



OVARIAN EPITHELIAL–TERATOMATOUS COLLISION TUMOURS: A REPORT OF TWO CASES

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ABSTRACT Collision tumours comprise histologically discrete neoplasms that occupy the same organ without intermingling at their interface. Ovarian examples are uncommon and may remain unrecognised until the resection specimen is examined. Two ovarian collision tumours with epithelial and teratomatous components are described. A 70-year-old woman with a lower-abdominal mass, pelvic pain and abnormal uterine bleeding underwent total abdominal hysterectomy, bilateral salpingo-oophorectomy and pelvic lymph-node dissection after a malignant frozen-section diagnosis. The 20 cm right ovarian mass contained two well-demarcated lesions: a mature cystic teratoma and an intestinal-type mucinous carcinoma. The capsule was intact, sampled nodes and omentum were negative, and the tumour was reported as pT1a pN0 (FIGO stage IA). A 45-year-old woman with seven months of abdominal distension and discomfort had a 13 cm multiloculated left ovarian mass. Histology demonstrated a serous cystadenoma alongside mature teratomatous tissue containing skin adnexa, adipose tissue, cartilage and abundant colloid-filled thyroid follicles, consistent with struma ovarii; no immature or malignant element was identified. These cases illustrate the benign–malignant and benign–benign spectrum of ovarian collision tumours and underscore the value of careful gross inspection and extensive sampling of morphologically heterogeneous ovarian masses.

KEYWORDS : Collision tumour; mature cystic teratoma; mucinous carcinoma; struma ovarii

INTRODUCTION

A collision tumour is defined by the coexistence of two histologically distinct neoplasms within the same organ, with each retaining a separate boundary and without transitional or admixed tissue at the interface (Peng et al., 2018; Singh & Singh, 2014). This feature distinguishes collision tumours from mixed or composite neoplasms, in which the constituent cell populations are intermingled. Ovarian collision tumours are rare and may contain epithelial, germ-cell, sex cord–stromal or metastatic components in benign, borderline or malignant combinations.

Mature cystic teratoma is a recurrent component of reported ovarian collisions, particularly in association with mucinous epithelial tumours (Alayed et al., 2021; Guo et al., 2022). Their heterogeneous appearance can complicate radiological and intraoperative assessment, while the biological behaviour of the more aggressive component determines staging and treatment. The following two cases demonstrate contrasting epithelial–teratomatous combinations and the diagnostic importance of representative sampling.

CASE REPORTS

Case 1

A 70-year-old woman presented with a palpable lower-abdominal mass, pelvic pain and abnormal uterine bleeding. A frozen section was interpreted as malignant, following which total abdominal hysterectomy with bilateral salpingo-oophorectomy and regional pelvic lymph-node dissection was performed.

The right ovarian mass measured 20 × 16 × 12 cm. Its external surface was tense and smooth, and the capsule was intact. The cut surface contained two well-demarcated lesions. The smaller lesion contained hair, pultaceous material and adipose tissue; the larger was predominantly solid and contained small cysts filled with solidified mucoid material. No papillary excrescences were identified. The attached fallopian tube was unremarkable. The uterus with cervix measured 8 × 7 × 6 cm. Bilateral pelvic nodal specimens and an unremarkable 20 × 18 × 11 cm omental specimen were also received.

Sections from the smaller lesion showed keratinous material, skin with adnexal structures, hair follicles, mature adipose tissue and benign

intestinal-type glands, without atypia or immature tissue. The larger lesion was composed of closely packed intestinal-type glands showing epithelial stratification and nuclear atypia, with stromal infiltration and glands within extracellular mucin pools. There was no capsular breach, lymphovascular invasion or perineural invasion. The cervix, endometrium, myometrium, bilateral pelvic nodal specimens and omentum were free of tumour. The final diagnosis was intestinal-type mucinous carcinoma coexisting with mature cystic teratoma of the right ovary, reported as pT1a pN0 (FIGO stage IA).

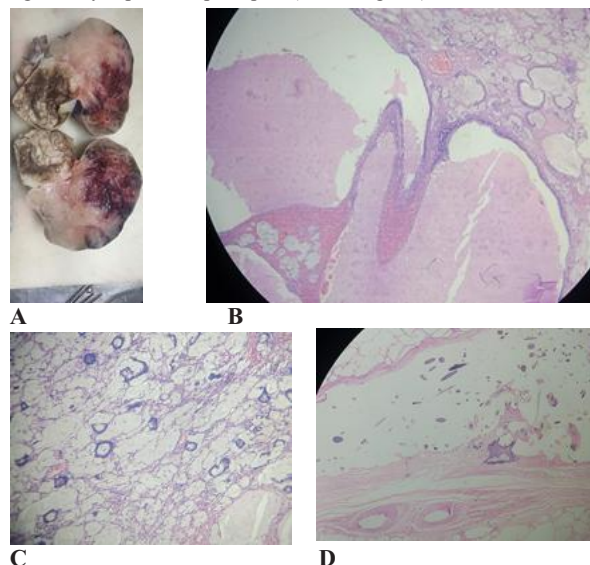


Figure 1. Clinicopathological features of Case 1. (A) Cut surface of the right ovarian mass showing sharply contrasting pultaceous/fatty and solid–mucinous regions. (B) Mature teratomatous tissue containing skin adnexa and adipose tissue. (C) Irregular glandular profiles within abundant extracellular mucin, supporting the mucinous carcinoma component. (D) Keratin and hair shafts with adnexal

structures in the mature cystic teratoma. Panels B–D, haematoxylin and eosin.

Case 2

A 45-year-old woman with regular menstrual cycles presented with abdominal distension and discomfort of seven months' duration. Examination disclosed a soft mass in the left iliac fossa and hypogastrium. She underwent total abdominal hysterectomy with bilateral salpingo-oophorectomy; the left ovarian mass was received separately from the hysterectomy and right salpingo-oophorectomy specimen.

The left ovarian mass measured $13 \times 8 \times 4$ cm and had a smooth, intact external surface. On sectioning, it was multiloculated and released yellowish serous fluid; one locule contained pultaceous material and hair. The uterus with cervix measured $8 \times 5 \times 4.5$ cm, the right ovary $3.5 \times 3 \times 1.5$ cm, the right fallopian tube 2 cm and the left fallopian tube 8 cm.

Microscopy showed a fibrocollagenous cyst wall with areas of cuboidal epithelial lining and separate stratified squamous lining accompanied by hair follicles and pilosebaceous units. Mature adipose tissue and hyaline cartilage were present. Colloid-filled thyroid follicles accounted for approximately half of the tumour, with focal cystic change and macrophages. No immature or malignant element was seen. The findings were reported as serous cystadenoma coexisting with a thyroid-rich mature teratoma (struma ovarii) of the left ovary.

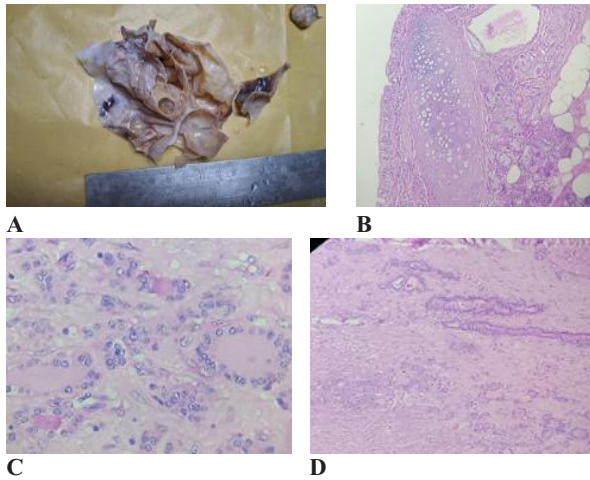


Figure 2. Clinicopathological features of Case 2. (A) Opened multiloculated left ovarian cystic mass. (B) Mature hyaline cartilage, adnexal structures and adipose tissue within the teratomatous component. (C) Colloid-filled thyroid follicles. (D) Cuboidal-lined cystic component with underlying thyroid follicles. Panels B–D, haematoxylin and eosin.

Table 1. Clinicopathological comparison of the two ovarian collision tumours

Feature	Case 1	Case 2
Age and presentation	70 years; lower-abdominal mass, pelvic pain and abnormal uterine bleeding	45 years; abdominal distension and discomfort for 7 months
Site and size	Right ovary; $20 \times 16 \times 12$ cm	Left ovary; $13 \times 8 \times 4$ cm
Gross appearance	Two discrete lesions: hair/pultaceous/fatty area and a solid–mucinous area	Multiloculated serous cyst with a separate hair-containing pultaceous locule
Epithelial component	Intestinal-type mucinous carcinoma	Serous cystadenoma
Teratomatous component	Mature cystic teratoma with skin adnexa, adipose tissue, keratin and benign intestinal-type glands	Thyroid-rich mature teratoma (struma ovarii) with skin adnexa, adipose tissue and cartilage
Malignant extent	Capsule intact; no LVI or PNI; pelvic nodes and omentum negative; pT1a pN0 / FIGO IA	No immature or malignant element

DISCUSSION

These cases represent two ends of the ovarian collision-tumour spectrum. The first combined a malignant epithelial neoplasm with a benign germ-cell tumour, whereas the second combined benign serous and teratomatous components. In both, gross heterogeneity directed sampling to morphologically different areas, and histology established the constituent tissues. This sequence is typical because ovarian collisions are often clinically and radiologically interpreted as a single complex mass (Guo et al., 2022; Peng et al., 2018).

The association of a mature cystic teratoma with a mucinous epithelial tumour is among the most frequently reported ovarian combinations (Alayed et al., 2021; Singh & Singh, 2014). When carcinoma and teratoma coexist, the principal diagnostic considerations are an independent mucinous carcinoma colliding with a teratoma, somatic malignant transformation of teratomatous epithelium, and metastatic mucinous carcinoma involving a teratoma-containing ovary. Grossly separate lesions and the absence of a histological transition favour a collision, as in Case 1; nevertheless, correlation with operative findings, gastrointestinal evaluation and ancillary studies remains important when establishing primary ovarian origin (Chahkandi et al., 2024; Roy et al., 2016). Recognition of the malignant component was decisive because it required staging beyond that appropriate for an uncomplicated mature cystic teratoma.

Case 2 showed a serous-lined cystic component adjacent to mature teratomatous tissues. Struma ovarii is a specialised mature teratoma in which thyroid tissue forms the predominant component, conventionally more than half of the tumour (Singh et al., 2018). The colloid-filled thyroid follicles in this case approximated that threshold, while skin adnexa, fat and cartilage confirmed additional mature teratomatous differentiation. The absence of immature tissue, cytological features of thyroid-type malignancy and destructive invasion supported benign behaviour. Its juxtaposition with a cuboidal-lined serous cystadenoma created the benign–benign collision.

For the pathologist, the practical lesson is to sample each distinct solid, cystic, mucinous, fatty, hair-bearing or haemorrhagic area separately. Restricting sections to the visually dominant component may miss a small focus that changes diagnosis, stage and treatment. Detailed preoperative imaging, tumour-marker, ancillary-testing and longitudinal follow-up data were not available for the present report; interpretation is therefore confined to the documented clinicopathological findings.

CONCLUSION

Ovarian collision tumours should be considered when a resection specimen contains sharply contrasting gross regions. Careful mapping of the cut surface and adequate sampling are essential to demonstrate separate components and exclude a transition between them. This is particularly important when a benign teratoma accompanies an epithelial malignancy, because the malignant component governs staging and subsequent management.

Conflict of interest: The authors declare no conflict of interest.

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