation and careful management are essential. This report highlights the importance of including bilateral dermoid cysts in the differential diagnosis for young female patients presenting with lower

Table I. List of reported cases of bilateral dermoid cysts with no post-operative complications and preserved ovarian function since 2020.

Authors/Reference	Year of publication	Patient age	No. of patients	Histology	Procedure done
Hakim MM, <i>et al.</i> (1)	2014	19	1	Bilateral dermoid ovarian cyst	Left ovariectomy and salpingectomy and right ovarian cystectomy
O'Neill KE, <i>et al.</i> (4)	2011	17	1	Bilateral ovarian MCT	Exploratory laparotomy
Fericean A, <i>et al.</i> (21)	2009	19	1	Bilateral ovarian MCT	Laparotomy
Fiaccavento A. <i>et al.</i> (22)	2009	24	1	Bilateral dermoid ovarian cysts	Laparoscopy
Mocciaro R, <i>et al.</i> (23)	2012	18-45	5	Bilateral dermoid ovarian cysts	Laparoscopic dermoid cystectomy by mesial incision
Alvarez RV, <i>et al.</i> (24)	2014	28	1	Bilateral ovarian teratomas	Laparoscopy
Iwahashi N, <i>et al.</i> (25)	2018	30	1	Bilateral ovarian MCT	Laparoscopy
Fayez I, <i>et al.</i> (26)	2018	19	1	Multiple bilateral ovarian MCT	Laparotomy
Rodrigues C, <i>et al.</i> (27)	2018	23	1	Bilateral ovarian MCT	Laparoscopy
Peperini A, <i>et al.</i> (28)	2020	15	1	Bilateral synchronous ovarian teratoma and cystadenoma	Robotic-assisted bilateral ovarian-sparing mass excision
Akhtar K, <i>et al.</i> (29)	2020	28	1	Bilateral multiple dermoid ovarian cysts	Bilateral ovarian cystectomy
Gaur N, <i>et al.</i> (30)	2020	24	1	Bilateral cystic teratomas	Laparoscopic bilateral dermoid cyst excision with right-sided ovariectomy and salpingectomy
Bou Zerdan M, <i>et al.</i> (31)	2022	21	1	Bilateral ovarian MCT	Laparoscopy

MCT: Mature cystic teratoma.

abdominal pain and pelvic discomfort. Tailoring the treatment approach based on individual factors, including age and comorbidities, is vital for optimizing outcomes and minimizing morbidity and mortality associated with these conditions.

Conflicts of Interest

The Authors declare no conflicts of interest in relation to this study.

Authors' Contributions

Conceptualization: S.P., S.S., and P.C.; Data curation: S.P., S.S., and P.C.; Formal analysis: P.C., and S.B.; Funding acquisition: S.B.; Investigation: S.P., S.S., and P.C.; Methodology: P.C., and S.B.; Project administration: S.B.; Resources: S.P., and S.S.; Software: P.C.; Supervision: S.B.; Validation: P.C.; Visualization: S.P., S.S., and P.C.; original draft: S.P., S.S., and P.C.; Writing – review & editing: S.P., S.S., P.C., and S.B.

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