

## Collision tumour of the ovary, malignant Brenner tumour and mature cystic teratoma

### Introduction

Collision tumours are uncommon lesions comprising of two or more histologically distinct neoplasms within the same tissue or organ. Whilst they have been reported in the oesophagus, stomach, liver, lung, thyroid and kidney, the presence of an ovarian collision tumour is rare. Malignant Brenner tumours are also infrequently encountered making this case particularly unusual.

They are usually diagnosed post-surgery however this report describes a case where the presence of two separate ovarian lesions was suspected on initial ultrasound scan.

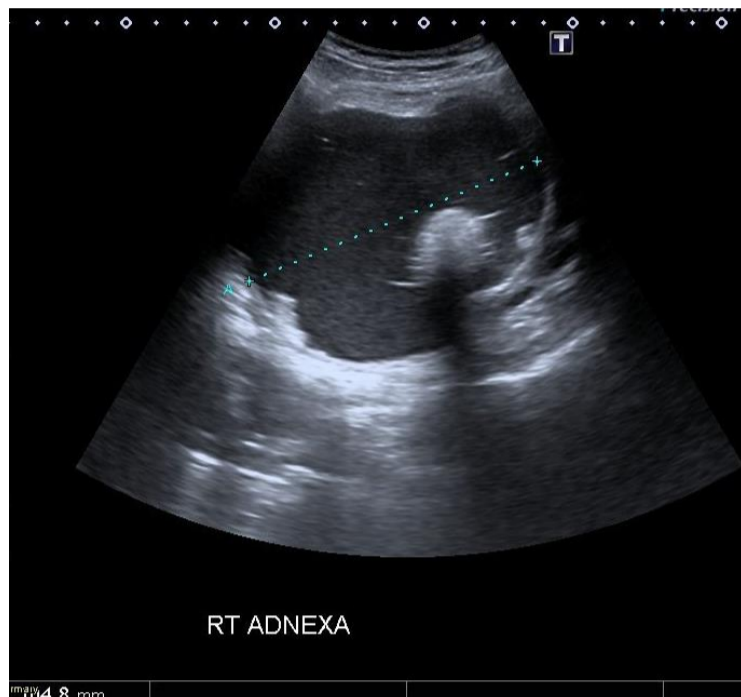


Figure 1

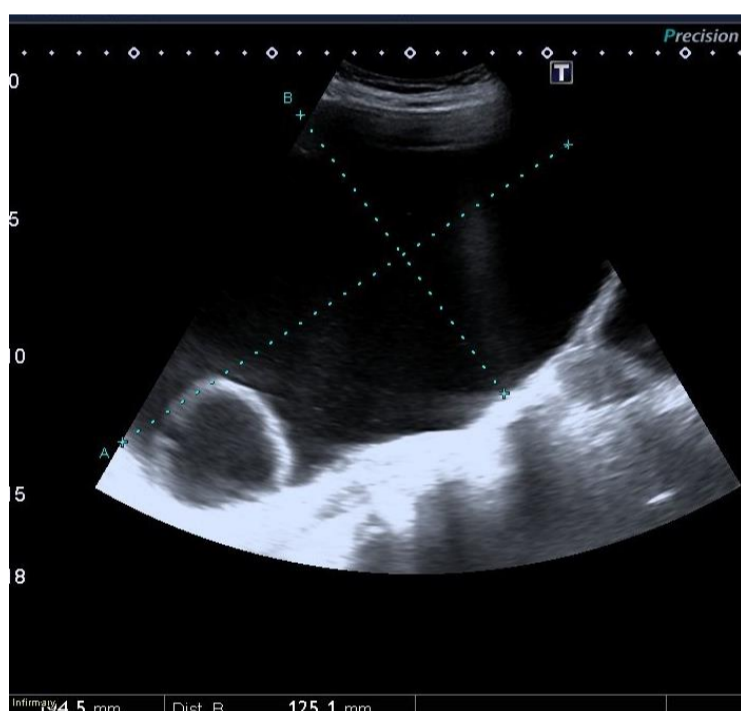


Figure 2

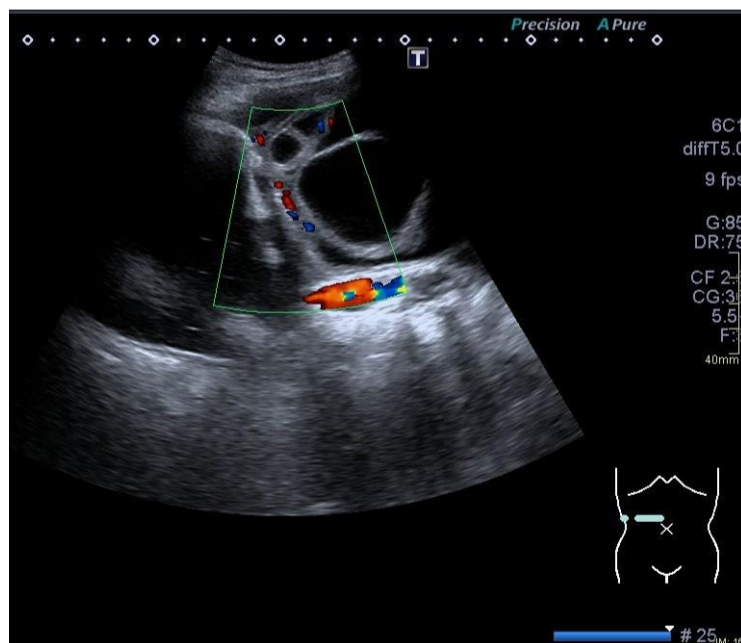


Figure 3

### Case Report

A 69 year old female attended the radiology department for assessment of lower abdominal pain and the suspicion of a mass arising from the pelvis. Ultrasound examination revealed a 19.5cm pelvic cyst containing thickened septations with internal vascularity (Figure 2 and 3). Adjacent to this lesion was a further mass measuring 10.5cm displaying ultrasound appearances in keeping with a dermoid cyst (Figure 1). A normal right ovary was not identified separately to these lesions and the left ovary and uterus appeared normal. There was no ascites. The scan was reported as suspicious for an ovarian malignancy with an adjacent co-existing dermoid cyst and the patient was referred for a CT scan which confirmed these findings. The patient had raised CA125 and CA199 tumour markers. A hysterectomy and bilateral salpingo-oophorectomy was performed. Histology revealed a malignant Brenner tumour of the right ovary and an adjacent but separate mature cystic teratoma in keeping with a collision tumour. The patient recovered well with no evidence of disease recurrence to date.

### Discussion

Collision tumours are two or more neoplasms within the same organ which are histologically distinct. Their respective margins may be adjacent to one another as in this case but there will be no significant admixture of tissues. They are most commonly found in the gastrointestinal tract or the endocrine system but are rarely seen in the ovary<sup>1</sup> and their exact incidence is unclear.<sup>2</sup>

Clinical presentation of collision tumours is non-specific and similar to that of any ovarian lesion. They are typically asymptomatic initially, only causing notable symptoms with an increase in size. This can manifest as abdominal swelling, pain and frequent urination.<sup>3</sup>

Figure 4 (Chen, 2003) demonstrates the 3 main groups into which most ovarian neoplasms can be classified. Most ovarian collision tumours involve a mature cystic teratoma, part of the germ cell group. These benign lesions are relatively common, comprising around 20% of all ovarian neoplasms<sup>4</sup> and can be bilateral in 10% of cases.<sup>5</sup>

Ultrasound appearances of dermoid cysts can vary depending upon their composition but include lesions with a Rokitansky nodule, linear hyperechoic areas, dense internal echoes, the tip of the iceberg sign and intracystic floating balls.

In collision tumours the most likely presentation is that of a mature cystic teratoma and a mucinous cystadenoma, part of the surface epithelial group of ovarian neoplasms.<sup>5</sup> The surface epithelial group accounts for 60% of all ovarian tumours.<sup>6</sup> Whilst a Brenner tumour is also part of this same group it represents a much rarer lesion, responsible for only 1.5% of all ovarian tumours.<sup>7</sup> Most Brenner tumours are benign and only 1% are malignant.<sup>7</sup>

Whilst Brenner tumours can occur at any age they have a predilection for women aged 50-70.<sup>8</sup> Benign Brenner tumours are usually smaller and solid on ultrasound with little to no internal vascularity<sup>8</sup> however borderline and malignant lesions are typically larger and more cystic in nature with solid mural nodules as in this case.<sup>9</sup> One study found the presence of calcifications in 57% of all Brenner tumours.<sup>8</sup> Nevertheless the ultrasound appearances can be non-specific with overlap of ultrasound finding with other pathologies.

### Conclusion

Whilst a pre-operative diagnosis of an ovarian collision tumour can be difficult with ultrasound, this case report shows that with careful assessment and a knowledge of typical ultrasound features of specific lesions that it possible to suspect this pathology and also correctly predict a potentially malignant lesion.

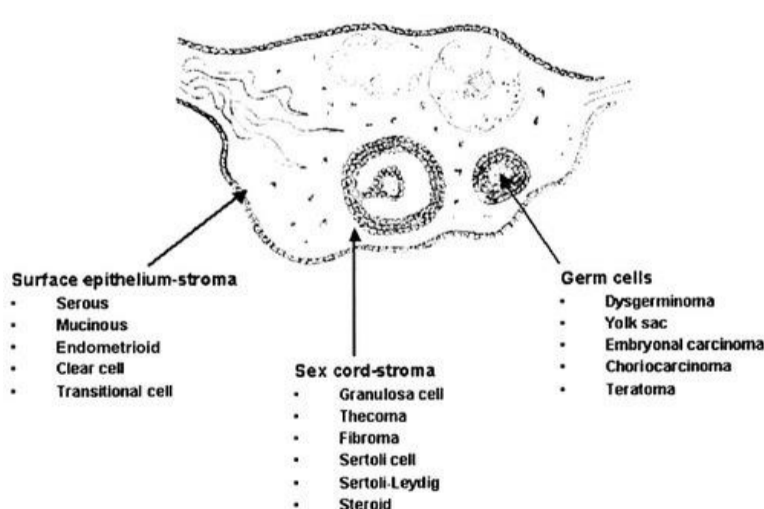


Figure 4: Pathology and classification of ovarian tumors (Chen 2003)

#### References

1. Peng et al. (2017). Ovarian collision tumours: imaging findings, pathological characteristics, diagnosis, and differential diagnosis. *Abdominal Radiology*. 43: 2156-2168
2. Guo et al. (2021). Ultrasound findings and O-RADS malignancy risk stratification of ovarian collision tumours. *J Ultrasound Med*. 41: 2325-2331
3. Alayed et al. (2021). Ovarian collision tumor, massive mucinous cystadenoma, and benign mature cystic teratoma. *Cureus*. 13(7)
4. Srisajjakul et al. (2019). Imaging features of unusual lesions and complications associated with ovarian mature cystic teratoma. *Clinical Imaging*. 57: 115-123
5. Bostanci et al. (2015). Collision Tumor: Dermoid cysts and mucinous cystadenoma in the same ovary and a review of the literature. *Obstet Gynecol cases Rev*. 2:2
6. Chen et al. (2003). Pathology and classification of ovarian tumours. *North American Association of Central Cancer Registries*. 97(10):2631-2642
7. Gezginc et al. (2012). Malignant Brenner tumor of the ovary: analysis of 13 cases. *International Journal of Clinical Oncology*. 17:324-329
8. Weinberger et al. (2018). Brenner tumour of the ovary-ultrasound features and clinical management of a rare ovarian tumor mimicking ovarian cancer. *Ginekologia Polska*. 89(7):357-363
9. Borah et al. (2011). Brenner tumor of ovary: An incidental finding. *Journal of Mid-Life Health*. 2(1):40-41