

# 人體秘境之膀胱、 攝護腺、子宮卵巢



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# US of the bladder

## - Normal



Longitudinal Bladder View



**Transverse Scan Plane**

# Role of Ultrasound

## ◆ Assessing

- ◆ Wall thickening, trabeculation, masses and diverticulae
- ◆ Pre and post micturition volumes
- ◆ Vesico-ureteric junctions
- ◆ Calculi & foreign bodies

## ◆ Acoustic window to assess

- ◆ the prostate in males
- ◆ gynecological structures in females

# Patient Preparation

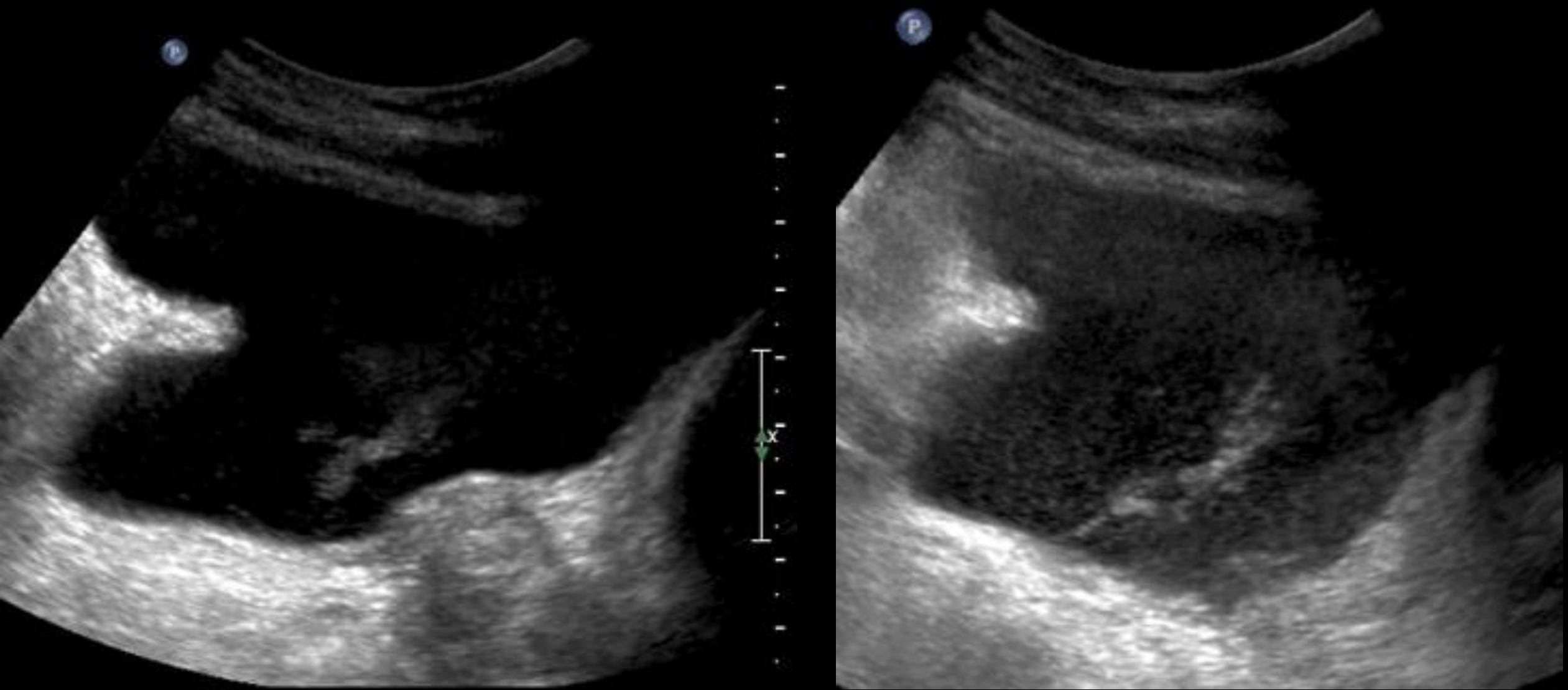
- ◆ 2hrs prior to the appointment: empty their bladder
- ◆ Over the next hour: drink at least 1 liter of water.
- ◆ Do not go to the toilet until instructed by the Sonographer

# US of the bladder - Pathology

# Common Pathology

- ◇ Trabeculation (小樑化)
- ◇ Diverticulum
- ◇ Calculus
- ◇ Ureterocele (輸尿管囊腫)
- ◇ Transitional Cell carcinoma (Urothelial carcinoma )
- ◇ Adenocarcinoma



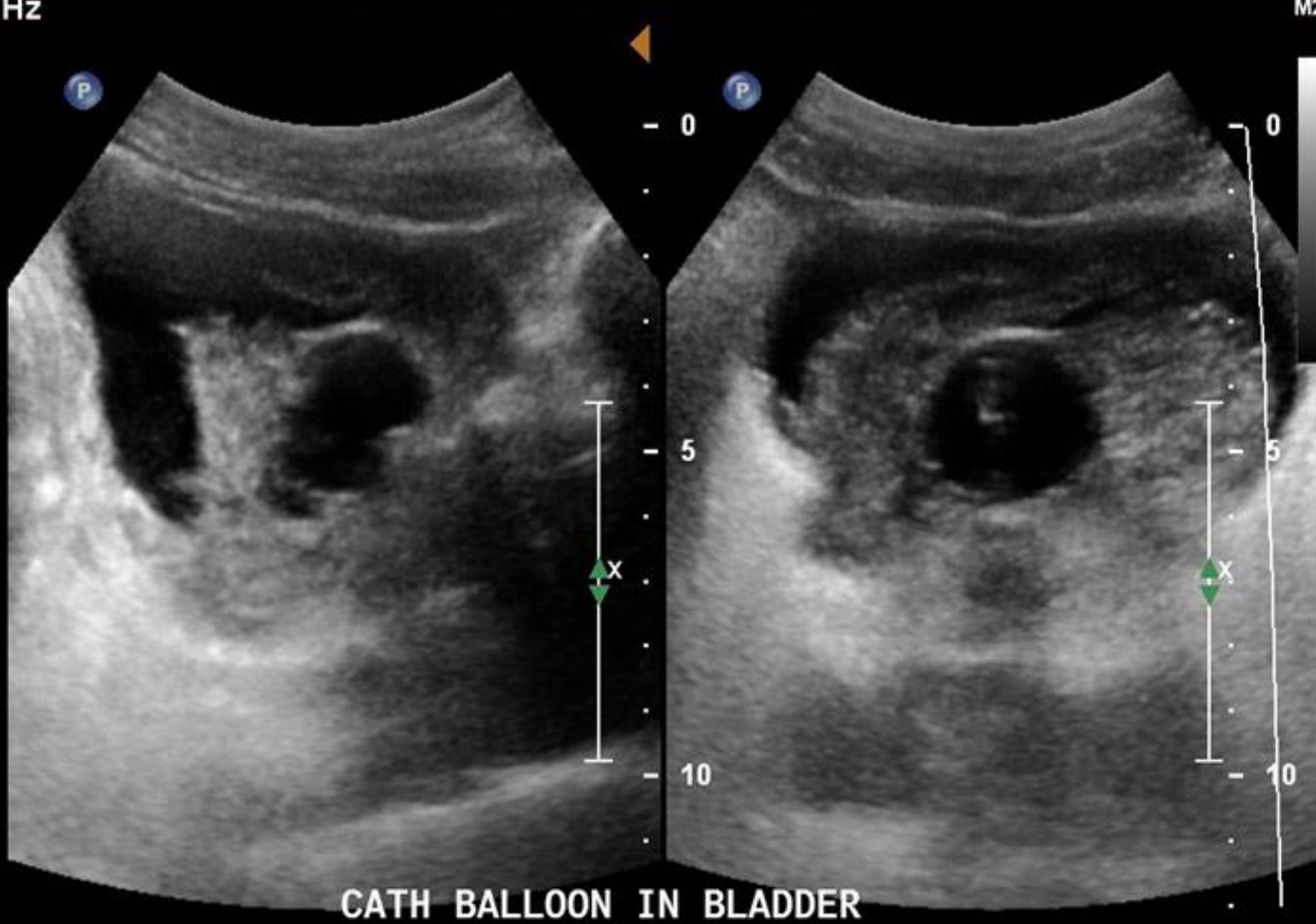


using high gain settings

Frank hematuria

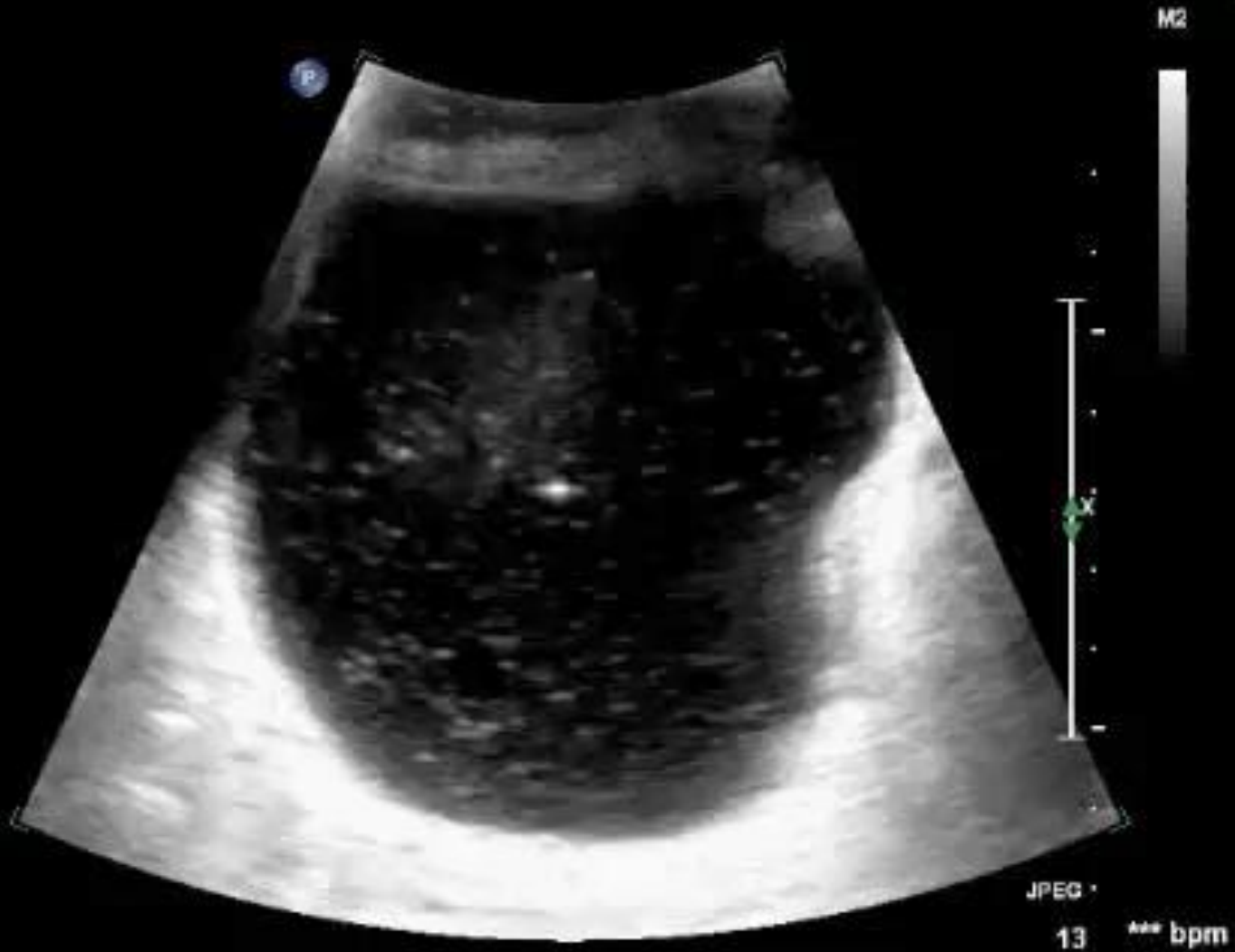
# Hematuria

- ◆ Mobile echogenic material
- ◆ Beware merely proteinaceous material or concentrated urine

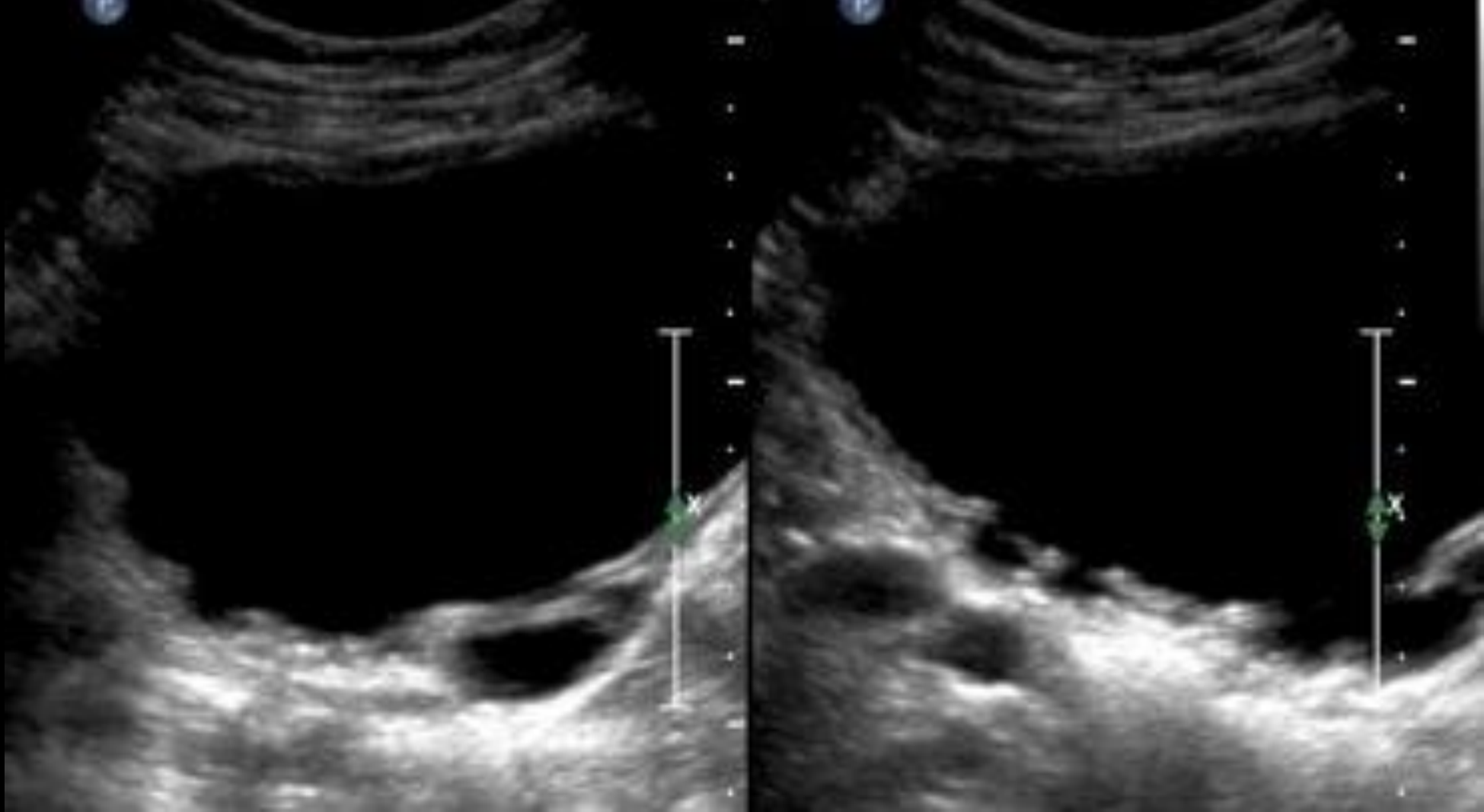


frank hematuria with clot  
surrounding a catheter balloon

FR 43Hz  
RS  
2D  
56%  
C 55  
P Low  
HPen



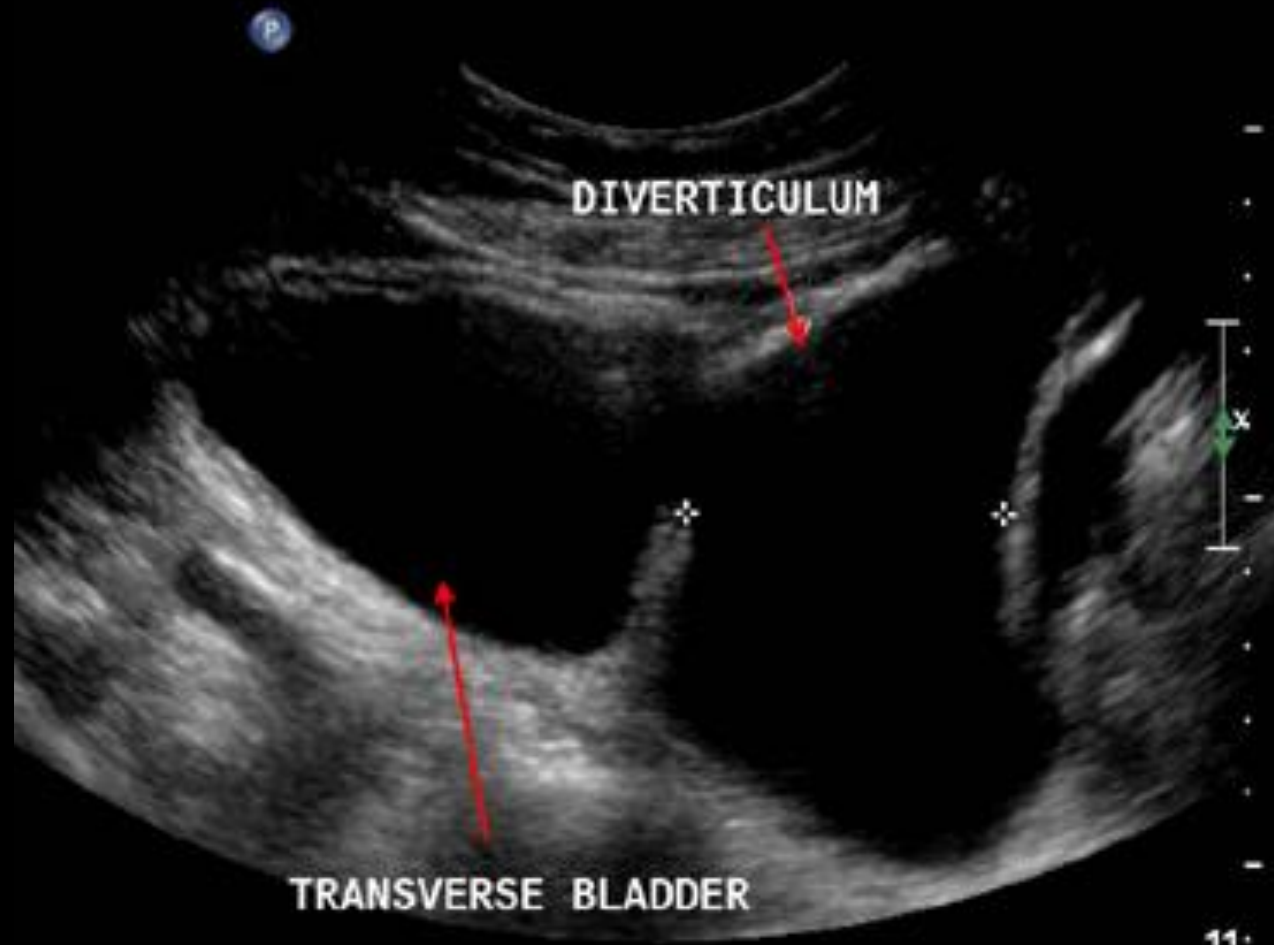
Ureteric jets into a bladder containing hematuria



Multiple bladder diverticulae  
Commonly seen with **chronic urinary retention**.

# Bladder Diverticulae

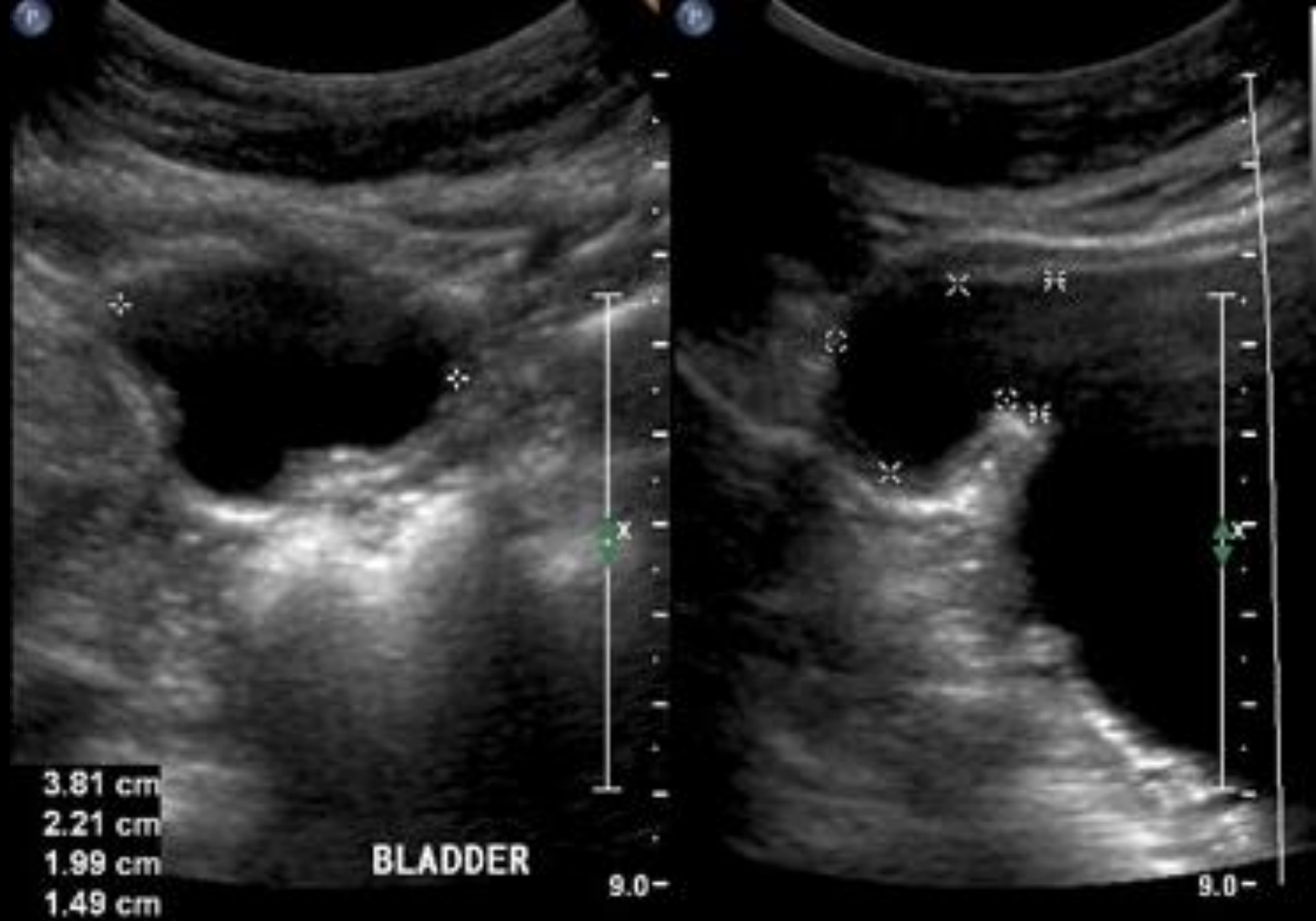
- ◇ out-pouching of bladder mucosa through the muscular bladder wall
- ◇ congenital or acquired (most common)



\* incidentally detected large bladder diverticulum

\* persist post micturition

\* asymptomatic



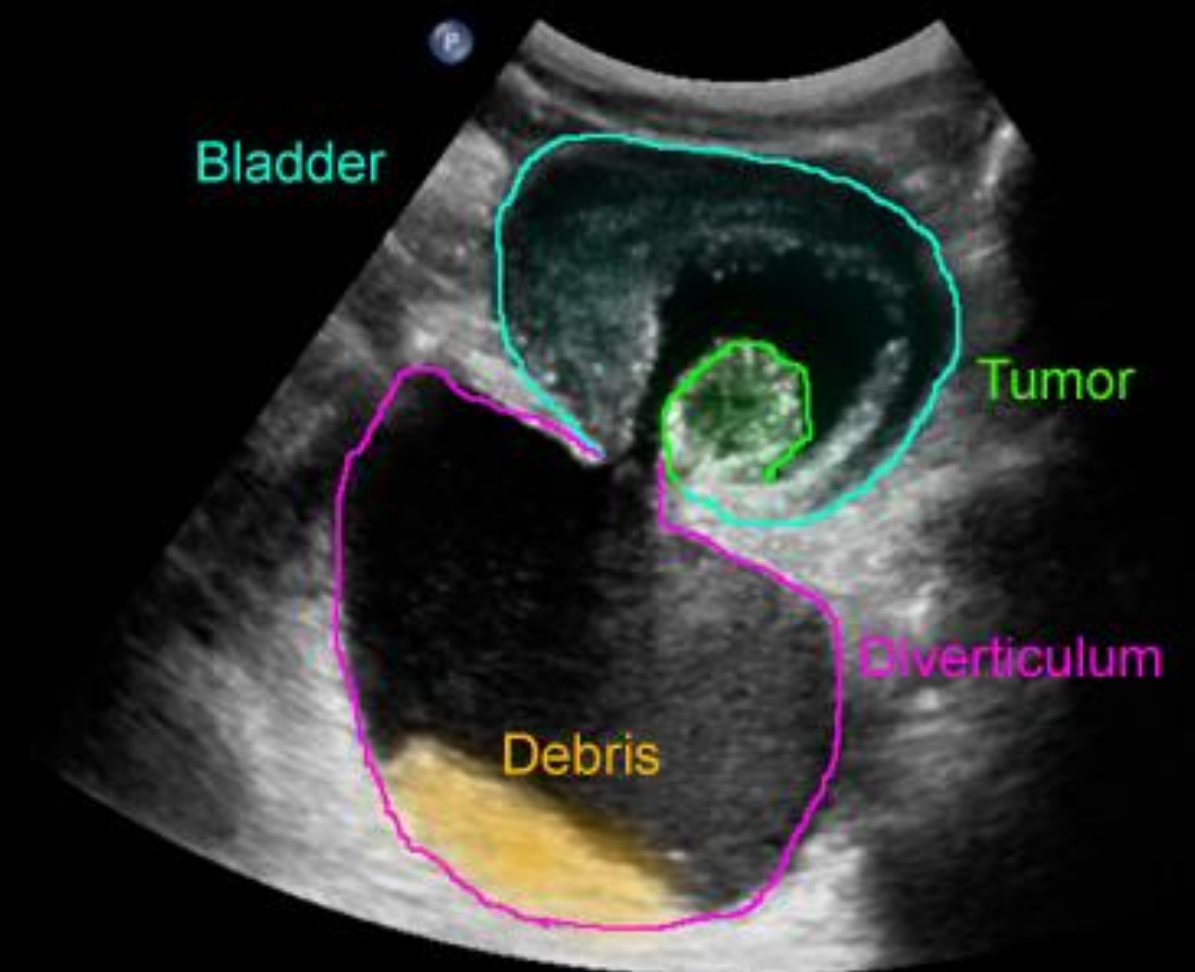
\* A wide neck diverticulum of the bladder dome



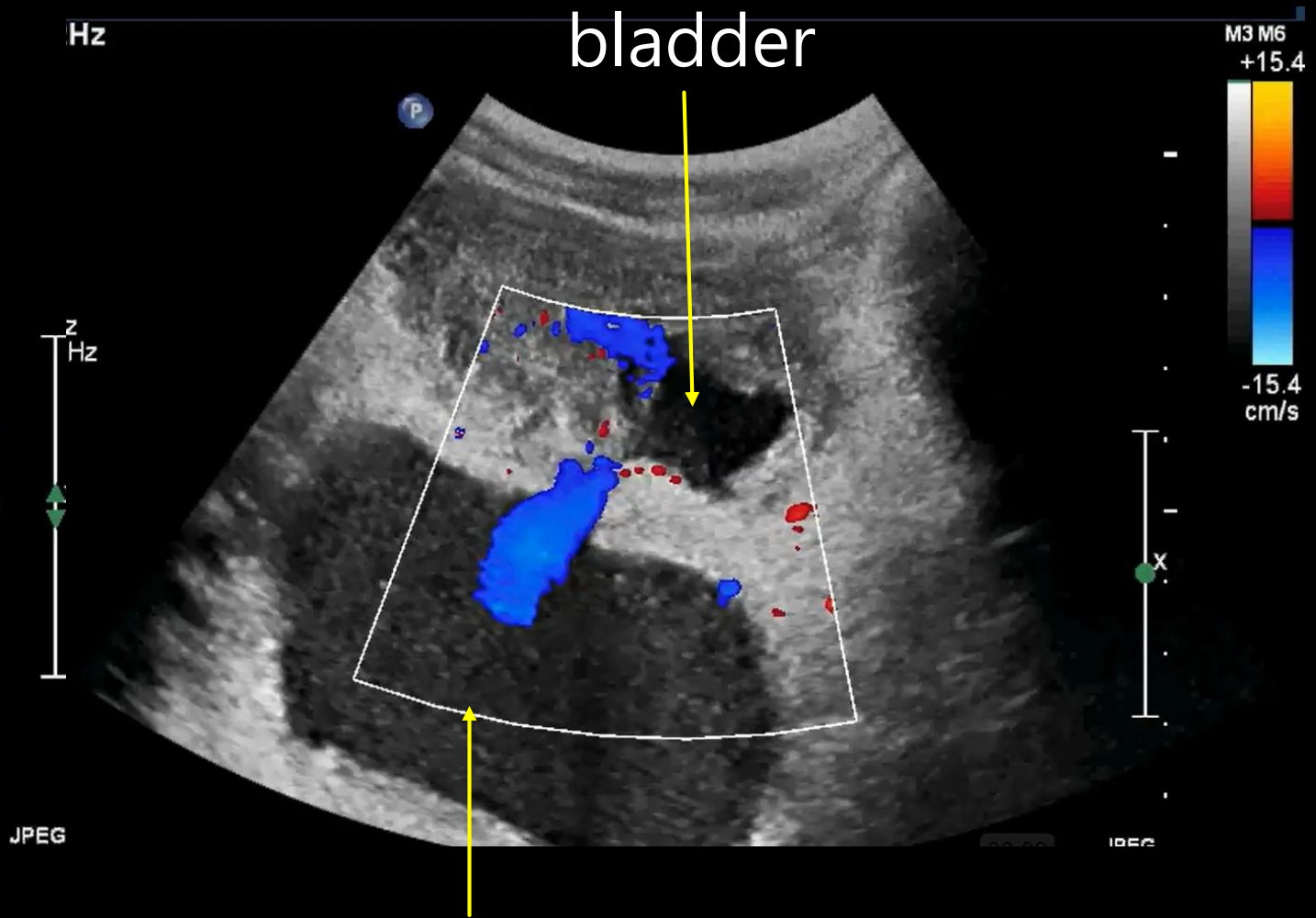
FR 11Hz  
R1  
Z 1.2  
2D  
27%  
C 55  
P Med  
Gen  
CPA  
85%  
850Hz  
WF 55Hz  
Med



Using color doppler to show the relationship of this diverticulum to the vessico-ureteric junction.



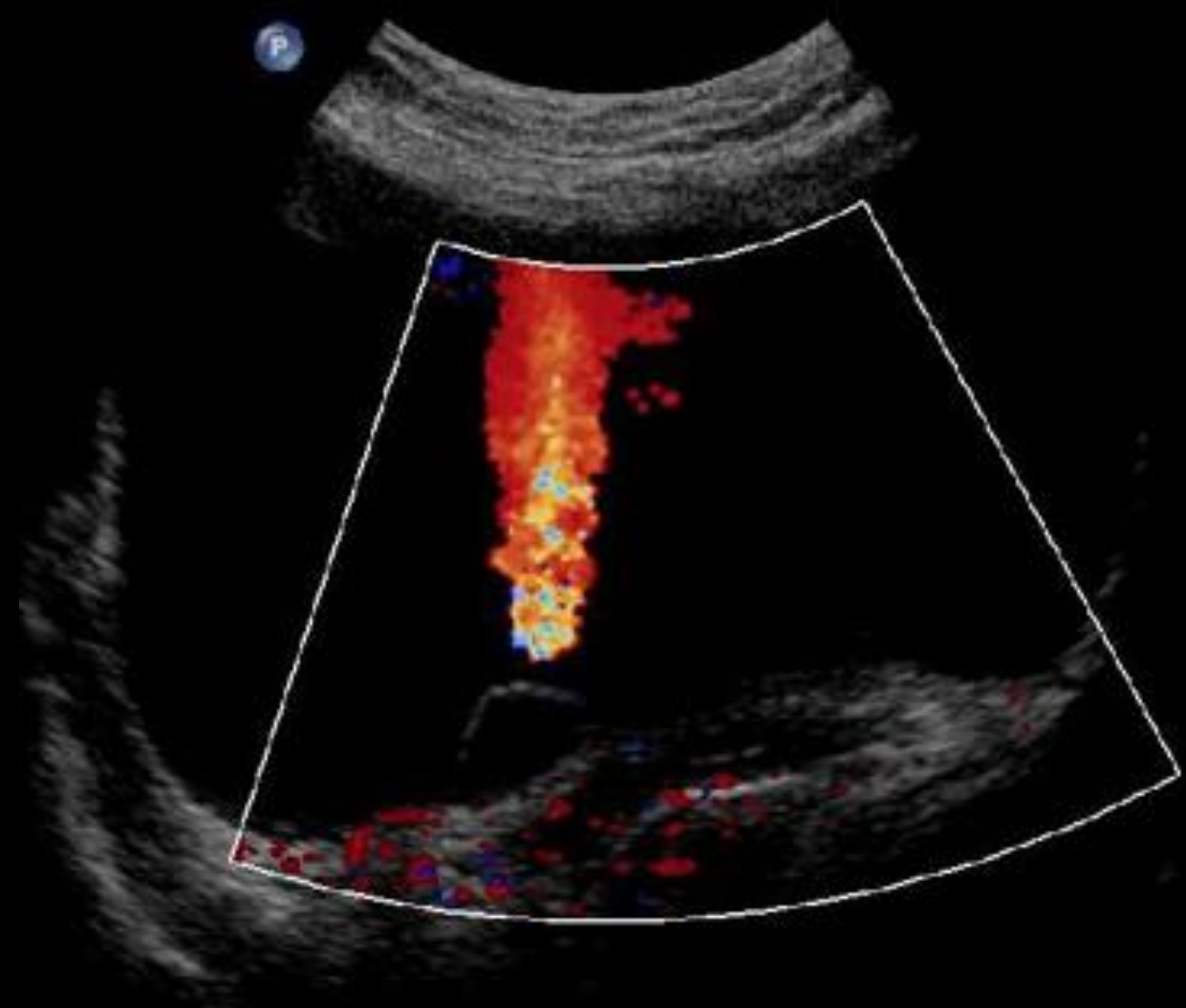
A large posterior diverticulum/ chronically contracted, thick walled bladder/ mass/ sediment in the diverticulum



By jostling the bladder the debris can be mobilized.

large diverticulum contains debris

a large example

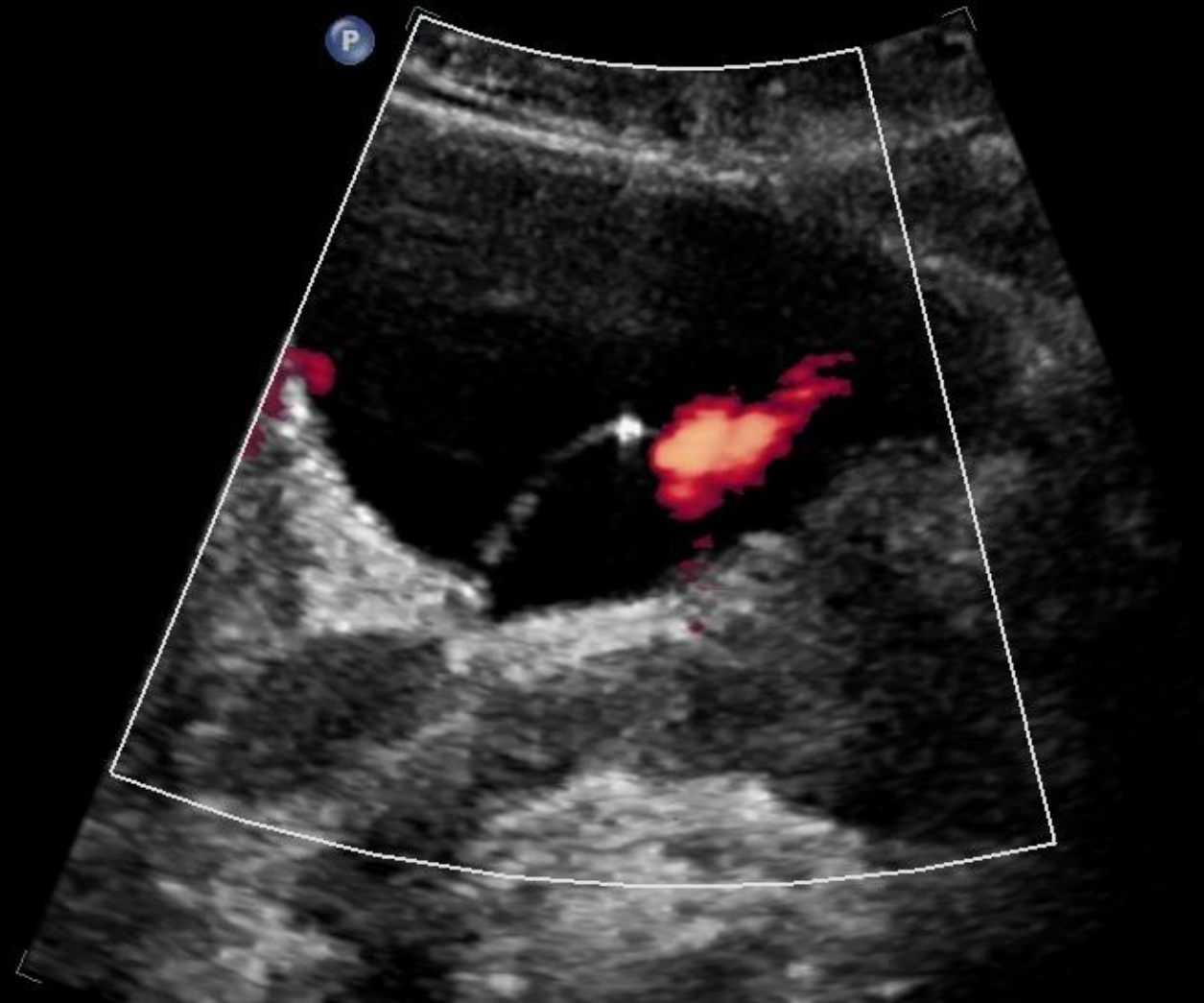


RIGHT UJ

Ureterocele/ a large example/  
asymptomatic

# Ureterocele

- ◆ A prolapse or outpouching of the distal ureter into the bladder at the vesico-ureteric junction.



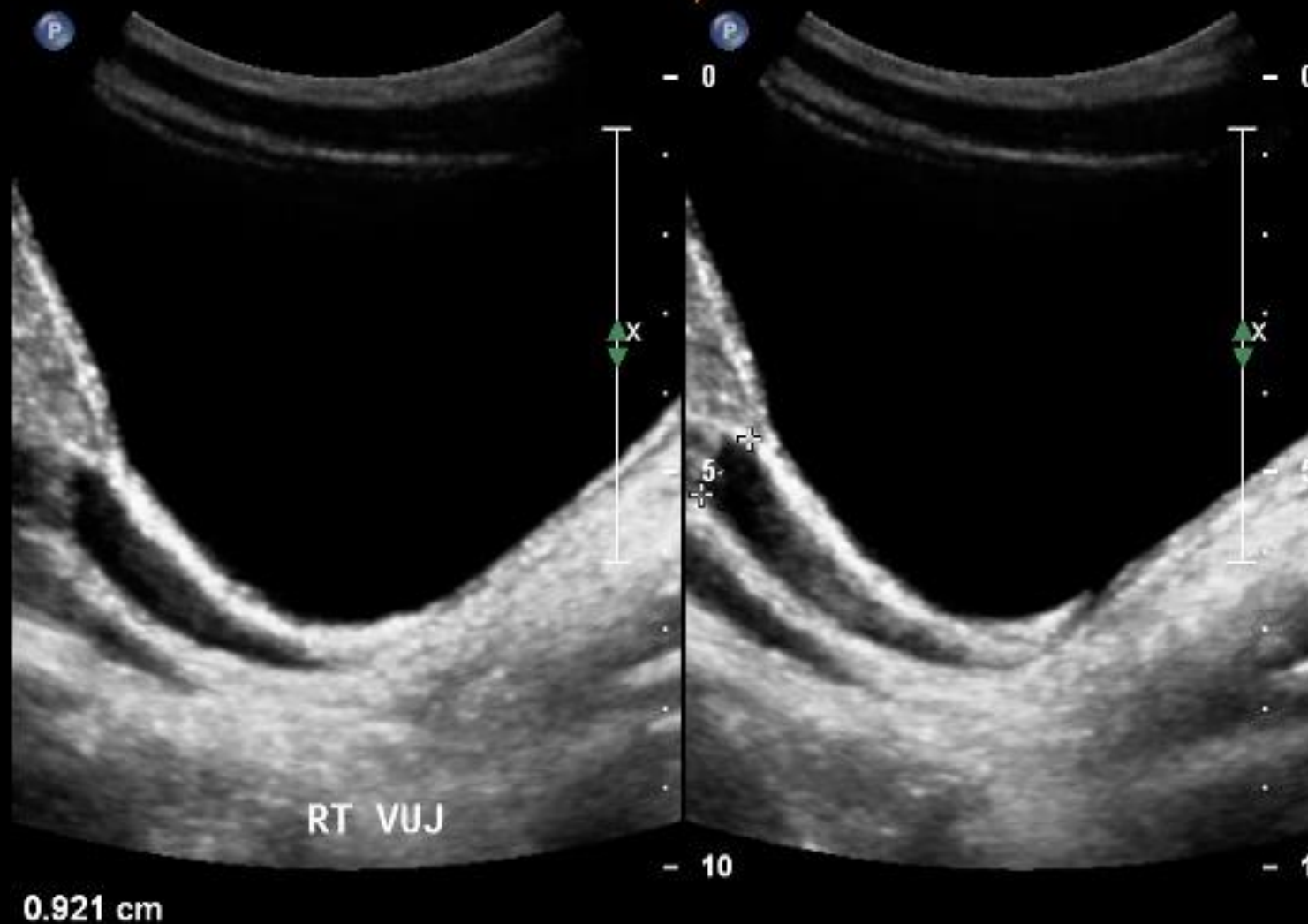
FR 32Hz  
RS  
Z 1.1  
2D  
41%  
C 55  
P Low  
HGen



+ Dist 1 1.84 cm  
x Dist 2 1.42 cm  
o Dist 3 1.60 cm  
Volume 2.20 ml

RT URETEROCEL VOLUME

Bilateral ureteroceleles persisting post micturition.



open vesico-ureteric junction/ dilatation of the distal ureter



# Vesico-Ureteric Reflux (VUR)

- ◆ VUR involves the retrograde passage of urine from the bladder, up into the ureter.
- ◆ Degree of consequence is based upon how far up the reflux extends and whether it causes calycael dilatation in the kidney

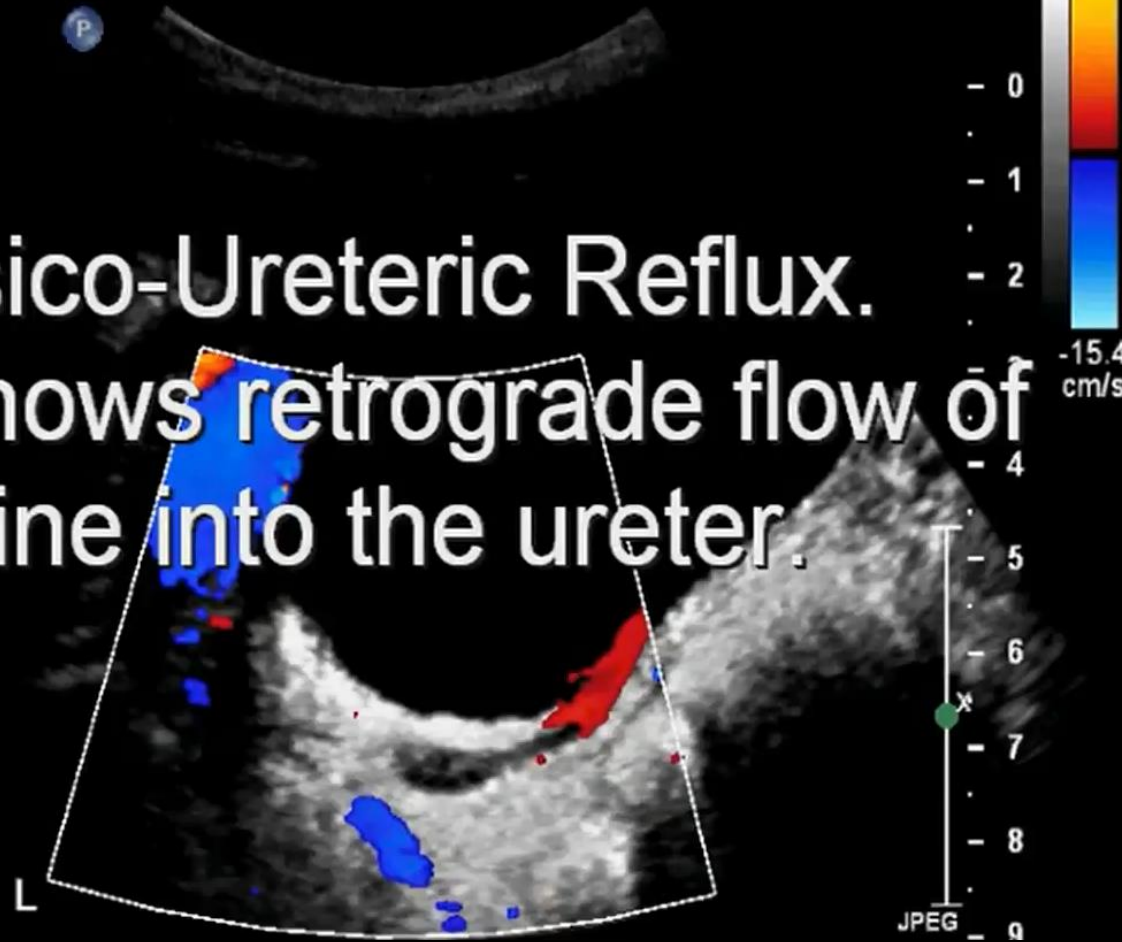
FR 11Hz  
RP

2D  
39%  
C 48  
P Med  
HGen

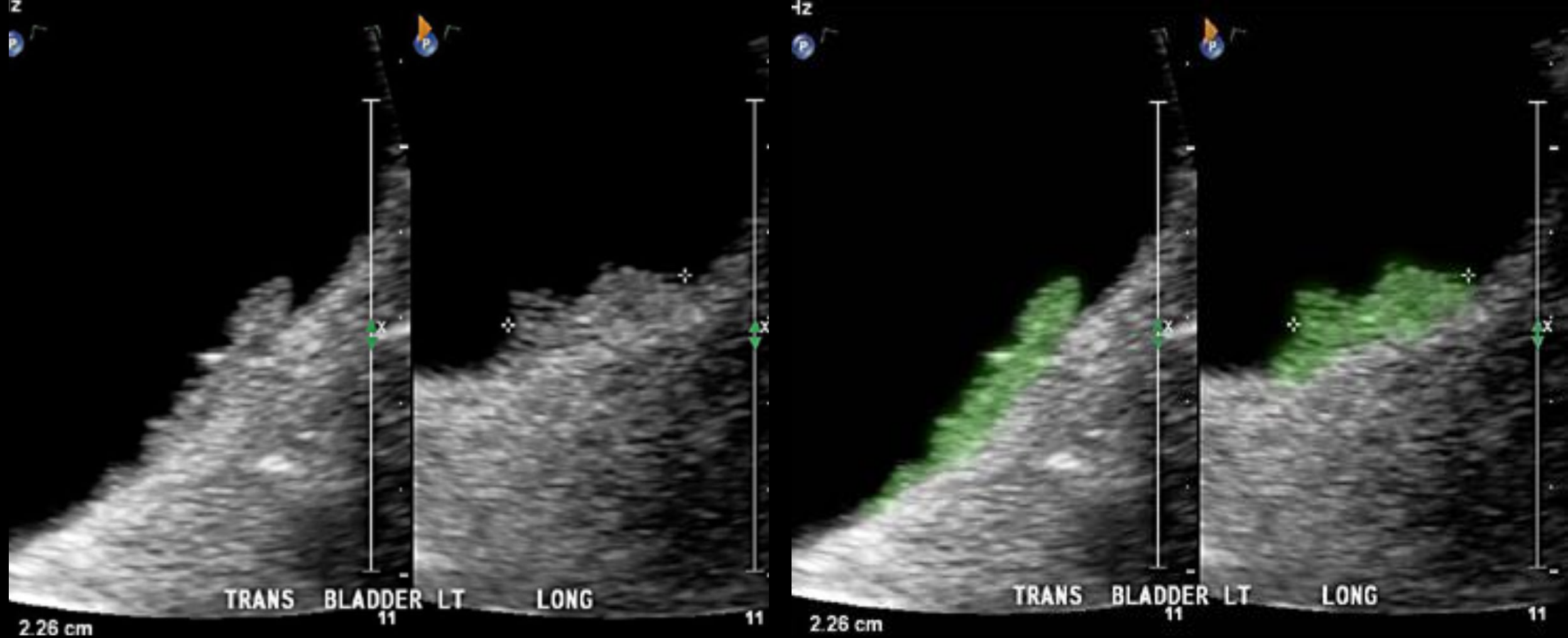
CF  
60%  
1100Hz  
WF 71Hz  
Med

## Vesico-Ureteric Reflux.

Blue shows retrograde flow of urine into the ureter.



refluxing urine is seen as blue through the ureteric orifice



Flat type TCC,

# Transitional Cell Carcinoma (TCC)

- ◆ Also called **urothelial carcinoma**.
- ◆ Arises from the Transitional epithelium that lines hollow organs such as the **bladder, ureter** and **renal pelvis**.
- ◆ There is increased risk in **smokers, excessive alcohol** or **analgesia** intake and use of some **dyes**.
- ◆ May be *flat* or *papillary*.



Marked TCC almost filling the bladder

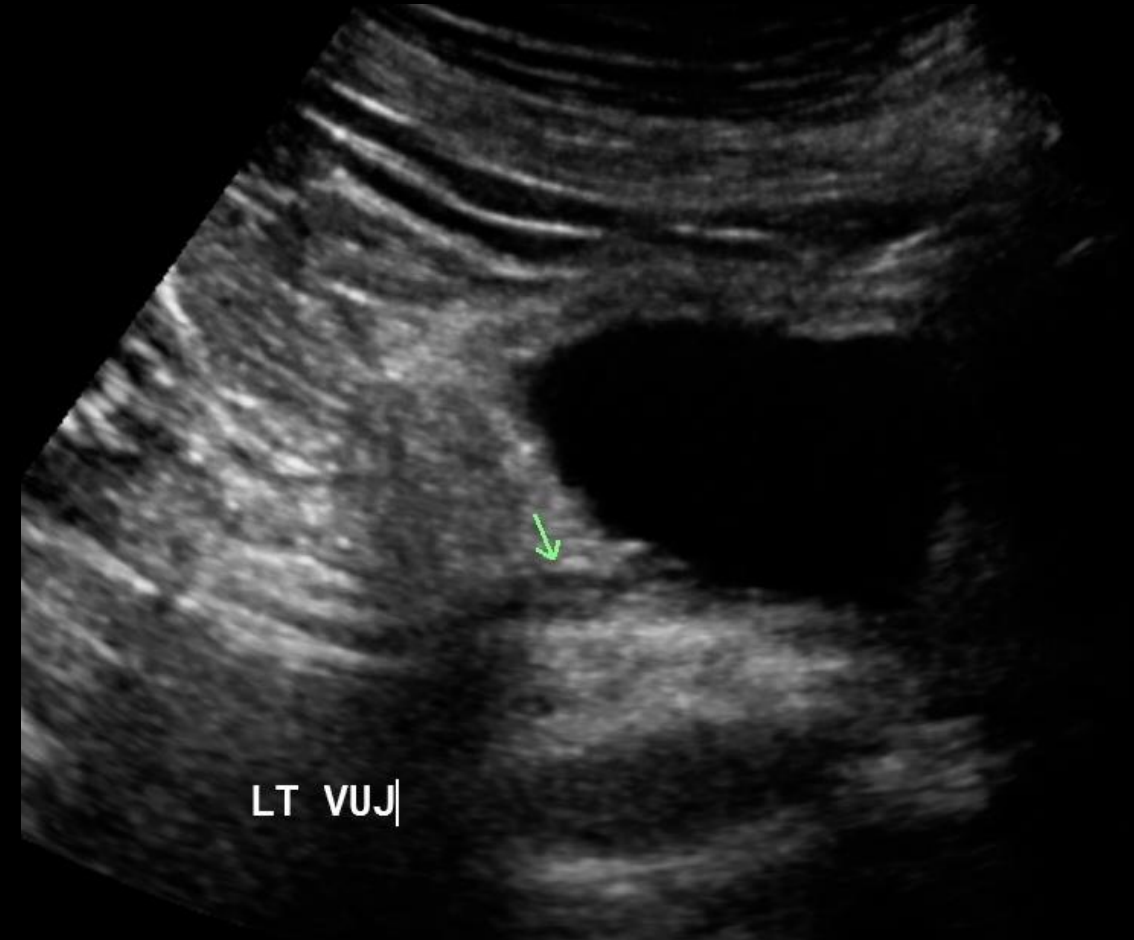


Left ureteric obstruction?



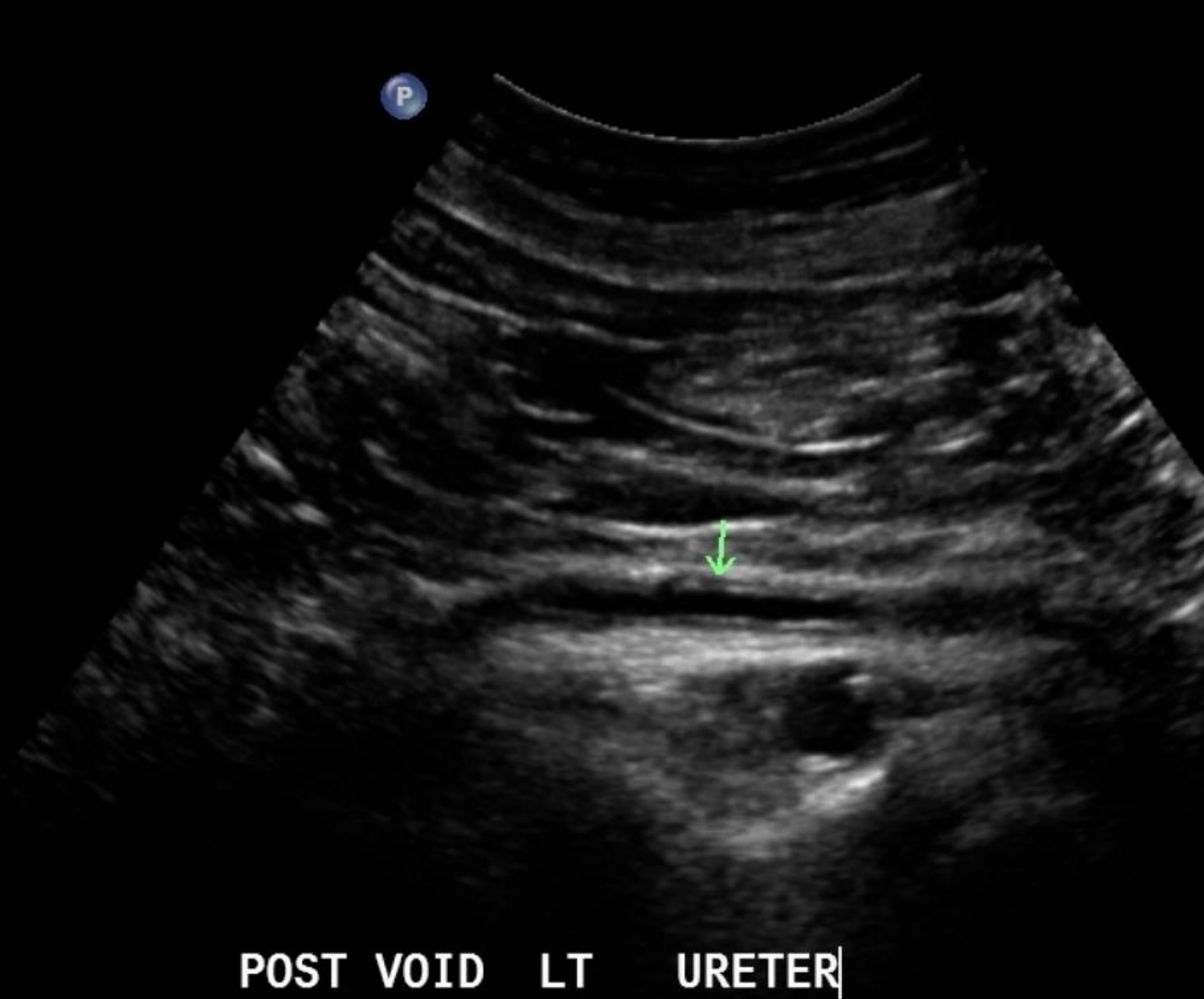
power doppler, excluding complete ureteric obstruction.

by slightly increasing the gain



material within the ureter at the  
vesico-ureteric junction



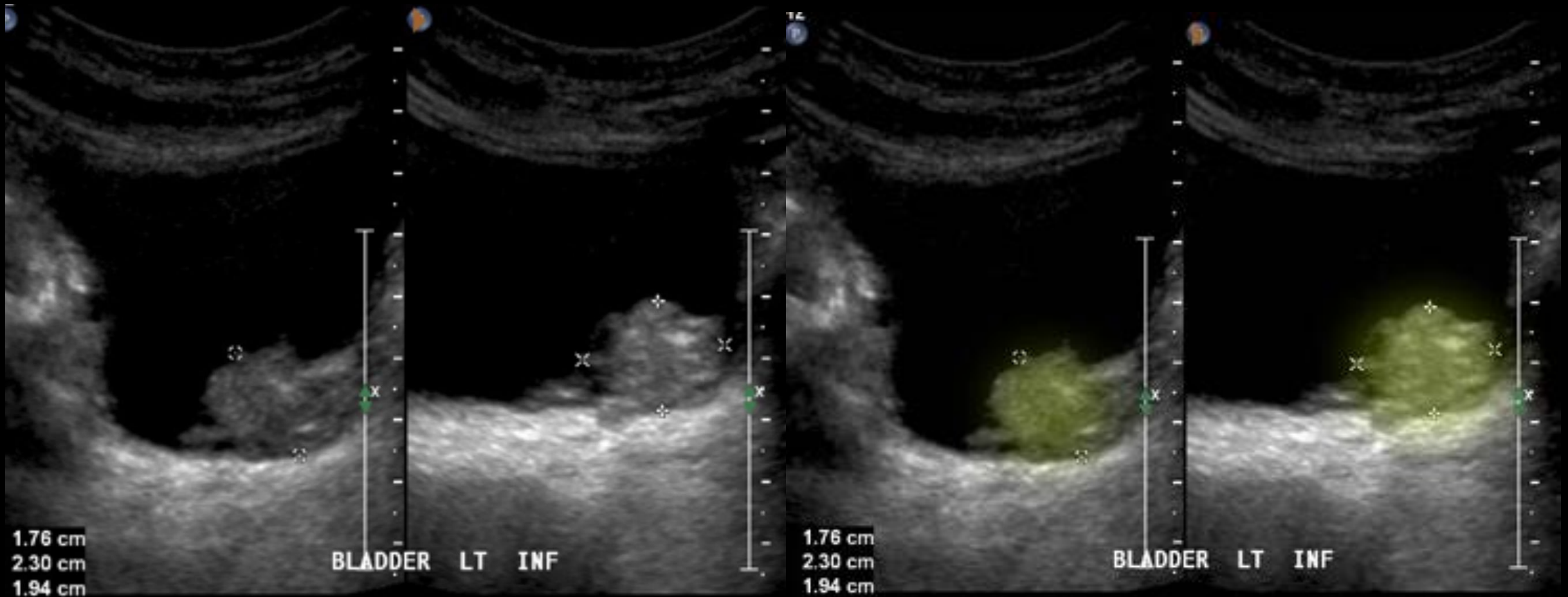


If hematuria + no infection → consider **tumor**

# Non TCC Bladder carcinomas

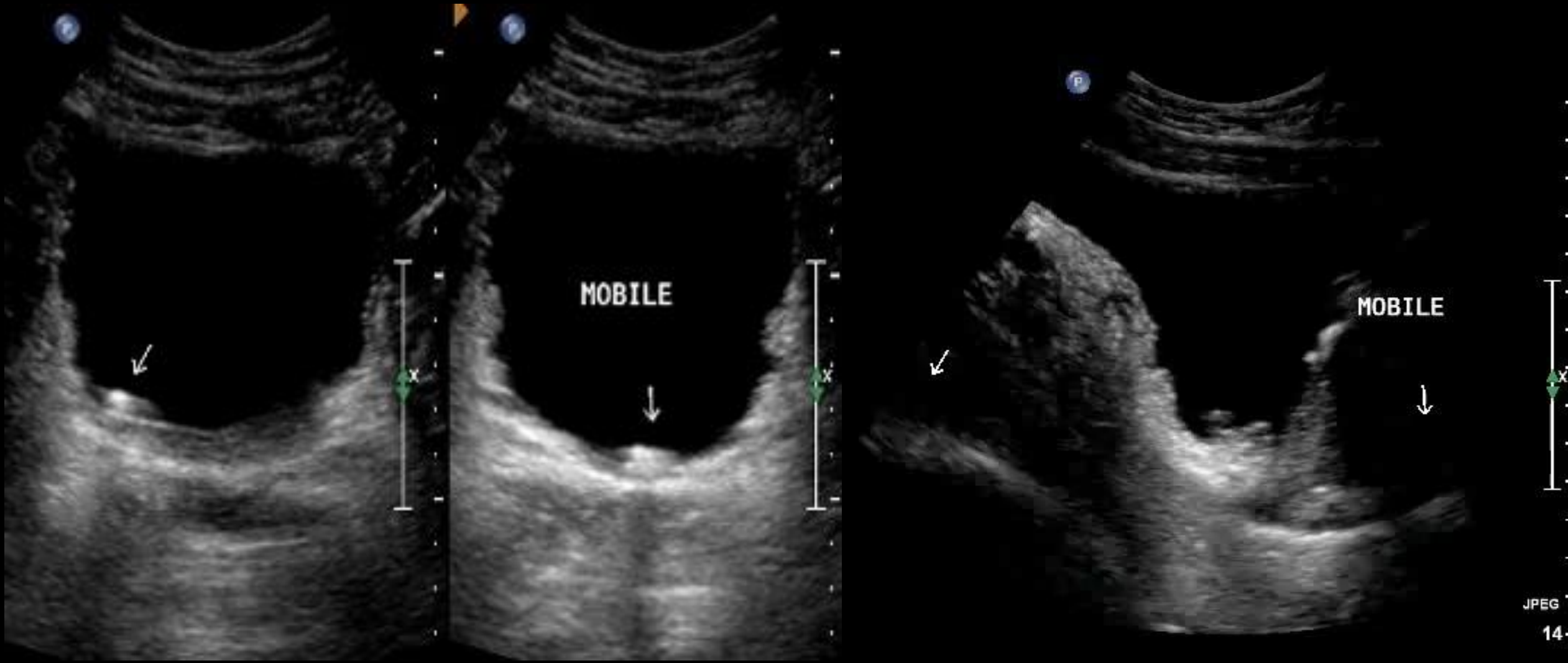
Types:

- ◆ Squamous cell carcinoma 1-2%
- ◆ Adenocarcinoma 1%
- ◆ Sarcoma
- ◆ Small cell carcinoma

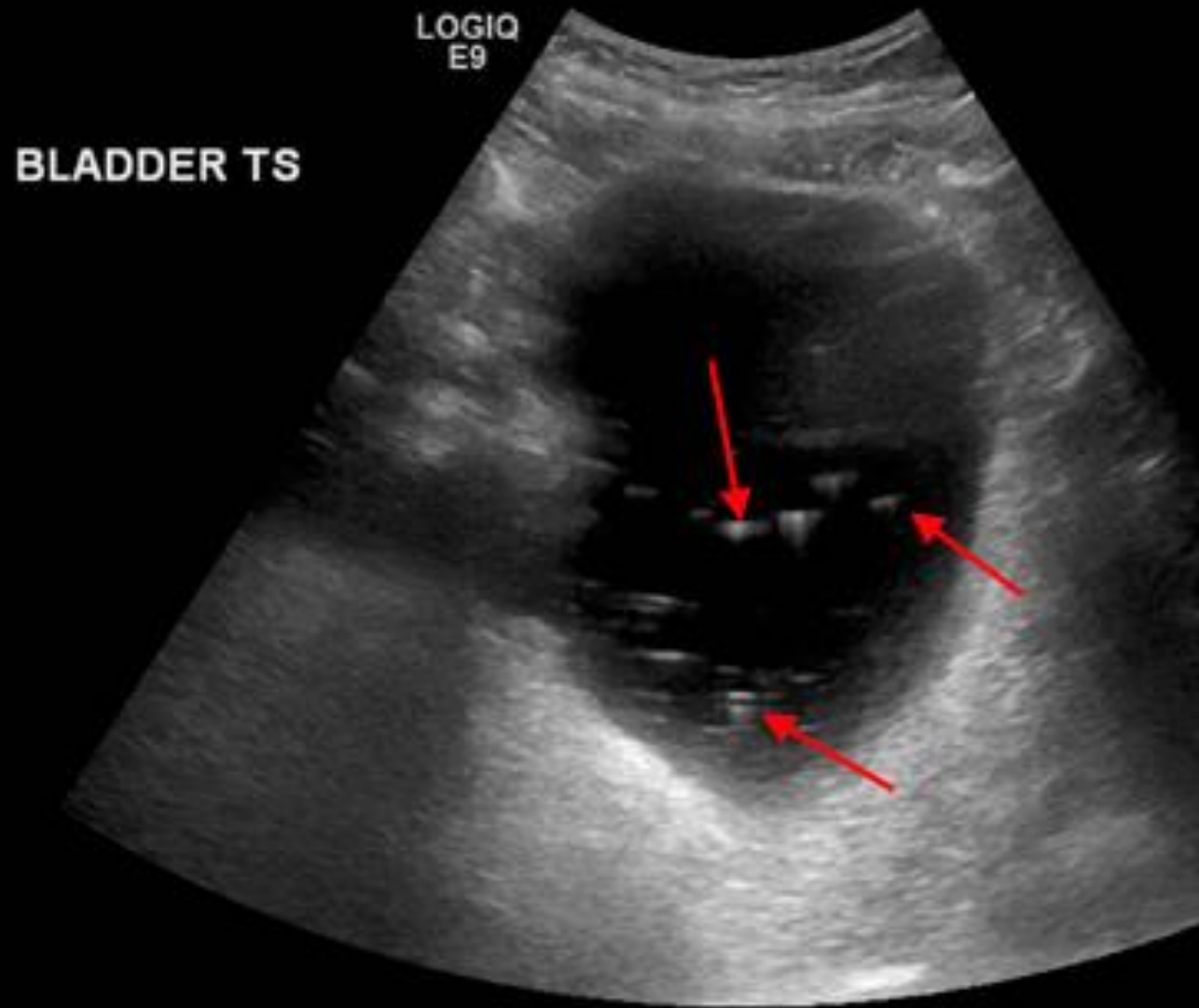


A bladder carcinoma.

Debris (likely hematuria) is present adjacent to the mass.



Bladder Calculus



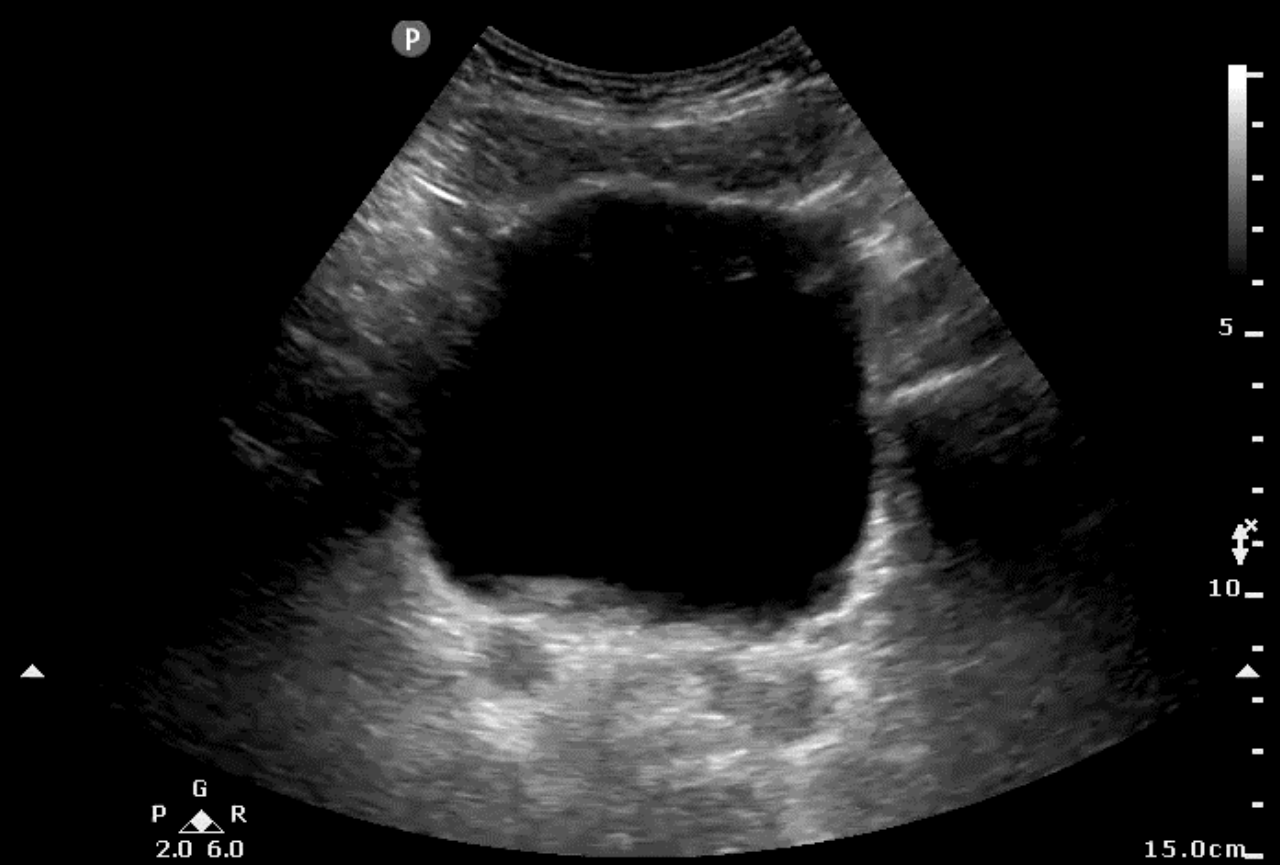
Uric acid calculi are often small and multiple

# Uric acid calculi nephropathy

- ◇urate/uric acid nephropathy or gouty nephropathy
- ◇Renal insufficiency can develop secondary to uric acid precipitation within the renal tubules.

52 y/o M, sudden RUQ pain radiates to back with vomitus.





P

5

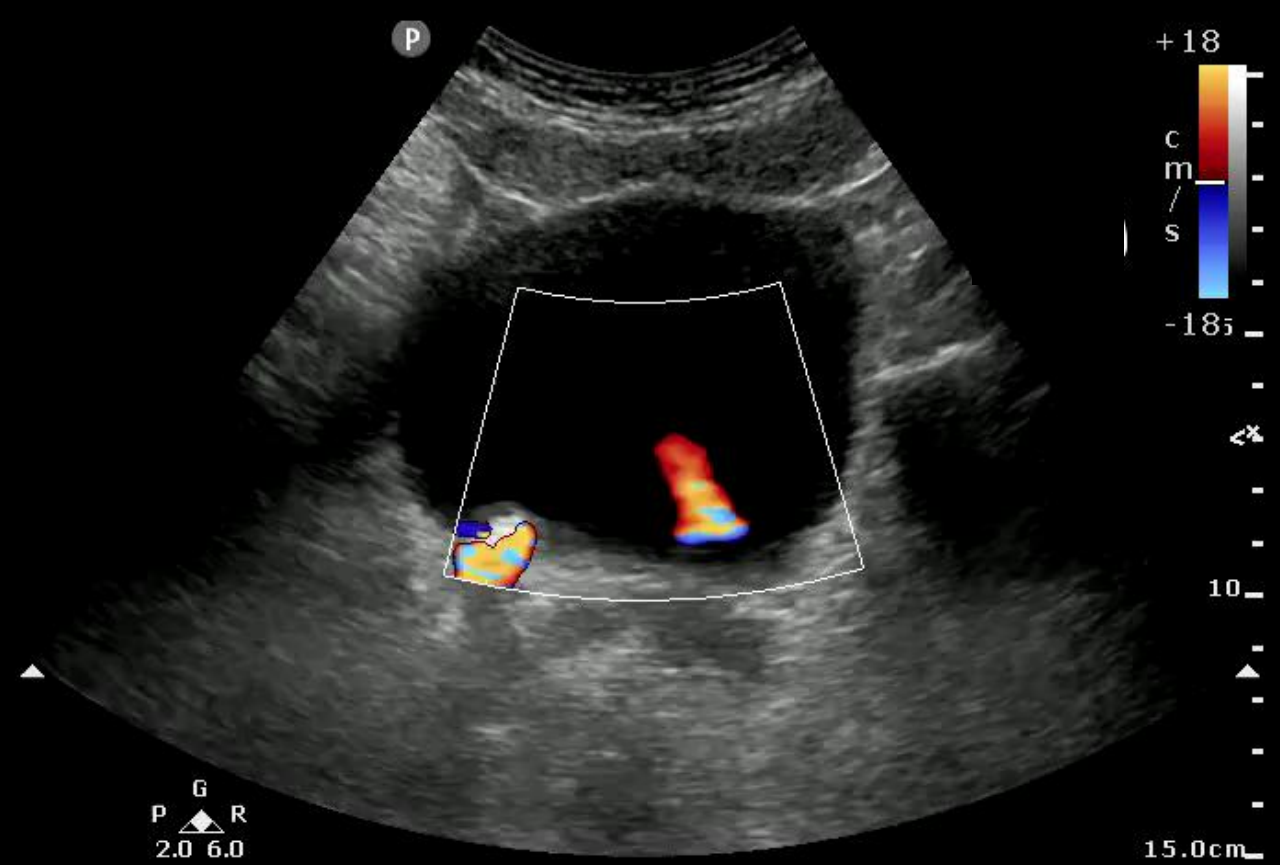
10

15.0cm

G  
P R  
2.0 6.0





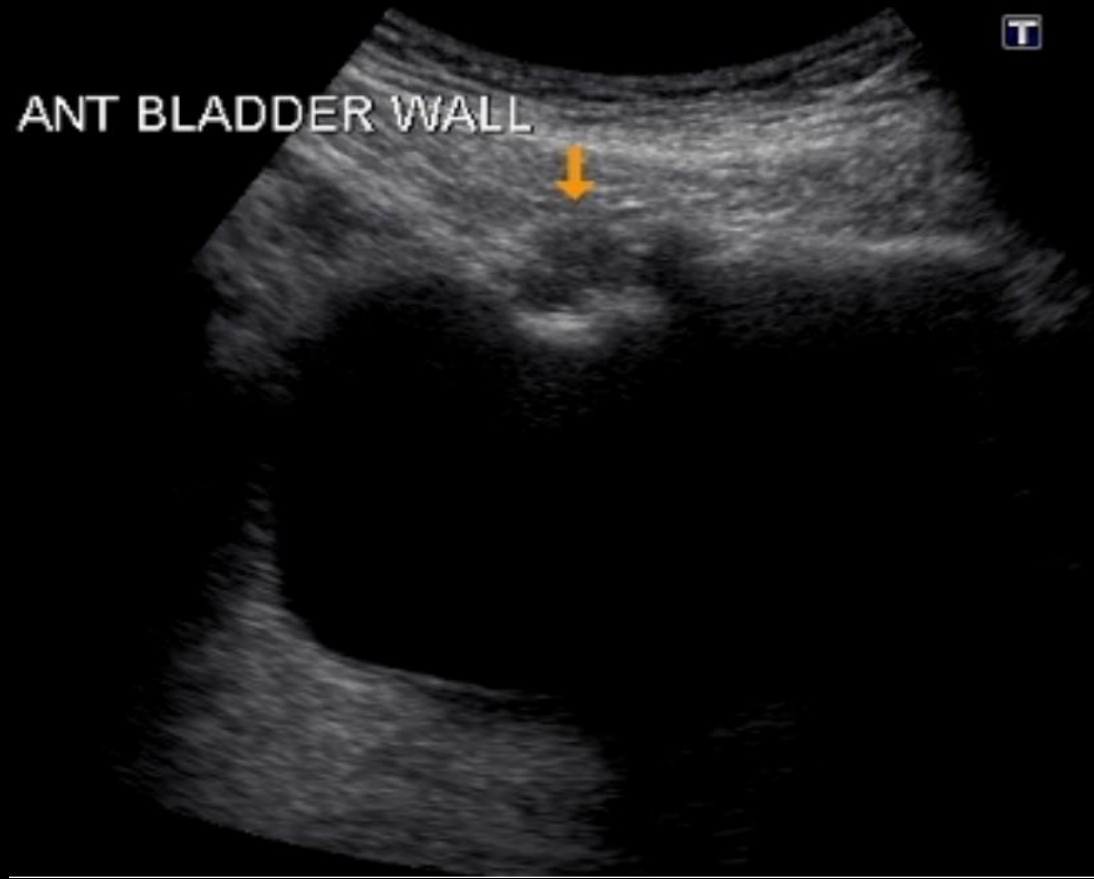


## **Diagnosis: Hydronephrosis due to an obstructing ureteral stone.**

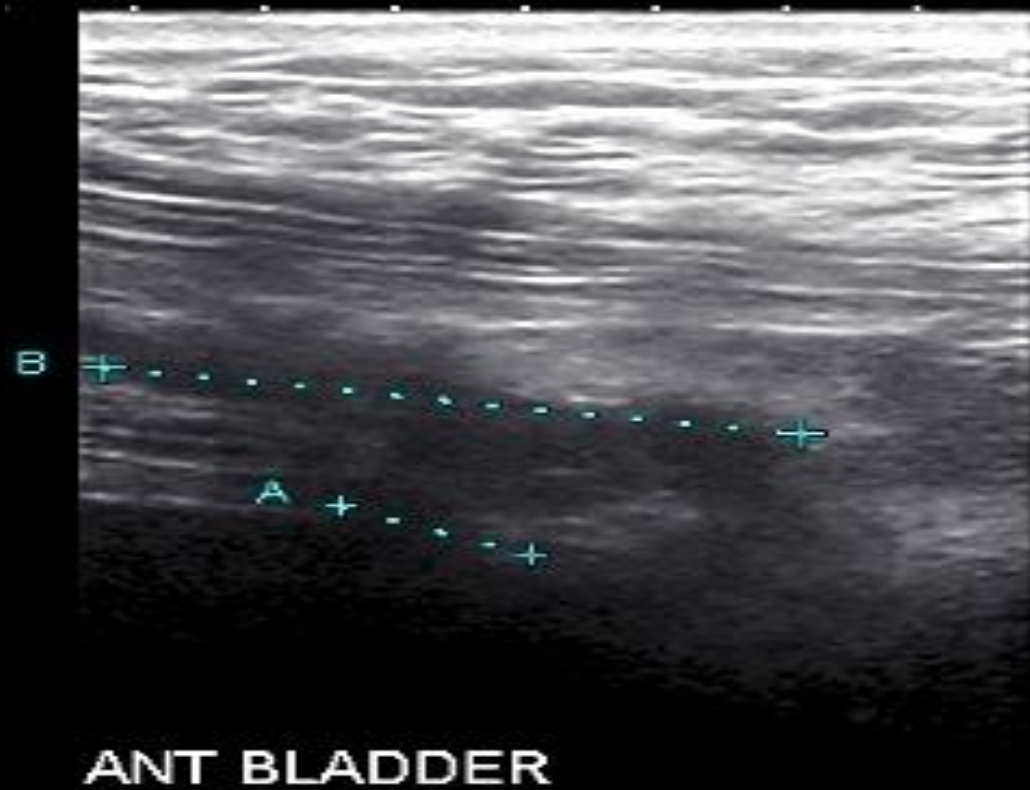
- ◇ moderate to severe hydronephrosis
- ◇ hyperechoic ureteral stone impacted at the VUJ
- ◇ hydroureter
- ◇ no right ureteral flow (color power Doppler)

# Ureterolithiasis

- ◇ peaks between 20-50 years old
- ◇ less common as a new diagnosis passed the age of 50
- ◇ occasionally the obstructing stone can be seen at the VUJ



Urachal Remnant/ no symptoms

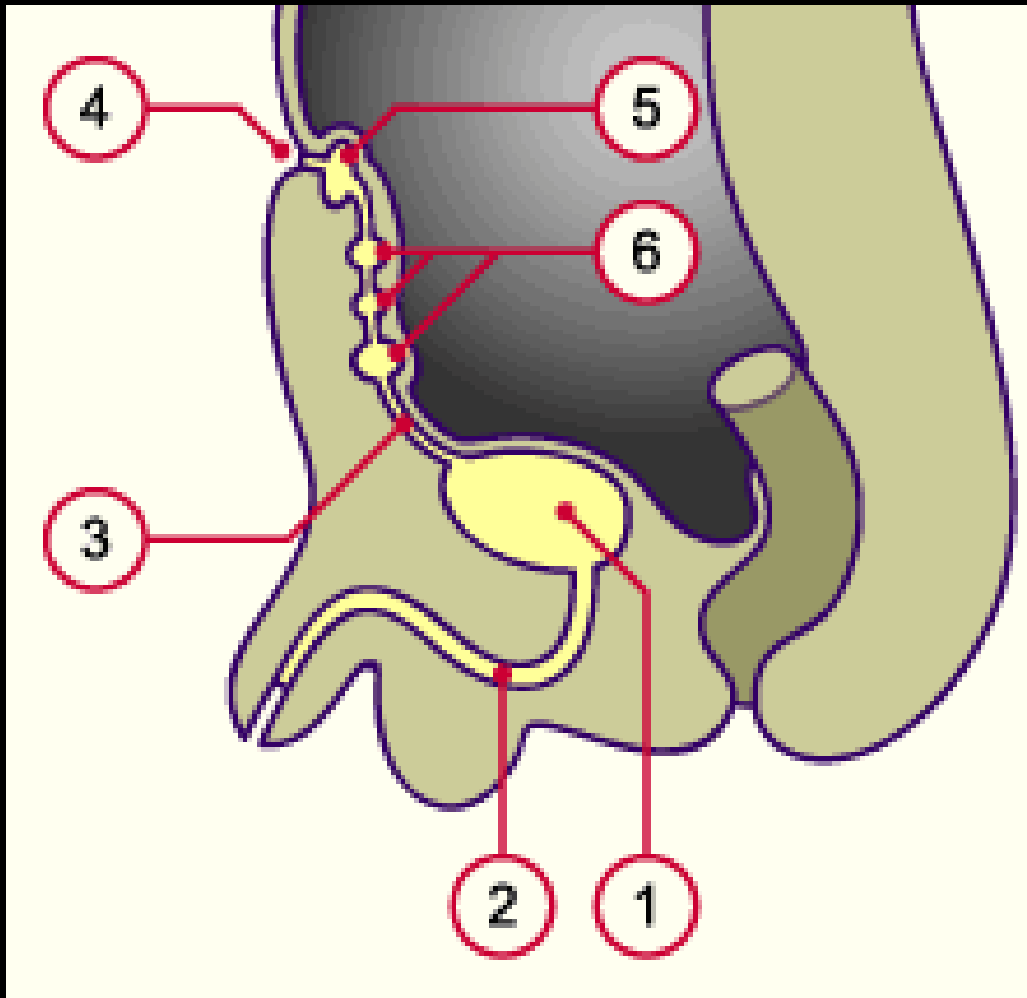


using a linear probe to get better  
visualisation

# URACHAL REMNANT

- ◇ clinically important when infected, dilated or neoplastic
  - ◇ Patent urachus
  - ◇ Urachal cyst
  - ◇ Urachal sinus
  - ◇ Vesicourachal diverticulum

# Urachal cyst



1. Bladder

2. Urethra

3. Urachus

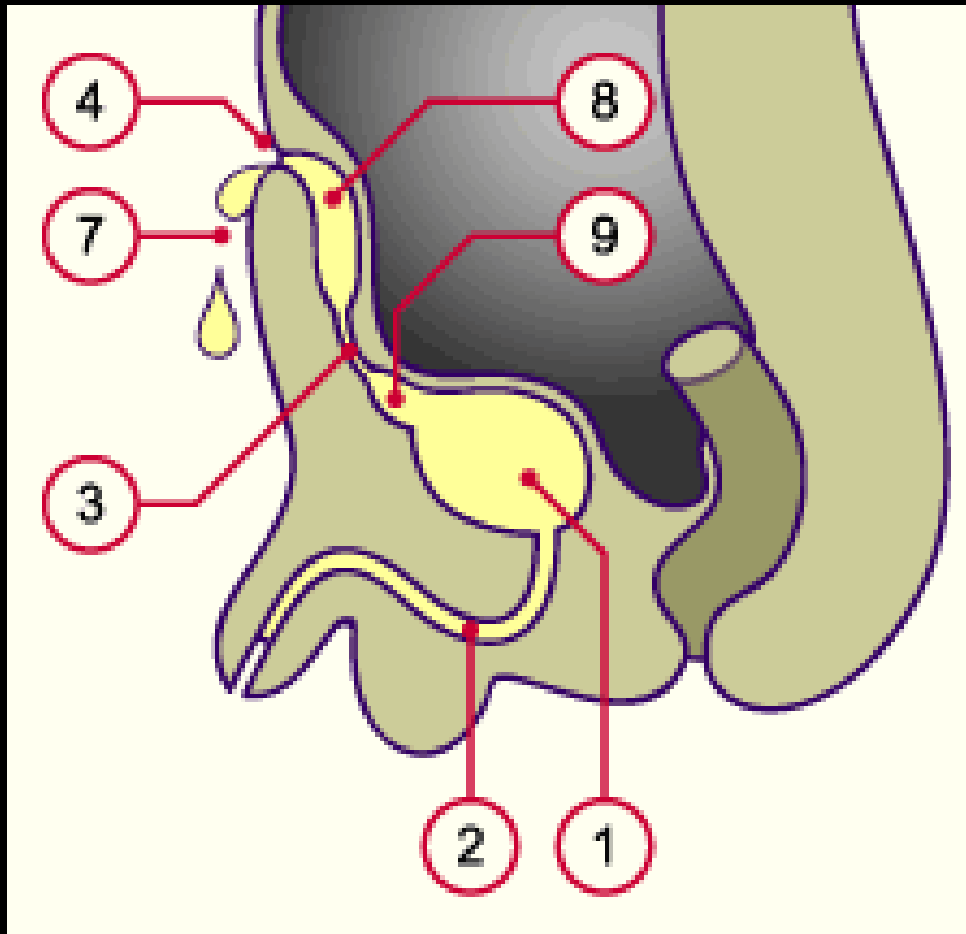
4. Navel

5. Umbilical cyst

6. Urachal cysts



# Internal fistula (urachal diverticulum) External fistula (urachal sinus)



3 Urachus

7 Urine outflow onto the skin

8 External fistula (urachal sinus)

9 Internal fistula (urachus diverticulum)

## REFERENCES

- ◇ <http://www.auanet.org/eforms/elearning/pathology/bladder-histoanatomic/urachal-remnant.cfm>
- ◇ <http://www.embryology.ch/anglais/turinary/patholurinary07.html>

**Thank you** ❤️