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Case Report
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A Very Rare Case of Ovarian Collision Tumor with Contralateral Endometriotic Cyst: Fertility-Sparing Surgical Management

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Abstract

Ovarian collision tumors are rare entities where two histologically distinct neoplasms coexist in the same ovary without interaction, often mimicking malignancy. Fertility-sparing surgery is crucial in young women. We present a unique case of a 25-year-old woman with progressive abdominal distension. Imaging revealed a large complex mass. Laparoscopic fertility-preserving surgery uncovered a 30 cm serous cystadenoma and a 5-7 cm mature cystic teratoma in the right ovary, along with a 4x5 cm endometriotic cyst in the contralateral ovary. A total of 12.5 litres of fluid was aspirated. Histopathology confirmed a collision tumor. Postoperatively, the patient experienced transient difficulty walking due to a sudden 12 kg weight loss but recovered fully with preserved ovarian function. This is the first reported case of a unilateral ovarian collision tumor with a contralateral endometriotic cyst. The case emphasizes the importance of considering collision tumors in differential diagnoses and the efficacy of laparoscopic fertility-sparing approaches.

Keywords: Collision Tumor; Ovarian Neoplasm; Serous Cystadenoma; Mature Cystic Teratoma; Endometriotic Cyst; Fertility Preservation

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Introduction

When two or more morphologically and histologically different tumors with clear borders and no histological mixing are found in the same organ, they are referred to be collision tumors. Such events in the ovary are uncommon and provide both diagnostic and therapeutic difficulty. It is very uncommon for ovarian tumors to arise simultaneously in the same ovary or inside a patient, since most of them are categorized as being of sex cord-stromal, germ cell, or epithelial origin. While some tumors with dual components may represent a mixed histological origin (e.g., mixed germ cell tumors), collision tumors maintain clear histological separation, supporting the hypothesis of independent but concurrent tumorigenesis. Their clinical manifestations can mimic ovarian malignancy due to the presence of complex solid-cystic masses, further complicating preoperative evaluation. Here, we highlight the significance of imaging, fertility-preserving surgery, and histological evaluation in such presentations by presenting a very uncommon and complicated case of a young lady who was identified with an endometriotic cyst, a mature cystic teratoma, and a serous cystadenoma.

Case Presentation

A 25-year-old unmarried female presented to gynaecology outpatient clinic with a six-month history of progressive abdominal distension, accompanied by intermittent mild lower abdominal discomfort. She reported no gastrointestinal, urinary, or systemic symptoms such as fever or weight loss. Her menstrual cycles were regular and there was no known hormonal problems or family history of Gynaecological malignancies.

On clinical examination, a non-tender abdominal mass was palpable which extended up to umbilicus. Transabdominal ultrasonography showed a large heterogeneous adnexal mass containing cystic and solid areas that led to a suspicion of a complex ovarian neoplasm. Further

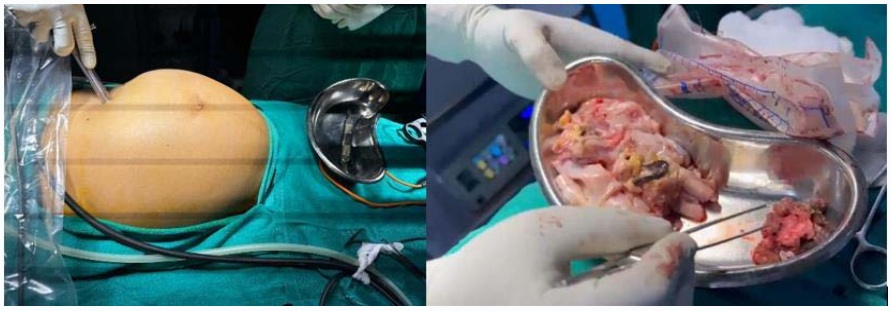

Figure 1: External view of large right ovary serous cystadenoma with coexisting dermoid cyst before surgery and specimen after laparoscopic removal using and endoscopic bag.

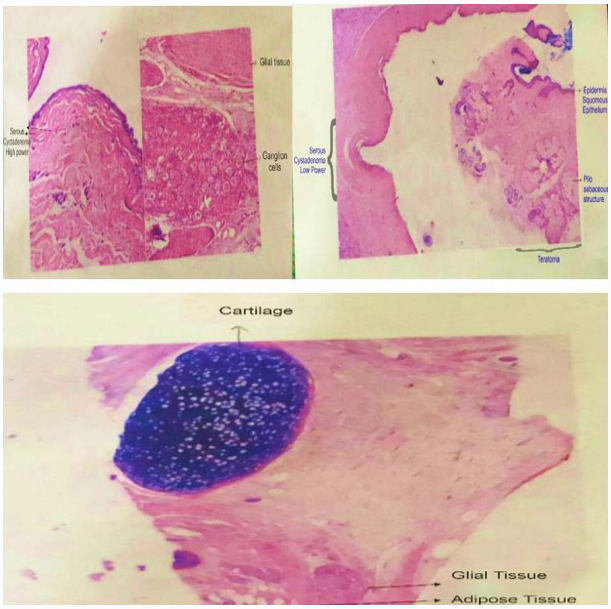

Figure 2: Histological section demonstrating features of a mature cystic teratoma including keratinized squamous epithelium and adnexal tissue (H&E stain, 100x).

imaging with Computed Tomography (CECT) of abdomen as well as pelvis with contrast and of the chest with a tidal imager proved the presences of a right-sided ovarian lesion with approximately 30 cm, or characterised with irregular septum and solid projections, a diagnosis of cystadenoma or possible malignancy. A smaller fat attenuating lesion, suggestive of a dermoid cyst was also observed within the same ovary. Additionally, a homogenous mass of 4x5 cm consistent with endometrioma was identified in the left ovary. Tumour markers, e.g., CA-125, CEA, and AFP, were normal, which decreased the suspicion of a malignant process.

Given the complexity and size of the ovarian mass, the patient was scheduled for elective surgery via laparoscopic approach, a fertility-sparing approach. Intraoperative findings showed that there was a massive right ovarian cyst with clear serous fluid, with fine septations, about 30 cm. Another distinct lesion consistent with a dermoid cyst (mature cystic teratoma) was observed within the same ovary. Approximately 12.5 litres of fluid were drained intraoperatively from the serous cystadenoma. The left ovary contained a well-defined endometriotic cyst. Other pelvic structures, including the uterus, appeared normal, with no signs of peritoneal dissemination, ascites, or lymphadenopathy. To minimize the risk of chemical peritonitis or tumor spillage, the cysts were carefully removed using endoscopic retrieval bags, ensuring ovarian parenchyma was preserved (Figure1).

Histopathological analysis confirmed three distinct histological entities:

1. Serous Cystadenoma: Characterized by single layer of bland, columnar to cuboidal epithelial cells forming papillary structures, confirming its benign nature (Figure 2)
2. Mature Cystic Teratoma: Demonstrating well-differentiated derivatives from all three germ layers, including stratified squamous epithelium, sebaceous glands, neural elements, and hair shafts (Figure 2).
3. Endometriotic Cyst (Endometrioma): Containing endometrial glands and stroma with hemosiderin-laden macrophages, suggestive of repeated cyclical haemorrhage.

Postoperatively, the patient experienced a sudden loss of 12 kg due to the removal of the large cystic mass, causing a temporary alteration in her centre of gravity and difficulty standing. She required a walking stick for ambulation for the first two days before gradually adapting. Her recovery was otherwise uneventful, and she resumed normal activities within a week. A six-month follow-up revealed no recurrence, and a transvaginal ultrasound confirmed preserved

ovarian function.

This case represents unusual instance of a collision tumor encompassing serous cystadenoma as well as a mature cystic teratoma in the right ovary, with a contralateral endometriotic cyst - a unique combination previously undocumented in medical literature. The multi-disciplinary approach that combines joint imaging, tumor marker evaluation, surgical intervention and histopathological confirmation played an important role in achieving an optimal result to ensure conservation of fertility and reduce post-operative complications.

Discussion

Collision tumors of ovary are sporadic and often evade preoperative diagnosis due to imaging limitations in detecting multiple tumor types. While individual coexistence of serous tumors, dermoid, and endometriomas has been reported, the simultaneous presence of all three is extremely uncommon. Various hypotheses attempt to explain their origin, including hormonal influences stimulating independent neoplasms, shared stromal or vascular elements supporting parallel tumorigenesis, and genetic instability leading to multiple distinct tumors [1, 2, 3]. A review of literature reveals only 6-7 reported cases of ovarian collision tumors, none involving a contralateral endometriotic cyst, making this case unique. Previous reports of Rjoop *et al.* and Bige *et al.* point to histological diversity and challenges in diagnosis that strengthens the need to confirm that histology is the best confirmation method since imaging techniques such as CT and MRI are inconclusive [4, 5]. Differential diagnoses include mixed germ cell tumours, metastatic neoplasms from the ovary, and borderline and malignant epithelial tumours with solid-cystic components. Surgical excision remains the treatment corner stone with fertility sparing techniques being recommended for young patients and benign pathology [6, 7]. Proper diagnosis and follow up treatment is only possible through histological confirmation that will enable detection of possible recurrence at an early stage [8].

Conclusion

This case presents a rare case of ovarian collision tumour and illustrates the challenges in diagnosis that ovarian collision tumour entities may present. This will require a high index of suspicion, cautious radiological interpretation and certain histopathological confirmation. The surgical approach must be individualised particularly in young women with a focus to balance oncological safety and fertility preservation [7, 9]. Given the low number of reported cases, more research and case series are needed to better understand their aetiology, clinical behaviour and to establish evidence-based protocols for their management.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her clinical information and images to be reported in the journal. The patient understands that her name and initials will not be published, and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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