Pitfalls of female pelvic ultrasound imaging: cystic lesions
Is it really what you think it looks like?
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BACKGROUND: Identifying the correct origin and nature of a cystic pelvic mass has important clinical impact. Whilst many cystic pelvic masses identified at pelvic ultrasound are likely to arise from an ovary, they may also arise from other pelvic structures. We illustrate some of the other structures they may arise from and suggest ways to avoid these pitfalls.

Uterus vs cyst
Uterine malformations are due to abnormal development of the paired Mullerian ducts which usually fuse during embryogenesis. Abnormal development can range from partial to complete failure of fusion or failure of resorption of the inter-Mullerian septa. Congenital uterine abnormalities may be associated with urinary tract abnormalities such as renal agenesis.

Uterine didelphys is two separate uterine horns and cervixes with no communication between them. It is associated with haematometroclopods: blood filled distended uterus (and vagina) due to mechanical obstruction. In this case, initial images show the two uterine horns; normal (and) distended compared to post drainage images of uterine didelphys (blue arrows)

Learning point: Assess kidneys and if lateralised, consider congenital malformation.

This cystic lesion (yellow arrow) looks like the urinary bladder but lies posterior to the uterus (white arrow) with the bladder (black arrow) identified anteriorly. It proved to be an ovarian serous cystadnomas.

Learning point: Applying knowledge of anatomy can help avoid confusing bladder and cystic ovarian lesions.

This structure was thought to be a thick walled ovarian cyst. It was difficult to interpret the anatomy on transabdominal images therefore a transvaginal scan was performed - which clearly demonstrates it to be the uterine bladder positioned anterior to the uterus (white arrow).

Learning point: It is important to undertake both transabdominal and transvaginal scans.

This cystic lesion was initially thought to represent the bladder with no adrenal mass seen. Follow up imaging afterwards identified an echogenic nodule with posterior acoustic shadowing (blue arrow), within the cystic lesion confirming the true nature of this cyst as an ovarian dermoid cyst and separate of bladder.

Learning point: Both these cases emphasise the importance of both trying to empty the bladder and of scanning all the way through a cystic lesion to avoid missing solid nodules and reduce errors.

This cyst was thought to have a solid component at first. Further imaging clearly demonstrated this to be a hydrosalphinx, the thick wall and the internal echogenic FURST and inability to fill the cyst with fluid on further imaging confirmed this.

This was a periureteral diverticulum. Only at further imaging was this seen to contain a solid nodule (blue arrow) and, recognised as a serous cystadnomas.

Learning point: Always closely associated and often contained within the apparent cyst.

Ovarian cyst vs ascites
A complex ovarian cyst may be difficult to differentiate from loculated ascites. These cases emphasise the importance of scanning all the way through a cystic lesion to ensure it is seen its entirety. Further imaging may be required if one is unsure of the margins of a cystic structure. The cases were of benign lesions but cystadnormomas have a similar appearance and would not be biopsied because of the risk of periureteral spread of malignant cells.

This large multiloculated ascites was found to be a mucinous cystadnomas; a benign ovarian cyst which can be very large.

Learning point: If the whole lesion is not clearly demonstrated, further imaging is required for full assessment.

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SUMMARY OF LEARNING POINTS:
• Correlate with history and review anatomy.
• Transabdominal and transvaginal approaches may be required. Consider emptying the bladder.
• Examine the whole lesion - if it extends beyond the pelvis consider a further modality.
• Be aware of developmental anomalies; examine kidneys.
• Be aware of specific signs.