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Case Series

Unusual presentations of benign adnexal lesions: a diagnostic challenge

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ABSTRACT

Benign adnexal masses are common but may present with atypical features, sometimes mimicking malignancy. Accurate diagnosis requires clinical evaluation, imaging, tumor markers and histopathology. This series includes eight females (ages 14–56) with various benign adnexal pathologies like dermoid cysts, mucinous and serous cystadenomas, corpus luteal and endometriotic cysts, and a rudimentary uterine horn. Presentations ranged from pelvic pain to large abdominal masses. Imaging and tumor markers were variably suggestive of benign or suspicious lesions. Surgical management included laparoscopic or open cystectomy, with final diagnosis confirmed histologically. Benign adnexal masses can mimic malignancy across age groups. A multidisciplinary approach and timely intervention are essential, especially to preserve fertility in younger patients.

Keywords: Benign adenexal mass, Atypical presentations, Dermoid cyst, Corpus luteal cyst, Mucinous cystadenoma, Endometriotic cyst, Frozen section

INTRODUCTION

Adnexal and adnexal-appearing pelvic masses encompass functional ovarian cysts, epithelial and germ-cell tumours, endometriosis, and Müllerian anomalies. Although most lesions are benign, large size, complex morphology, or an unusual age at presentation can make preoperative characterization uncertain. Giant ovarian tumours, including teratomas, may require careful operative planning despite reassuring clinical findings.[1,2]

Ultrasound morphology, selective cross-sectional imaging, and tumour markers can help estimate risk, but none replaces tissue diagnosis. This series describes nine patients whose final diagnoses differed in important ways from their initial clinical or imaging impressions. Rather than proposing a new diagnostic test, we examine recurring sources of uncertainty and how intraoperative findings and histopathology influenced the extent of surgery.

CASE SERIES

Case 1: Giant dermoid cyst in a young woman

A 28-year-old P1L1 presented with a two-month history of abdominal heaviness. Physical examination revealed a 32-34 weeks gravid uterus size abdominal mass of irregular surface and restricted mobility. USG showed a complex ovarian cyst of (24×20) cm. A contrast enhanced computer tomography (CECT) scan revealed a non-enhancing cystic mass containing fat calcification within measuring 24.2 x 19.8x12.5 cm in size fulfilling IOTA-B rules. All other tumor markers were within the normal range. The RMI scores were also within normal limits (RMI-1: 106.5, RMI-2: 142).

Exploratory laparotomy was conducted. An unusually large dermoid cyst measuring 24x18 cm (Figure 1A) was discovered. Peritoneal washing collected followed by cystectomy. Frozen section revealed a benign ovarian

cystic teratoma with hair, teeth, mucoid substance. Histopathological analysis confirmed the diagnosis of a benign ovarian cystic teratoma (Figure 2A).

Case 2: Giant corpus luteal cyst in postmenopausal woman

A 48-year-old P3L3 surgical postmenopausal woman, ten years post-hysterectomy for a benign condition, presented with dull left-sided abdominal pain for three months, without signs of malignancy. Examination revealed a firm, mobile, non-tender 10×10 cm mass below the umbilicus with a smooth surface and regular margins. Tumor markers (CA-125: 9.4, CA-19.9: 17.7, CEA: 1.37) were normal. USG and CECT showed a 16×12×10 cm left adnexal cystic lesion with thin septations, no solid areas, lymphadenopathy, or ascites. Imaging met IOTA B-rules without M-rules. RMI scores were normal (RMI-1: 28.2, RMI-2: 37.6).

Patient underwent exploratory laparotomy which revealed a large smooth left ovarian cystic mass without peritoneal deposits or ascites. Histopathology confirmed a benign corpus luteal cyst (Figure 2B). The patient was discharged on the fourth postoperative day in stable condition and remained asymptomatic on follow-up.

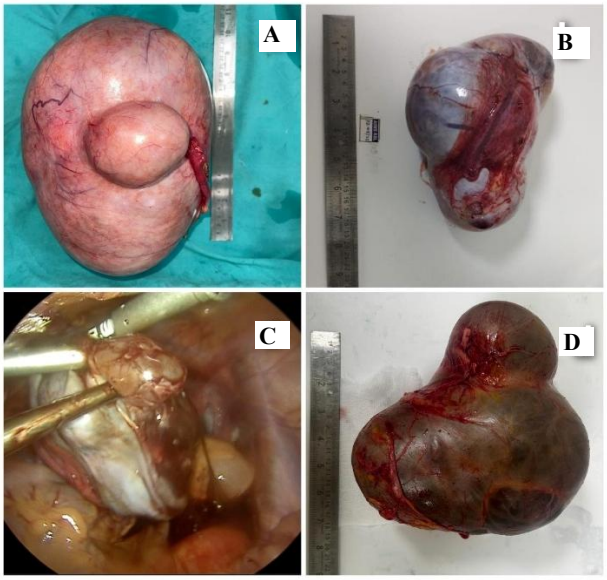


Figure 1: (A) Dermoid cyst; (B) Mucinous cystadenoma in 14-year-old; (C) Mucinous cystadenoma in 16-year-old; (D) Endometriotic cyst.

Case 3: Rare age group for mucinous cystadenoma in an adolescent female

A 14-year-old female presented with frequent menstrual cycles and abdominal pain for three months, without signs of malignancy, hirsutism, or virilization. Examination revealed a mobile, non-tender abdominopelvic mass (10×5 cm) with a cystic consistency, smooth surface, and regular borders. Breast and thyroid examinations were normal.

Imaging (CECT and ultrasound) showed a left ovarian benign haemorrhagic cyst (10.6×6.2 cm) with internal septations (Figure 1B). Tumor markers were within normal limits except for an elevated CA 19.9 (134.1). RMI scores were normal (RMI-1: 33, RMI-2: 44). Laparoscopy revealed a multiloculated left ovarian cyst containing mucinous material. Laparoscopic cystectomy and appendicectomy were performed. Histopathology confirmed a benign mucinous cystadenoma (Figure 2C). The patient had an uneventful recovery and was discharged on the 8th postoperative day.

Case 4: Mucinous cystadenoma in a teenage patient

A 16-year-old female presented with abdominal pain for one-week, irregular menstrual bleeding for three months, and pelvic heaviness with an abdominal lump for six months. Ultrasound and CECT showed a 17.8×17×16.2 cm well-defined, thin-walled mucinous cystadenoma with multiple thick enhancing septations and solid areas, arising from the right adnexa and extending to the epigastric region suggestive of borderline features.The uterus was normal in size.

All the tumor markers were within normal limit (CA 125=27.8, CA 19.9=11.1, CEA=0.69, AFP=1.89, beta-HCG=2.39). RMI scores were normal (RMI1=83.4, RMI2=111.2).

The patient underwent exploratory laparotomy with right ovarian cystectomy (Figure 1C). Frozen section and histopathology confirmed a benign mucinous cystadenoma (Figure 2d). The postoperative course was uneventful, and she was discharged on the fifth day.

Case 5: Endometriotic cyst mimicking ovarian cystadenoma

A 47-year-old woman with a history of hysterectomy presented with a large abdominopelvic mass and abdominal pain for one month. On examination, a non-tender, cystic to firm mass measuring approximately 20×15 cm was felt in the left iliac fossa with restricted mobility.

Ultrasound and CECT suggested a benign left ovarian cystadenoma. serum LDH was mildly increased, but all other tumor markers were normal (LDH=461, CA 125=23.8, CA 19.9=31.7, CEA=1.53).RMI scores were within normal range (RMI1=71.4, RMI2=95.2).

During laparotomy, a 20×20 cm cystic mass was found attached to the retroperitoneum. Ovarian cystectomy and appendicectomy were performed. Frozen section revealed a benign endometriotic cyst with three litres of chocolate brown fluid inside. The surgery was uneventful, and she recovered well. Histopathology confirmed the diagnosis. She was discharged in stable condition and remained symptom-free on follow-up.

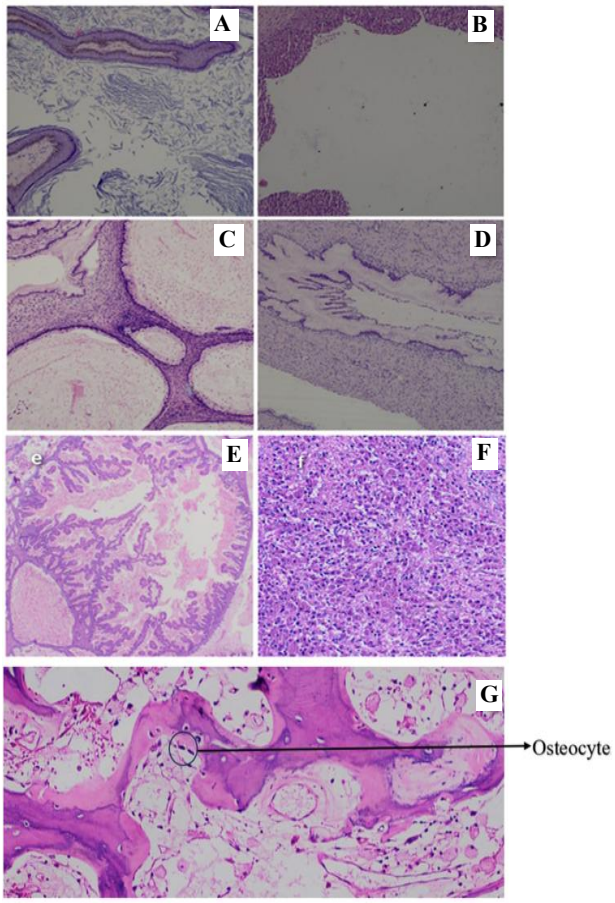


Figure 2: (A) Dermoid cyst: (B) Corpus luteal cyst; (C) Mucinous cystadenoma of 14-year-old; (D) Mucinous cystadenoma of 16-year-old; (E) Borderline mucinous cystadenoma without capsular invasion; (F) non-communicating rudimentary horn with endometrial lining, haemorrhage, and hemosiderin-laden macrophages; (G) Osseous metaplasia showing osteocytes, bony trabeculae and fat.

Case 6: Benign serous cystadenoma mimicking hydrosalpinx in a postmenopausal woman with prior TB

A 56-year-old postmenopausal woman presented with lower abdominal pain for six months. She had completed antitubercular therapy for pulmonary TB six months ago and had a history of abdominal hysterectomy 16 years back for a benign condition. On examination, per abdomen and per speculum findings were normal, but per vaginal examination revealed right adnexal fullness.

Ultrasound and CECT showed a right adnexal, well-defined, tubular anechoic structure with enhancing septa, suggestive of hydrosalpinx (9×6×3 cm). All tumor markers (CEA, CA-125, CA 19.9, AFP, LDH, β-hCG) were within normal range. RMI scores and IOTA criteria favored a benign lesion.

She underwent laparoscopic removal of the right tubo-ovarian mass (10×3 cm). Dense adhesions were noted in the pelvis and perihepatic region. Peritoneal washing and cystic fluid were negative for ADA and malignant cells. Histopathology confirmed a benign serous cystadenoma. The case highlights those adnexal masses in TB-treated women may mimic malignancy, and definitive diagnosis relies on histopathology.

Case 7: Borderline mucinous cystadenoma in an adolescent with unusual findings

A 19-year-old girl presented with a 7-month history of abdominal distension, without menstrual complaints. On examination, a non-tender abdominopelvic mass equivalent to a 24–26-week gravid uterus was noted, cystic to firm in consistency, with a smooth surface and restricted mobility. Ultrasound and CECT revealed a well-defined, heteroechoic solid-cystic pelvic mass measuring 20×17×11 cm, suggestive of a benign lesion. Tumour markers (AFP, CA-125, β-hCG, CEA, CA 19.9, LDH) and RMI score were within normal limits.

Exploratory laparotomy revealed a large right ovarian mass (20×10×8 cm) (Figure 3A), ascites, and enlarged right iliac lymph nodes. Right salpingo-oophorectomy was performed. Frozen section showed a borderline mucinous cystadenoma without capsular invasion (Figure 2E). Ascitic fluid cytology was negative for malignancy, and lymph node biopsy showed reactive lymphoid hyperplasia.

Case 8: Non-communicating rudimentary horn mimicking as ovarian cyst

A 24-year-old unmarried female presented with a 2-year history of lower abdominal pain with episodic exacerbations requiring analgesics. Clinical examination was unremarkable. Ultrasound revealed a left adnexal cystic lesion (6.8×2.9×2.5 cm) adjacent to the uterus, suggestive of an endometrioma. MRI described a thick-walled left adnexal cyst (7×3 cm), hyperintense on T1/T2 and suppressed on STIR/FST2, suggestive of a dermoid cyst. Tumour markers showed elevated LDH (472 U/L) and CA-125 (111 U/ml).

Laparoscopy revealed a 10×5×5 cm mass on the anterior uterine wall below the left round ligament (Figure 3B); ovaries and tubes were normal. Chromopertubation showed bilateral spillage. After aspirating 40 ml of chocolate-coloured fluid, laparotomy was performed, and the mass was excised without entering the uterine cavity. Histology confirmed a non-communicating rudimentary horn with endometrial lining, haemorrhage, and hemosiderin-laden macrophages (Figure 2F). Cytology showed no atypia or malignancy

Case 9: Osseous metaplasia in calcified fibroid in a postmenopausal woman

A 50-year-old postmenopausal woman with a 2-year history of dull lower abdominal pain presented with a 14–16 weeks-sized, hard, mobile abdominopelvic mass. She

had no postmenopausal bleeding and a BMI of 35 kg/m². Ultrasound showed a well-defined hypoechoic lesion with peripheral calcifications (6.7×5.6×6.2 cm), suggestive of a calcified fibroid. All investigations were normal. She underwent total abdominal hysterectomy with bilateral salpingectomy.

Intraoperatively, a hard mass (7×9 cm) was found in the right broad ligament (Figure 3C). Grossly, it was firm, gritty, and difficult to cut. Histopathology showed spindle cells, calcification, bony trabeculae, and osteocytes (Figure 2G), confirming osseous metaplasia.

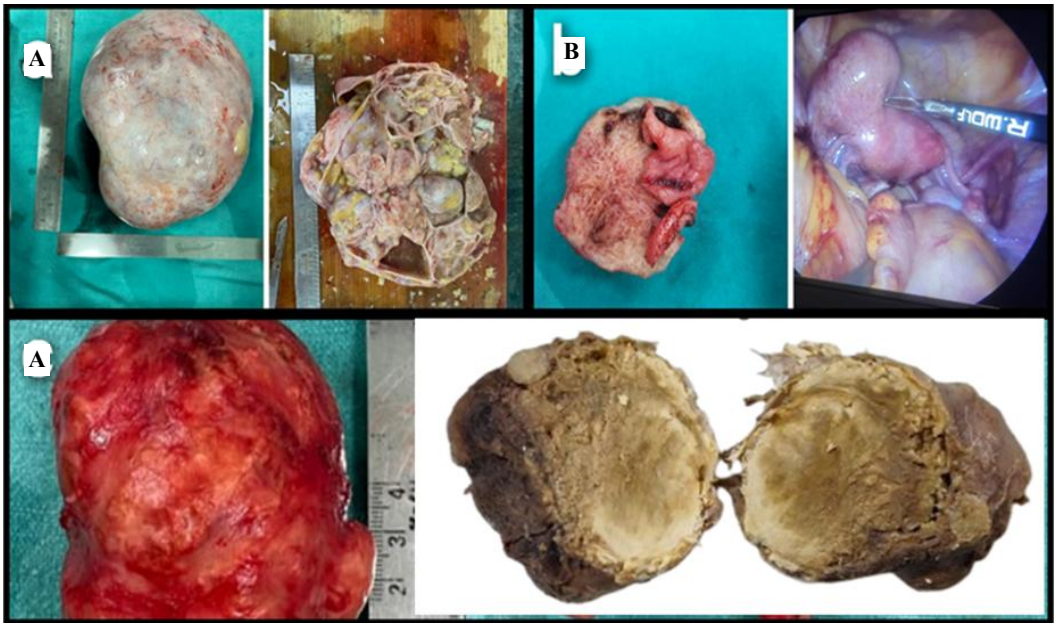


Figure 3: (A) A gross specimen with cut section of borderline mucinous cystadenoma of a 19 year old female; (B) A gross specimen of resected ACUM as well as the laproscopic view of ACUM; (C) A gross specimen of uterus and calcified fibroid of size 7x9 cm dissected by hysterectomy with bilateral salpingo-oopharectomy with cut section showing hard calcified mass.

DISCUSSION

The nine cases illustrate a common clinical problem: a lesion may appear straightforward on imaging yet prove different in origin, histology, or biological behaviour at surgery. Size alone did not reliably indicate malignancy, and normal tumour markers did not exclude a borderline lesion. Conversely, elevated markers in an adolescent with a benign lesion did not establish cancer. These observations support integrating morphology, age, symptoms, fertility goals and operative findings rather than relying on a single investigation.

In Case 1, a 24-cm mature cystic teratoma presented chiefly as abdominal enlargement. Published descriptions of giant ovarian lesions and a comparable large mature teratoma emphasize that an unusually large mass can remain benign.[1–3] The diagnostic clue was the fat and calcification on CT; the clinical challenge was safe removal while preserving ovarian tissue. This case therefore adds an example of marked size without malignant histology, not evidence that large size can be ignored.

Case 2 was particularly unexpected because a corpus luteal cyst was reported in a woman described as surgically postmenopausal following hysterectomy. Menstrual status after hysterectomy does not itself establish ovarian menopause if the ovaries remain functional; the operative history and ovarian status should therefore be clarified. The giant ovarian cyst reported by Kiemtoré et al occurred in the gravid–puerperal period, so it is a comparator for size and operative decision-making, not direct evidence for postmenopausal corpus luteal cysts.[4]

Cases 3 and 4 demonstrate how adolescent mucinous cystadenomas can be mistaken for haemorrhagic or potentially borderline lesions. Cowan and colleagues described mucinous cystadenomas in children and adolescents, while Haber et al also reported an adolescent presentation.[5,6] In our 14-year-old patient, CA 19-9 was elevated despite benign histology; in the 16-year-old, imaging raised concern for borderline features despite normal markers. Both underwent ovarian cystectomy, underscoring the value of tissue-preserving management when feasible and oncologically appropriate.

Case 5 was interpreted radiologically as a cystadenoma but proved to be an endometriotic cyst. Intraoperative frozen section may guide the extent of surgery for suspicious ovarian masses, although its accuracy is less reliable for borderline pathology than for clearly benign or invasive lesions.[7] Literature on endometriosis around menopause and reports of endometriotic cyst complications further

support retaining endometriosis in the differential diagnosis even when symptoms or imaging are atypical.[8,9] Frozen section in this case supported a limited procedure; it should not be portrayed as a substitute for final paraffin histology.

In case 6, a tubular right adnexal lesion was interpreted as hydrosalpinx in a patient with prior tuberculosis treatment, whereas histology showed serous cystadenoma. Prior infection and adhesions can complicate anatomical interpretation, but the available findings do not establish that tuberculosis caused the lesion. Boussouar and colleagues described a benign serous cystadenoma with imaging features mimicking malignancy, illustrating a related but not identical diagnostic pitfall.[10]

Case 7 is an important qualification to the title of this series: final frozen section identified a borderline mucinous tumour, which is not classified as a benign epithelial neoplasm. The normal marker profile and apparently benign preoperative imaging contrasted with ascites and enlarged nodes at surgery. Reviews of ovarian mucinous tumours describe the limitations of serum markers; data on nodal metastasis in invasive mucinous carcinoma should not be directly extrapolated to this borderline tumour.[11,12] Negative ascitic cytology and reactive lymph-node histology were reassuring, but final permanent-section pathology and follow-up should be reported before drawing firm conclusions about staging or prognosis.

Case 8 revealed a non-communicating cavitated uterine structure with functioning endometrium, initially interpreted as an adnexal cyst. Reports of accessory cavitated uterine masses and a recent scoping review of accessory cavitated uterine malformations (ACUM) show that such lesions can be difficult to distinguish from ovarian pathology.[13,14] The terminology should be checked against the operative anatomy and pathology: a non-communicating rudimentary horn and ACUM are not automatically synonymous. This distinction matters for accurate classification and counselling.

Case 9 broadens the series beyond adnexal disease: the lesion was a broad-ligament leiomyoma with osseous metaplasia. Published case reports document bone formation within leiomyomatous tissue, including after myomectomy.[15,16] Histology in our patient established the unusual degenerative change, but the present observations cannot determine its mechanism. The manuscript title should therefore acknowledge adnexal-appearing pelvic masses rather than imply that every case arose from the ovary.

Overall, this descriptive series suggests three practical lessons: atypical imaging should prompt a broad differential; tumour markers and risk models require interpretation in clinical context, particularly in adolescents and patients with altered pelvic anatomy; and intraoperative assessment must be balanced against fertility preservation and the possibility of borderline pathology. The small, heterogeneous sample and absence of systematic long-term follow-up prevent conclusions about diagnostic accuracy or comparative treatment outcomes.

CONCLUSION

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