

Overlooked Bladder Pathology in Transabdominal Ultrasound – A Pictorial Review

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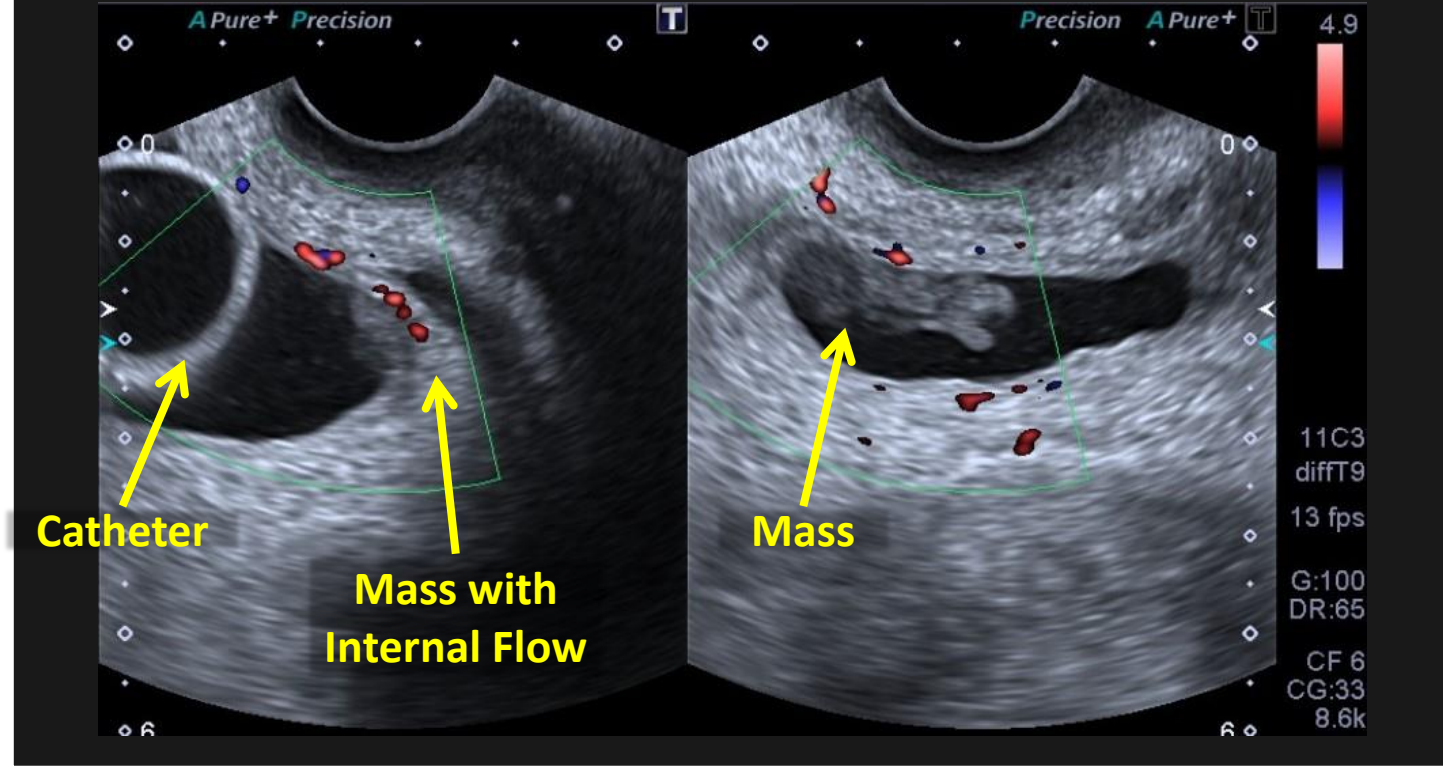
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Introduction

Transabdominal ultrasound is a routine investigation in managing surgical patients with acute abdominal/pelvic pain. The bladder is often imaged purely to measure residual urine volumes or as a window for interrogation of ovaries and/or uterus. However, there are a range of important pathologies that may be overlooked unless the bladder is specifically examined. This retrospective review of patients presenting with acute abdominal pain in a tertiary centre demonstrates the range of bladder pathologies that may be missed during transabdominal ultrasound examinations.

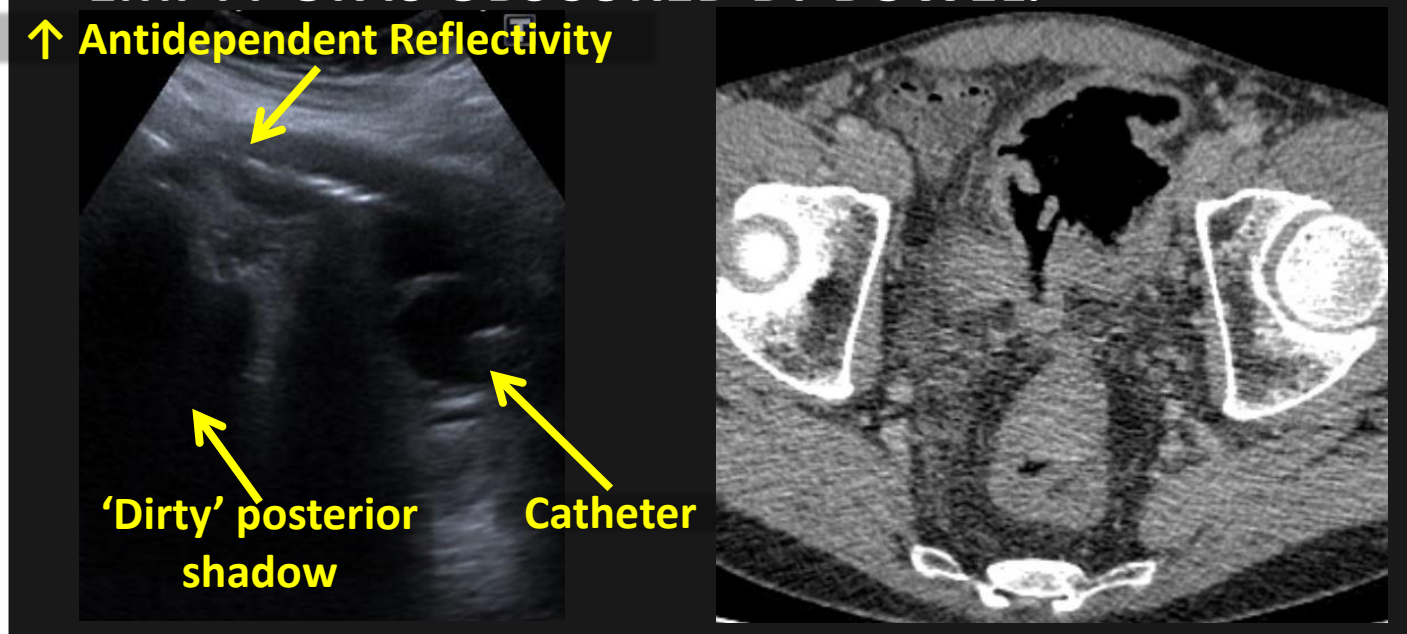
Case 1 – Sessile TCC:

- 15% of urothelial carcinomas are sessile – raised, undulating mass with no pedunculation/stalk (i.e. flat), and demonstrate vascularity on Doppler.



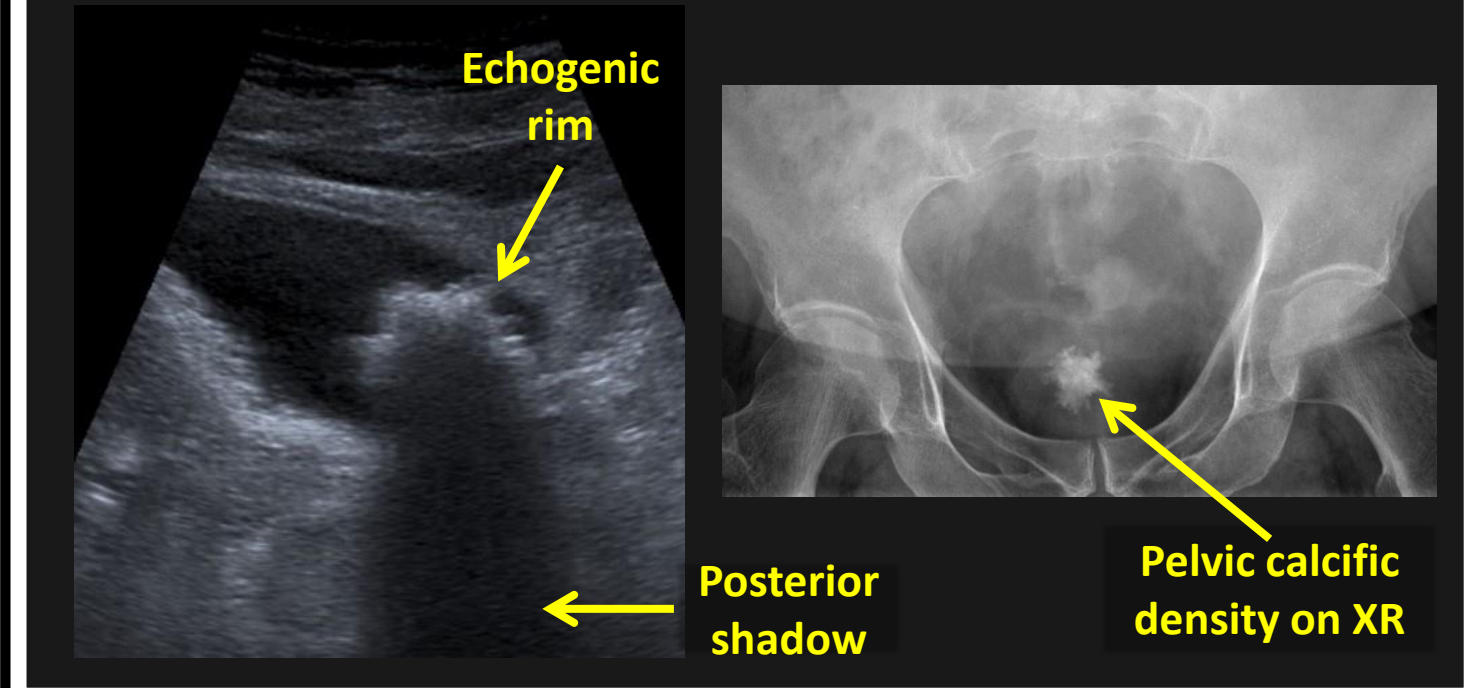
Case 5 – Colo-vesical Fistula:

- Communication between lumen of colon and bladder. Aetiology includes diverticulitis, colorectal carcinoma and Crohn's.
- Clinical presentation – pneumaturia/faecaluria.
- Findings – gas in bladder (echogenicity in anti-dependent area with 'dirty' posterior acoustic shadow – **DON'T ALWAYS ASSUME BLADDER EMPTY OR IS OBSCURED BY BOWEL.**)



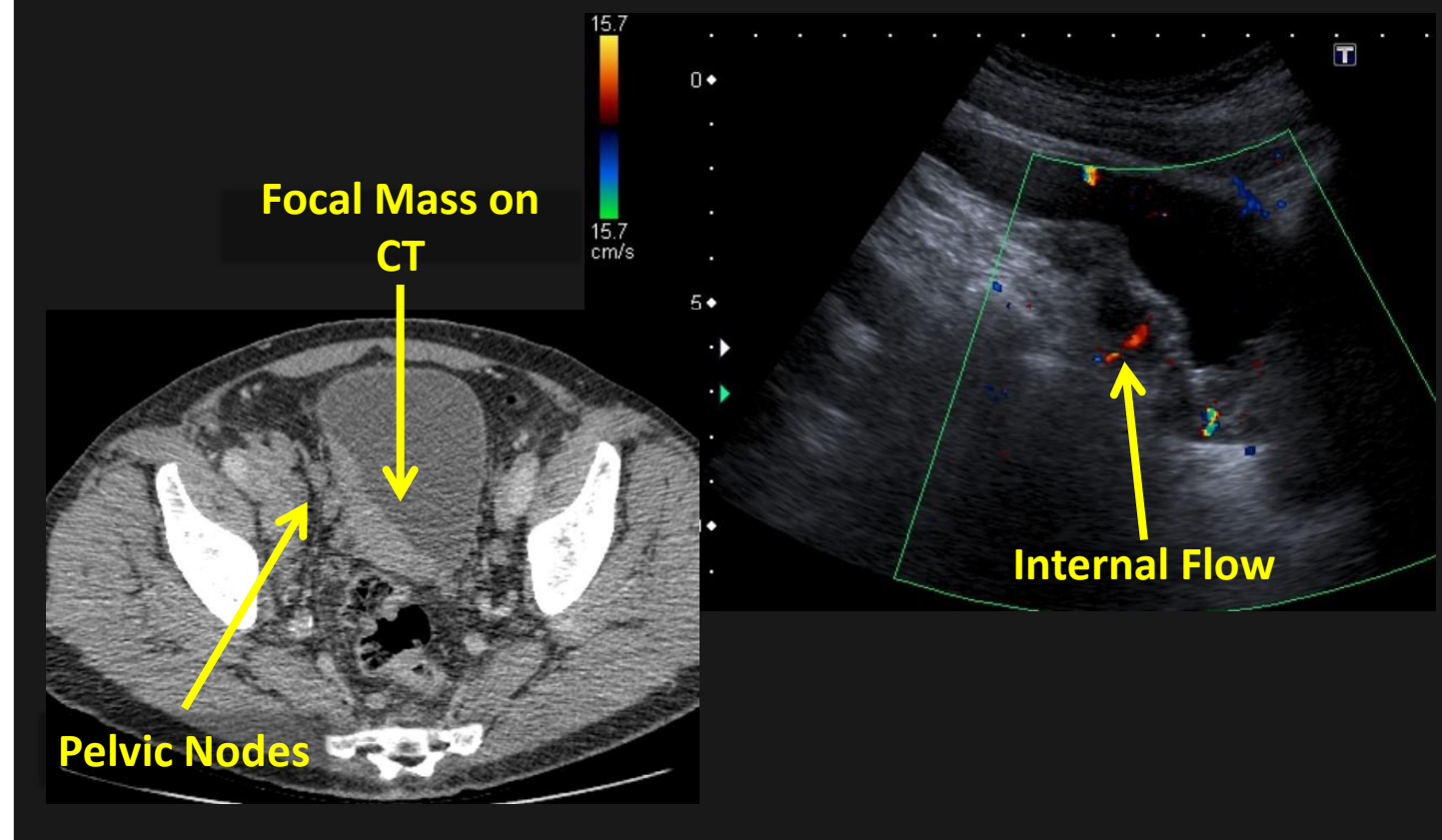
Case 8 – Bladder Stone:

- Causes include urinary stasis (chronic retention or neurogenic), or secondary to long-term catheter.
- Echogenic with posterior acoustic shadow, no flow and mobile – **MUST SCAN IN MULTIPLE POSITIONS.**



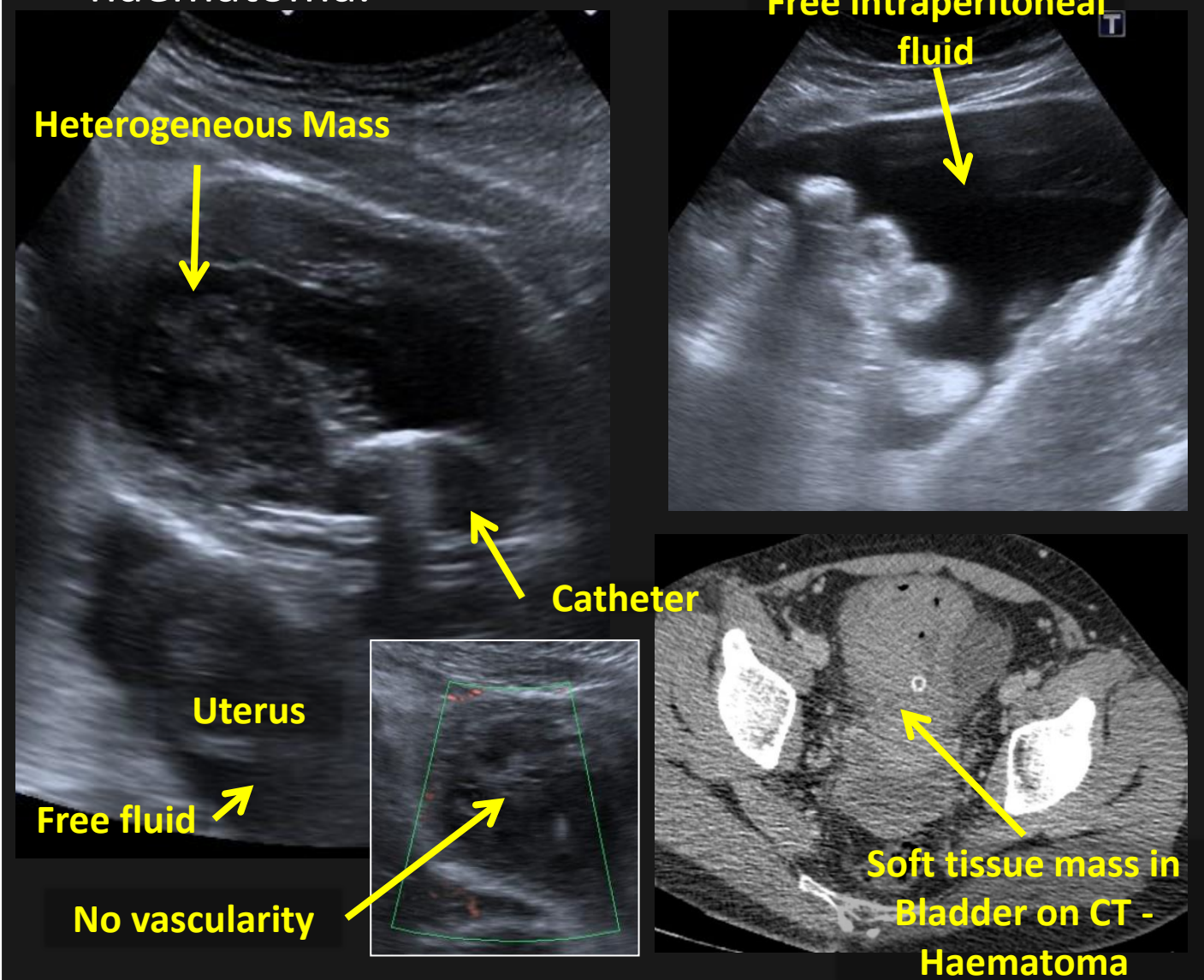
Case 2 - Muscle-invasive Sessile TCC:

- Sessile urothelial tumours are more likely to be higher grade and stage than papillary TCCs.



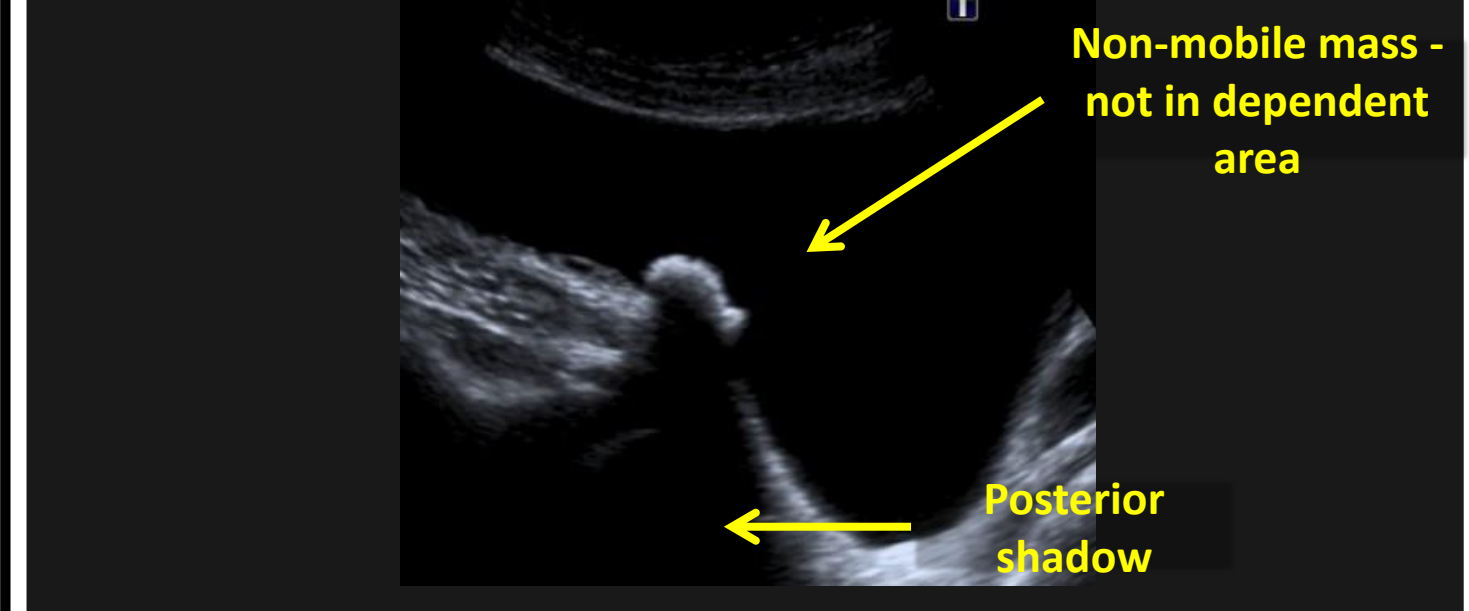
Case 6 – Bladder Perforation:

- Usually associated with major pelvic trauma – can be intra- or extra- peritoneal.
- This case is intraperitoneal – ascites and heterogeneous echoes in the bladder due to a haematoma.



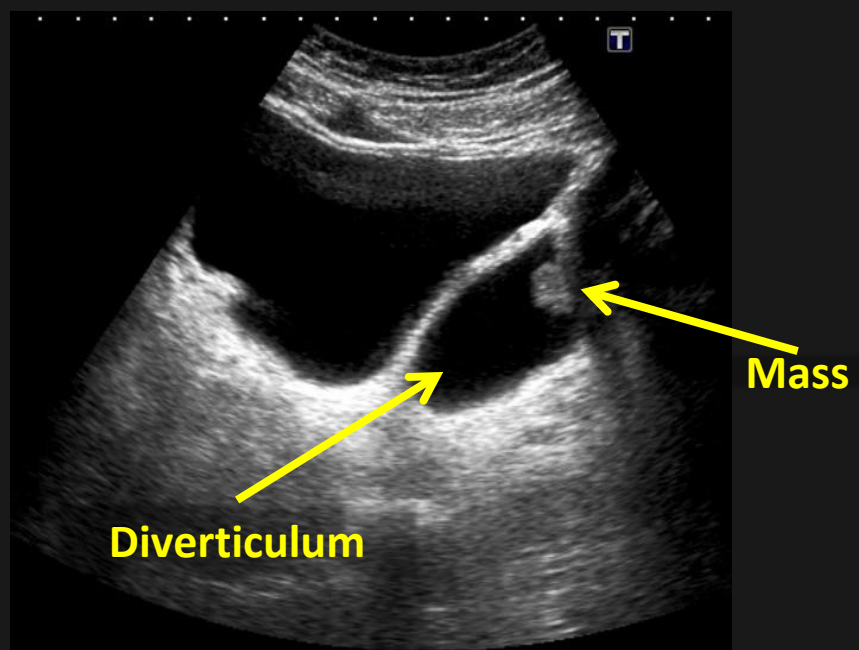
Case 9 – Calcified TCC:

- Calcifications in bladder tumours are not common.
- Findings - mass with surface echogenicity and posterior acoustic shadow (mimics a stone), however there is flow on Doppler and the mass is not mobile (ask patient to roll, see case 8 above).



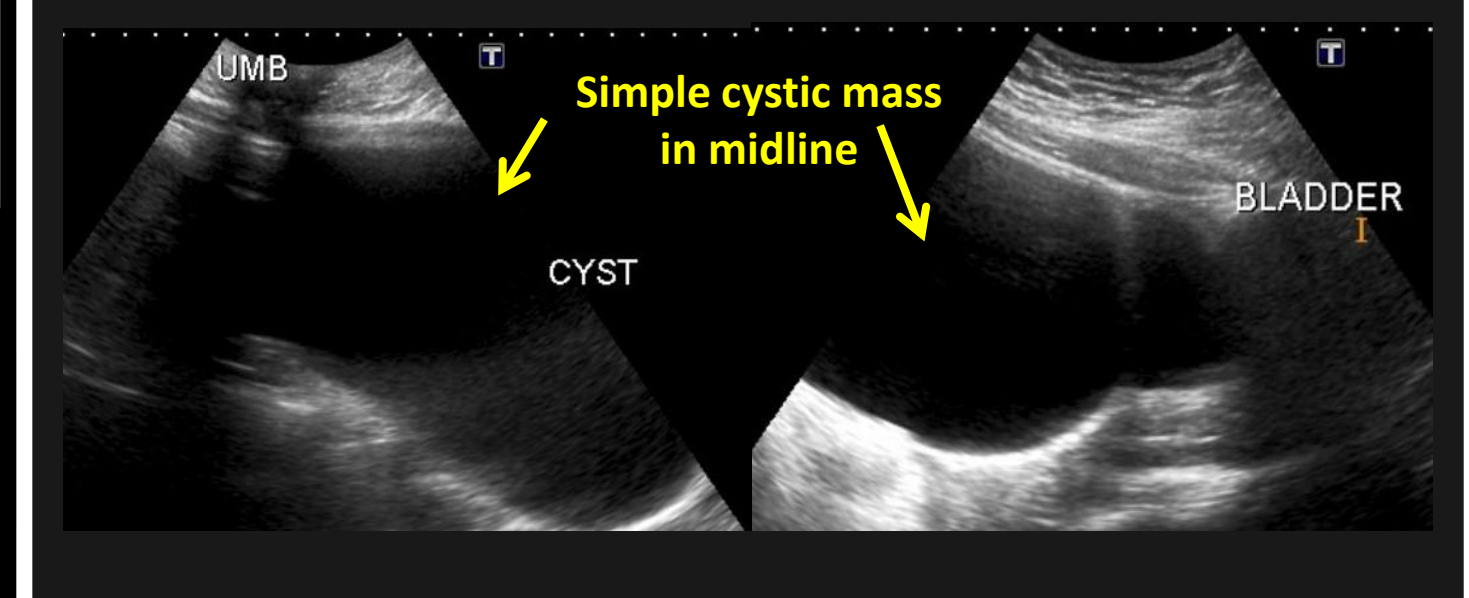
Case 3 - TCC in Diverticulum:

- In bladder diverticula, urinary stasis produces chronic mucosal irritation and prolonged exposure to urinary carcinogens. Thus, there is predisposition to malignant degeneration of the diverticular urothelium.



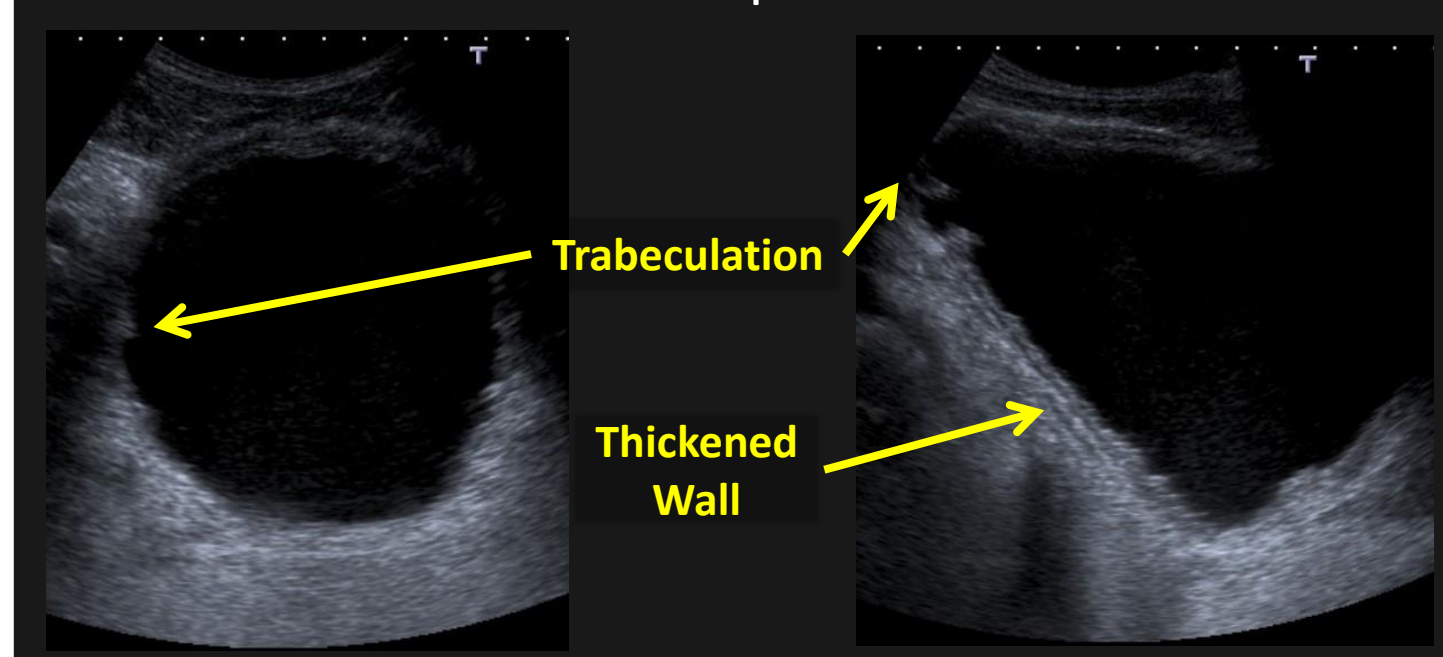
Case 10 – Urachal Cyst:

- Urachal cyst – a manifestation in the spectrum of congenital urachal remnant abnormalities.
- Findings - A simple fluid collection in the midline of anterior abdominal wall, between the umbilicus and bladder dome.



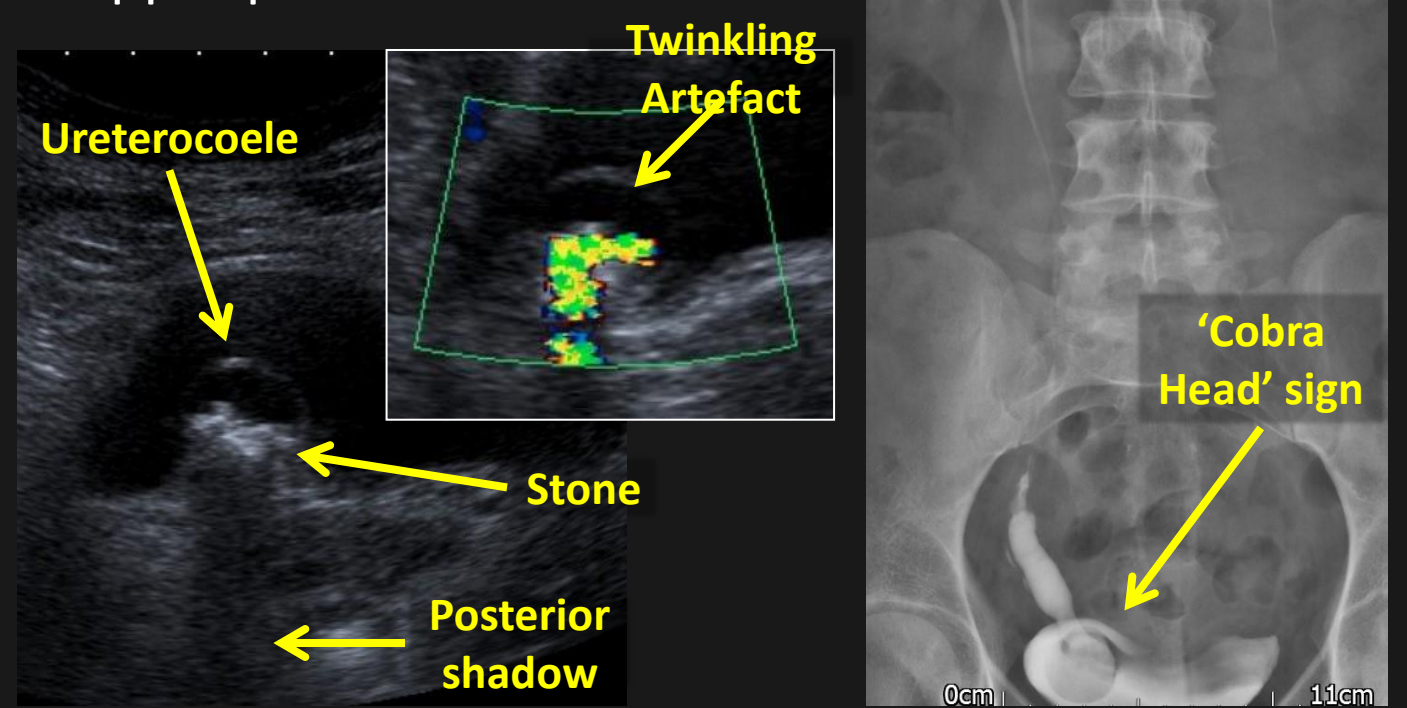
Case 4 – Bladder Outflow Obstruction:

- Aetiology includes congenital urethral valves, urethral strictures, prostate enlargement (benign and malignant), and peri-urethral masses.
- Findings – thickened and trabeculated wall, urinary retention and increased post-void residual volume.



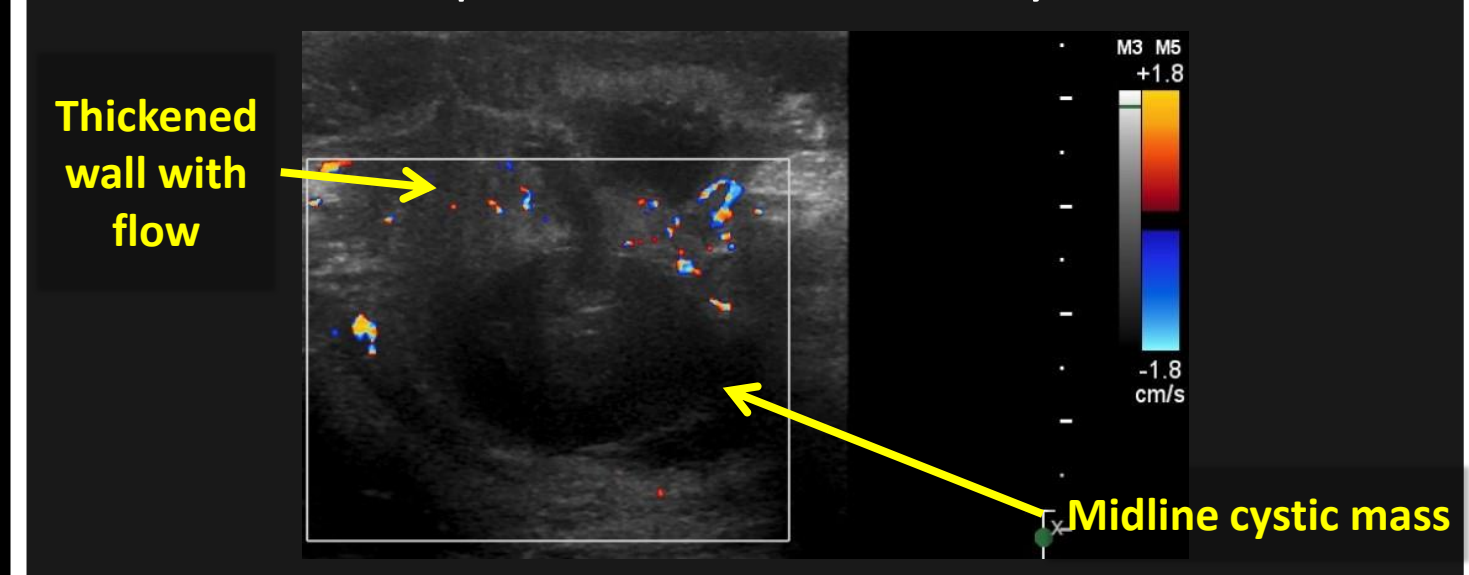
Case 7 – Stone in Ureterocoele:

- Ureterocoele – a congenital cystic dilatation of the intravesical part of the ureter due to malformation of the submucosa of the bladder.
- Can be simple, or associated with duplex collecting system (upper moiety), and ectopic ureteric insertion.
- This case - Stone from right upper pole in ureterocoele.



Case 11 – Infected Urachal Cyst:

- Infection is the most common presentation of urachal cyst; it is a rare Ddx in the acute abdomen.
- Findings - A midline anterior abdominal wall cystic lesion as above, but with thickened irregular wall and potentially internal echoes within the cyst. It should be separate from mesentery/bowel.



Conclusion - Dedicated examination of the bladder is required during any transabdominal ultrasound evaluation of the urinary tract or abdomen. Those undertaking ultrasound in patients with abdominopelvic pain should possess an understanding of potential bladder pathologies in order to accurately diagnose them and expedite management. All images owned and provided by Derriford Hospital (PHNT). Poster references provided on request, ask Dr Chaytor for copy.