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Differentiated Surgical Approach With Oophorectomy and Ovarian Cystectomy for Fertility Preservation in a Young Patient With Bilateral Ovarian Teratomas: A Case Report

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Abstract

Mature cystic teratomas are the most common benign ovarian germ cell tumors in women of reproductive age. Bilateral involvement is uncommon and presents a surgical challenge when preservation of ovarian function is desired. We report a case of bilateral ovarian mature teratomas managed with a differentiated surgical approach. A 28-year-old nulliparous woman presented with acute right iliac fossa pain and nausea. Contrast-enhanced computed tomography revealed a heterogeneous right ovarian mass measuring 11.2 × 16.5 × 17.5 cm, containing calcifications and fatty components, associated with bilateral pelvicalyceal dilatation secondary to extrinsic compression. Exploratory laparotomy identified a 15-cm mixed solid and cystic right ovarian mass and a 6-cm mixed lesion in the left ovary. Given the differences in tumor size and ovarian parenchymal involvement, right oophorectomy and left oophoroplasty were performed. The postoperative course was uneventful, and histopathological examination confirmed bilateral mature ovarian teratomas. Individualized surgical management based on tumor characteristics may allow complete treatment while preserving functional ovarian tissue in selected young patients with bilateral ovarian teratomas. Long-term surveillance of the preserved ovary remains essential.

Categories: Obstetrics/Gynecology, General Surgery, Oncology
Keywords: bilateral oophorectomy, fertility preservation, germ cell and embryonal neoplasms, ovarian neoplasms, teratoma resection

Introduction

Ovarian teratomas, or dermoid cysts, are the most common germ cell tumors of the ovary and constitute the most common benign ovarian neoplasm in women of reproductive age, with an estimated incidence ranging from 1.2 to 14.2 cases per 100,000 women per year [1]. They originate from totipotent primordial germ cells and contain mature tissues derived from all three germ layers, accounting for the heterogeneity of their histological components, including skin and skin appendages, adipose tissue, cartilage, and, less frequently, thyroid tissue [1,2]. Although most cases are unilateral, bilateral involvement has been documented in approximately 10% to 17% of patients according to different contemporary series [3,4]. This bilateral presentation poses a particular surgical challenge, especially in young women who have not yet fulfilled their reproductive goals, as it requires balancing complete lesion resection with preservation of functional ovarian tissue in both gonads [5,6]. Diagnosis is primarily based on transvaginal ultrasonography, supplemented when necessary by computed tomography or magnetic resonance imaging. Findings such as the Rokitansky nodule or fat-fluid levels strongly suggest the diagnosis, although histopathological confirmation remains the definitive diagnostic standard [1].

Regarding treatment, there is a consensus that the choice between cystectomy (conservative oophoroplasty) and oophorectomy should be individualized according to tumor size, the extent of involvement of healthy ovarian parenchyma, suspicion of malignancy, and the patient's reproductive wishes [1,3]. In premenopausal women, laparoscopic cystectomy with preservation of ovarian tissue is considered the preferred approach whenever technically feasible, whereas oophorectomy is reserved for cases with extensive anatomical distortion of the gonad, suspicion of malignancy, or in perimenopausal and postmenopausal patients [1,4]. When bilateral involvement is present, different reports have demonstrated the usefulness of a differentiated approach, that is, selecting a distinct surgical technique for each ovary according to its individual characteristics, with the aim of maximizing the preservation of functional gonadal tissue without compromising oncological safety. For example, the combination of salpingo-oophorectomy on one side and conservative cystectomy on the contralateral ovary has been described in cases of bilateral torsion [6], as well as simultaneous bilateral cystectomy with complete preservation of both gonads [3,7], and even robot-assisted minimally invasive surgery for synchronous bilateral ovarian tumors with different histological characteristics [8].

Despite the usually benign behavior of these tumors, recurrence, adnexal torsion, and, more rarely,

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malignant transformation have been reported following surgical management, highlighting the importance of careful intraoperative inspection of the contralateral ovary and long-term postoperative ultrasonographic follow-up, particularly of the preserved ovarian tissue [2,5,9]. Likewise, the laparoscopic approach remains preferred in most pediatric and young adult cases because of its lower morbidity and favorable safety profile, even in bilateral presentations [10]. Given the limited evidence available regarding the differentiated surgical management of bilateral ovarian teratomas in young patients, which is primarily restricted to small series and case reports, we present the case of a young patient with bilateral ovarian teratomas who underwent a combined approach of oophorectomy and oophoroplasty. This case aims to illustrate an individualized surgical strategy focused on preserving ovarian function without compromising procedural safety.

Case Presentation

A 28-year-old nulliparous woman with no previous comorbidities presented to the emergency department with a 24-hour history of sudden-onset, constant pain in the right iliac fossa, radiating to the ipsilateral lumbar region, and associated with nausea. Physical examination revealed tenderness to palpation in the right iliac fossa, without signs of peritoneal irritation. Based on these findings, laboratory tests were performed and showed no abnormalities (Table *1*).

Category/Test Name	Result	Unit/Detail	Reference Range
1. Complete Blood Count (CBC) & Coagulation Profile			
RBC (Red Blood Cells)	4.31	Million/mm³	4.0 to 5.2 Million/mm³
Hemoglobin	10.7	g/dL	12.0 to 16.0 g/dL
Hematocrit	33.0	%	35.0 to 46.0%
Mean Corpuscular Volume (MCV)	76.6	fL	80 to 100 fL
Mean Corpuscular Hemoglobin (MCH)	24.8	pg	26 to 34 pg
Mean Corpuscular Hemoglobin Conc. (MCHC)	32.4	%	31 to 36%
Red Cell Distribution Width (RDW)	13.8	%	11.5 to 15.0%
Total WBC (White Blood Cells)	5.9	Thousand/mm³	4.0 to 11.0 Thousand/mm³
Basophils	0.0% (0/mm³)	%/absolute	0 to 1%
Eosinophils	6.0% (355/mm³)	%/absolute	0 to 5%
Myelocytes	0.0% (0/mm³)	%/absolute	0 %
Metamyelocytes	0.0% (0/mm³)	%/absolute	0 to 0%
Band Neutrophils	3.0% (177/mm³)	%/absolute	0 to 1%/0 to 7%
Segmented Neutrophils	47.0% (2,778/mm³)	%/absolute	40 to 70%
Lymphocytes	35.0% (2,069/mm³)	%/absolute	22 to 45%
Monocytes	9.0% (532/mm³)	%/absolute	2 to 10%
Red Cell Morphology Note	Microcytosis	—	—
Platelet Count	234	Thousand/mm³	150 to 450 Thousand/mm³
Prothrombin Time (PT) - Time	10.0	sec	—
Prothrombin Time (PT) - Activity	115.0	%	70 to 100%
Prothrombin Time (PT) - INR	0.90	—	0.96 to 1.30
aPTT - Patient Time	30.2	sec	Up to 40 sec
aPTT - Control Time	26.0	sec	—
aPTT - Patient/Control Ratio	1.16	—	Up to 1.30
2. Biochemistry, Liver Profile & Kidney Function			
Glucose	83	mg/dL	70.0 to 99.0 mg/dL
Urea	17	mg/dL	10.0 to 50.0 mg/dL

Creatinine	0.75	mg/dL	0.50 to 1.30 mg/dL
Sodium	138	mEq/L	136 to 145 mEq/L
Potassium	4.4	mEq/L	3.5 to 5.1 mEq/L
Ionized Calcium	1.15/4.6	mmol/L/mg/dL	1.0 to 1.2 mmol/L/4.0 to 4.8 mg/dL
C-Reactive Protein (CRP)	0.20	mg/dL	Up to 0.50 mg/dL
AST (SGOT)	20	IU/L	15 to 37 IU/L
ALT (SGPT)	22	IU/L	14 to 63 IU/L
Alkaline Phosphatase	59	IU/L	50 to 136 IU/L
Gamma-GT	25	IU/L	5 to 55 IU/L (Females)
Direct Bilirubin	0.10	mg/dL	0.1 to 0.4 mg/dL
Indirect Bilirubin	0.20	mg/dL	0.1 to 0.8 mg/dL
Total Bilirubin	0.30	mg/dL	0.1 to 1.2 mg/dL
Total Protein	7.3	g/dL	6.4 to 8.2 g/dL
Albumin	3.6	g/dL	3.5 to 5.5 g/dL
Globulin	3.7	g/dL	1.9 to 3.1 g/dL
Albumin/Globulin Ratio	1.0	—	1.1 to 2.0
Amylase	49	IU/L	Up to 115 IU/L
Lipase	36	IU/L	16 to 77 IU/L
Lactic Acid (Lactate)	0.70/6.3	mmol/L/mg/dL	0.4 to 2.0 mmol/L/3.6 to 18.0 mg/dL
3. Venous Blood Gas Analysis			
pH	7.38	—	7.32 to 7.43
pCO_2	49	mmHg	38 to 50 mmHg
pO_2	14	mmHg	35 to 40 mmHg
HCO_3	29.0	mmol/L	22 to 29 mmol/L
Total CO_2	30.5	mmol/L	23 to 30 mmol/L
Base Excess (BE)	3.1	—	-2.0 to 2.0
O_2 Saturation	16.0	%	60 to 75%
4. Urinalysis (Routine Urinalysis/EAS)			
Specific Gravity	1.010	—	1.010 to 1.035
Color	Light Yellow	—	Light Yellow
Appearance	Turbid (Cloudy)	—	Clear
pH	8.0	—	—
Protein	Negative	—	Negative
Glucose	Normal	—	Normal
Ketones	Negative	—	Negative
Blood	Negative	—	Negative
Urobilinogen	Normal	—	Normal
Bilirubin	Negative	—	Negative
Leukocyte Esterase	Negative	—	Negative

Nitrite	Negative	—	Negative
Epithelial Cells	Rare	—	Rare or Few
Leukocytes (WBC)	1 to 3	per HPF	Absent to 3/HPF
RBC (Erythrocytes)	0 to 1	per HPF	Absent to 1/HPF
Crystals	Numerous amorphous phosphates	—	Absent
Casts	Absent	—	Absent
Mucus Threads	Rare	—	—
Bacteria	Rare	—	Absent or Rare

TABLE 1: Laboratory findings

Imaging studies were also obtained, including contrast-enhanced computed tomography of the abdomen and pelvis, which revealed a heterogeneous expansive mass measuring 11.2 cm × 16.5 cm × 17.5 cm (Figure *1*), apparently originating from the right ovary and extending to the contralateral iliac fossa, associated with calcifications and without significant contrast enhancement. These findings raised suspicion of a germ cell tumor. Additionally, bilateral pelvicalyceal dilatation, predominantly on the right side, was observed, secondary to extrinsic compression by the previously described lesion.

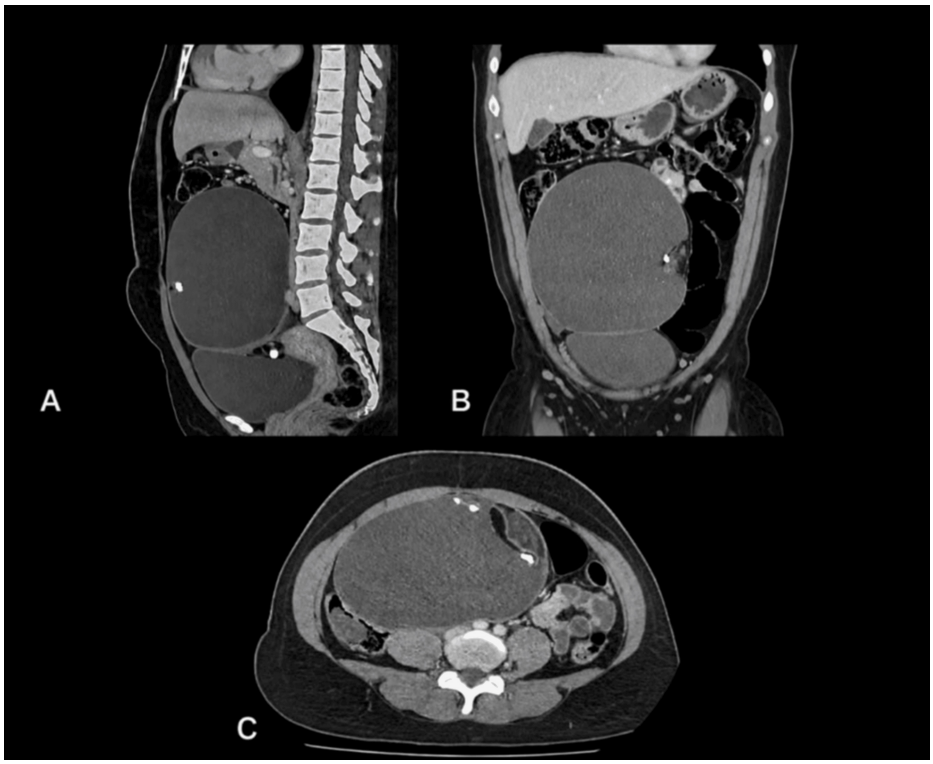


FIGURE 1: Contrast-enhanced computed tomography of the abdomen and pelvis, coronal, sagittal, and axial views

(A) Coronal, (B) sagittal, and (C) axial views showing a large, heterogeneous, expansive mass presumably arising from the right ovary, associated with calcifications and fatty content, without significant enhancement after contrast administration, measuring 11.2 × 16.5 × 17.5 cm (arrow).

Source: Photograph obtained by the authors.

Based on these findings, an exploratory laparotomy was performed. Intraoperatively, a mixed solid and cystic lesion measuring approximately 15 cm was identified, originating from the right ovary, along with a second mixed solid and cystic lesion in the left ovary, measuring approximately 6 cm. Both lesions were

suggestive of ovarian teratomas. Given the intraoperative findings, a differentiated surgical approach was chosen, consisting of right oophorectomy and left oophoroplasty (Figure 2).

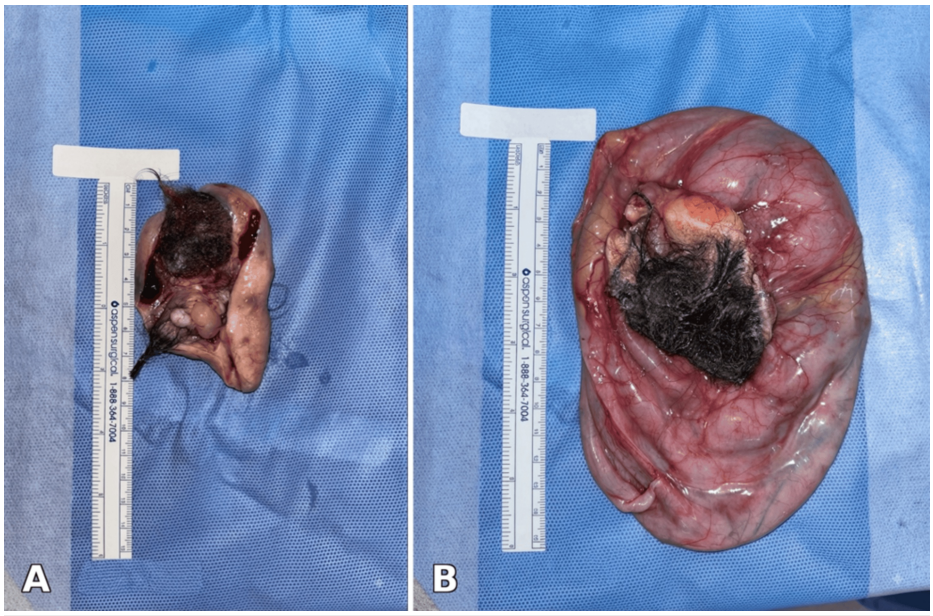


FIGURE 2: Surgical specimens of the bilateral ovarian lesions

(A) Left oophoroplasty specimen (8.0 × 5.0 × 4.0 cm), with an internal view of the lesion showing abundant hair and calcified structures with a tooth-like appearance. (B) Right oophorectomy specimen (15.0 × 10.0 × 6.0 cm), showing a smooth, vascularized external surface with an area of capsular dehiscence exposing hair and sebaceous material. Both gross findings are characteristic of mature teratoma.

Source: Photographs obtained by the authors.

The procedure was completed without complications. The patient had an uneventful postoperative course and was discharged 24 hours after surgery. Histopathological examination confirmed the diagnosis of bilateral mature germ cell tumors, consisting of mature teratomas of both the left and right ovaries (Figure 3). The patient is currently undergoing outpatient follow-up with a favorable clinical course.

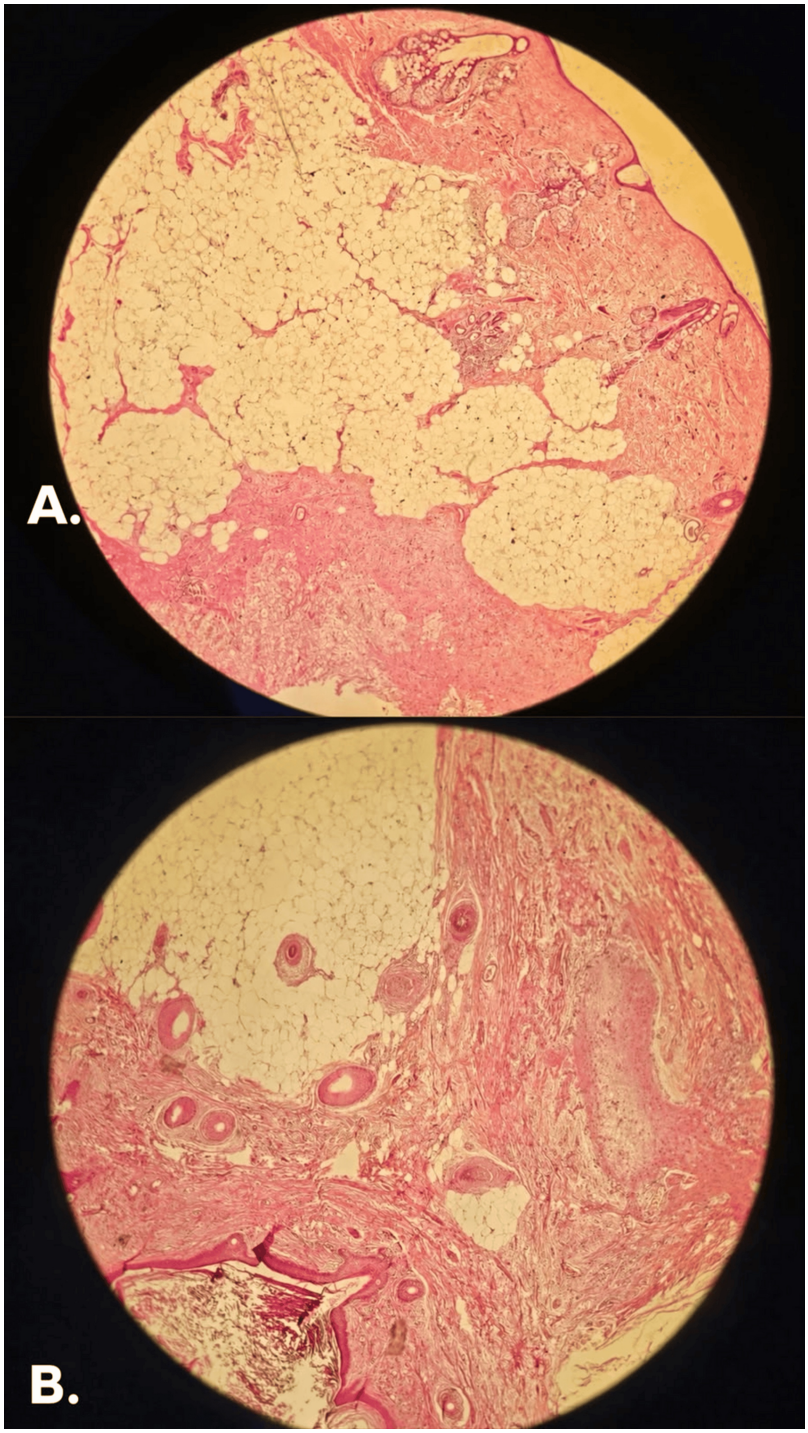


FIGURE 3: Histopathological examination

(A) Right ovary: cystic right ovary measuring 7.0 × 5.0 × 4.0 cm, bosselated and light brown, with an area of rupture. Internally, it is unilocular, containing yellow, pasty material with scattered hairs. The wall is smooth and elastic, with a raised, yellowish-white, firm area measuring 2.0 × 1.7 cm. (B) Left ovary: left ovary measuring 11.0 × 10.0 × 6.0 cm, similar to the contralateral ovary, with a yellowish-white, firm area measuring 6.0 × 2.0 cm. Findings are consistent with bilateral mature cystic teratomas.

Discussion

The present case involves a patient of reproductive age, which is consistent with the age group in which mature ovarian teratomas are most prevalent [1]. Although bilateral involvement is uncommon, the finding in this case falls within the range reported in the literature, which varies between 10% and 17% of cases [3,4].

A notable aspect of this case is the considerable size of the lesions, particularly the right-sided lesion, which measured approximately 15 cm, thereby meeting the criteria for classification as a giant teratoma, defined in the literature as a tumor with a diameter greater than or equal to 15 cm [11]. Tumors of this size represent a diagnostic and therapeutic challenge because they increase the risk of intraoperative rupture, make preservation of healthy ovarian parenchyma more difficult, and increase the likelihood of compressive complications involving adjacent structures [12].

In this context, the bilateral pelvicalyceal dilatation, predominantly on the right side, secondary to extrinsic compression identified in this patient, is consistent with findings described in large ovarian teratomas, in which mechanical compression of the urinary tract may result in obstructive uropathy even in the absence of direct tumor invasion [12].

The diagnostic approach using contrast-enhanced computed tomography, in the setting of an acute clinical presentation, allowed adequate characterization of the lesion, demonstrating calcifications and heterogeneous content characteristic of mature teratomas. Nevertheless, the mixed solid and cystic appearance of both lesions warrants consideration of an immature component or malignant transformation until definitive histopathological confirmation is obtained [1,9,13,14].

Regarding the surgical approach, exploratory laparotomy was selected instead of laparoscopy. This decision was considered reasonable given the considerable size of the lesions, which would make intact specimen extraction and safe manipulation through a minimally invasive approach more challenging. Although recent multicenter series in pediatric populations have not demonstrated significant differences in the rate of intraoperative spillage between the two approaches, laparotomy remains a preferred approach for large tumors, particularly when they reach the dimensions of a giant teratoma [11,15].

The decision to perform a differentiated surgical approach consisting of right oophorectomy and left oophoroplasty reflects the principles described in the literature for the management of bilateral ovarian teratomas, according to which the surgical technique should be individualized based on tumor size, the extent of involvement of healthy ovarian parenchyma, and the patient's reproductive goals [2,4,16]. In this case, the right-sided lesion, which was larger and had a more prominent solid component, extensively involved the healthy ovarian parenchyma; therefore, oophorectomy was considered the safest option. In contrast, the smaller left-sided lesion allowed preservation of functional ovarian tissue through oophoroplasty, consistent with similar strategies previously described in cases of bilateral ovarian involvement [5,7,8]. Indeed, recent series have identified increased tumor size and bilaterality as independent risk factors for recurrence following cystectomy, supporting consideration of oophorectomy for the larger lesion when the amount of residual healthy parenchyma is limited [16].

The patient's favorable postoperative course and early discharge are consistent with outcomes reported in series describing the surgical management of ovarian teratomas. Nevertheless, given that recurrence rates of up to 5% have been reported following conservative surgery, as well as the rare but documented possibility of malignant transformation, long-term periodic ultrasonographic follow-up is essential, particularly of the preserved left ovary [1,9].

Conclusions

A differentiated surgical approach, consisting of oophorectomy for the lesion with greater involvement of healthy ovarian parenchyma and conservative ovarian surgery for the smaller lesion, proved to be a safe and effective strategy for preserving reproductive function in this young patient with bilateral ovarian teratomas. This case supports the individualization of the surgical technique according to lesion size and the amount of residual healthy ovarian parenchyma and contributes to the still limited evidence regarding the differentiated surgical management of this condition. Given the risk, although uncommon, of recurrence and malignant transformation, long-term ultrasonographic follow-up of the preserved ovary is recommended.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

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Disclosures

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References

1. Cong L, Wang S, Yeung SY, Lee JH, Chung JP, Chan DY: Mature cystic teratoma: an integrated review. Int J Mol Sci. 2023, 24:10.3390/ijms24076141
2. Goudeli C, Varytimiadi A, Koufopoulos N, Syrios J, Terzakis E: An ovarian mature cystic teratoma evolving in squamous cell carcinoma: a case report and review of the literature. Gynecol Oncol Rep. 2017, 19:27-30. 10.1016/j.gore.2016.12.005
3. Pinnamaneni S, Sayani S, Chilakuluri P, Boussios S: Bilateral dermoid ovarian cysts in a young woman - a case report and literature review. Cancer Diagn Progn. 2024, 4:819-24. 10.21873/cdp.10402
4. Tankou J, Foley OW, Liu CY, Melamed A, Schantz-Dunn J: Dermoid cyst management and outcomes: a review of over 1000 cases at a single institution. Am J Obstet Gynecol. 2024, 231:442.e1-7. 10.1016/j.ajog.2024.04.021
5. Chang CF, Lin CK: A case of recurrent, bilateral ovarian mature teratoma in a young woman . BMC Womens Health. 2014, 14:57. 10.1186/1472-6874-14-57
6. Baradwan S, Sendy W, Sendy S: Bilateral dermoid ovarian torsion in a young woman: a case report . J Med Case Rep. 2018, 12:159. 10.1186/s13256-018-1698-8
7. Akhtar K, Talha M, Alam S, Mohsin Z: Bilateral ovarian mature cystic teratoma - a rare case presentation . J Clin Diagn Res. 2020, 14:11-3. 10.7860/JCDR/2020/45346.14112
8. Peverini A, Goodman L, Denham L, Radulescu A: Robotic-assisted surgery for bilateral synchronous ovarian teratoma and cystadenoma: a case report. J Pediatr Surg Case Rep. 2020, 53:101366. 10.1016/j.epsc.2019.101366
9. Okuda T, Uda Y, Sakai S, Harada T: Malignant transformation of unknown duration of an ovarian mature cystic teratoma presenting as a trocar recurrence in a young patient: a case report and literature review. Case Rep Obstet Gynecol. 2023, 2023:8875092. 10.1155/2023/8875092
10. Raicevic M, Saxena AK: Review of laparoscopic management of mature cystic teratoma of ovaries in children. J Indian Assoc Pediatr Surg. 2019, 24:92-6. 10.4103/jiaps.JIAPS_246_17
11. Barragán-Curiel AE, Murillo-Zepeda C, Castro-Perez KF, et al.: Giant mature ovarian cystic teratoma in a pediatric patient: case report and literature review. Case Rep Oncol. 2023, 16:1066-72. 10.1159/000534141
12. Adnan WFW, Ismail MP, Mohamad Zon E, Nik Mahmood NMZ, Othman MS, Kamaludin Z: Huge mature cystic teratoma with compression and obstructive outcome. J Clin Gynecol Obstet. 2022, 11:113-6. 10.14740/jcgo828
13. Vargas JI, Riscanevo-Bobadilla AC, Hernández MA, Saavedra PA: Mature mesenteric teratoma in an adult woman: a case report and literature review. Rev Colomb Cir. 2024, 39:155-60. 10.30944/20117582.2321
14. Ceballos-Esparragón JJ, Camarillo RM, Cabrero-Acosta A, Petrone P: Mature teratoma mimicking a retroperitoneal mesothelial cyst. Rev Colomb Cir. 2023, 38:174-5. 10.30944/20117582.2217
15. Knaus ME, Onwuka AJ, Afrazi A, et al.: Laparoscopy versus laparotomy for pediatric ovarian dermoids. J Pediatr Surg. 2022, 57:1008-12. 10.1016/j.jpedsurg.2022.01.053
16. Park CH, Kim SM, Kim SE, Lee DY, Choi DS: Five-year recurrence pattern of mature cystic teratoma according to operation type in young women. Int J Gynaecol Obstet. 2023, 160:249-55. 10.1002/ijgo.14320