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CASE STUDIES OF VESICoureTERAL REFLUX

Clinical History Case Study 1

- 3 year old girl with history of UTI
- Potty trained at 2 yr old
- 'wetting' accidents during the day, but fully continent during the night.
- Occasional complaint of 'tummy' pain.
- Physician suggested renal ultrasound

Ultrasound / RIGHT KIDNEY



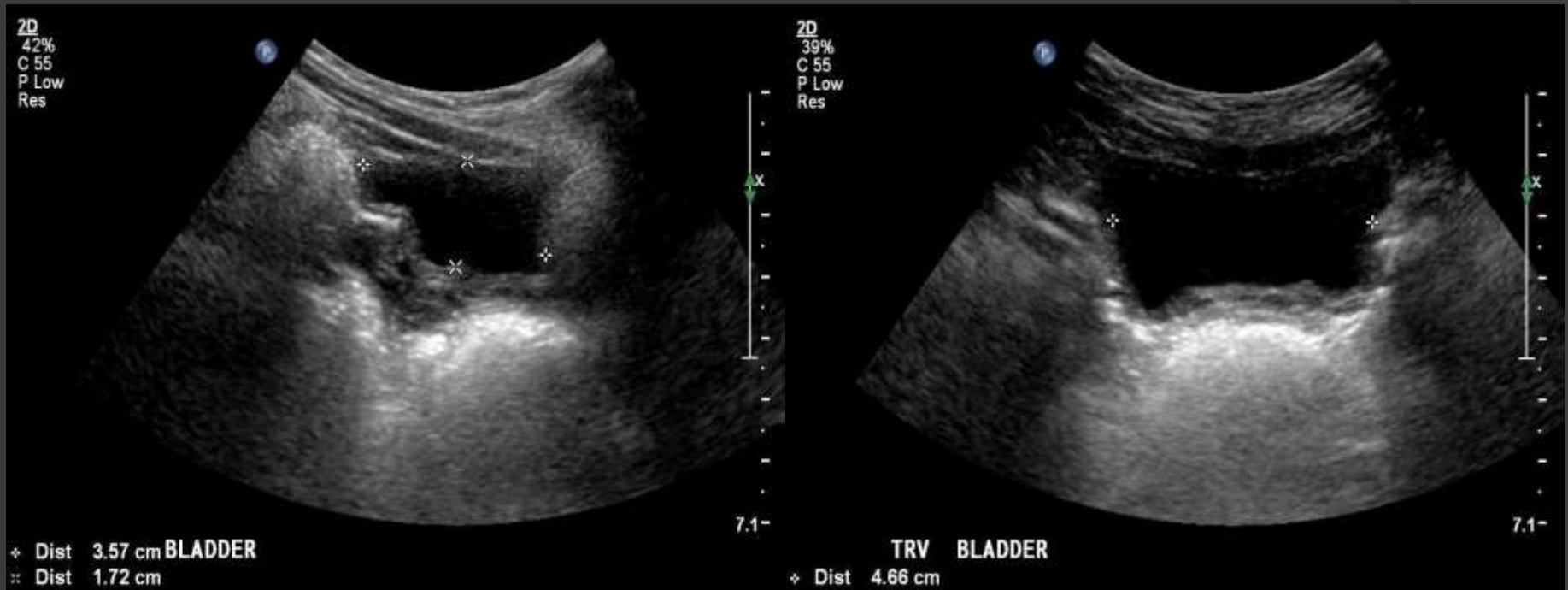
RIGHT KIDNEY IS NORMAL IN SIZE WITHOUT HYDRONEPHROSIS

Ultrasound / LEFT KIDNEY



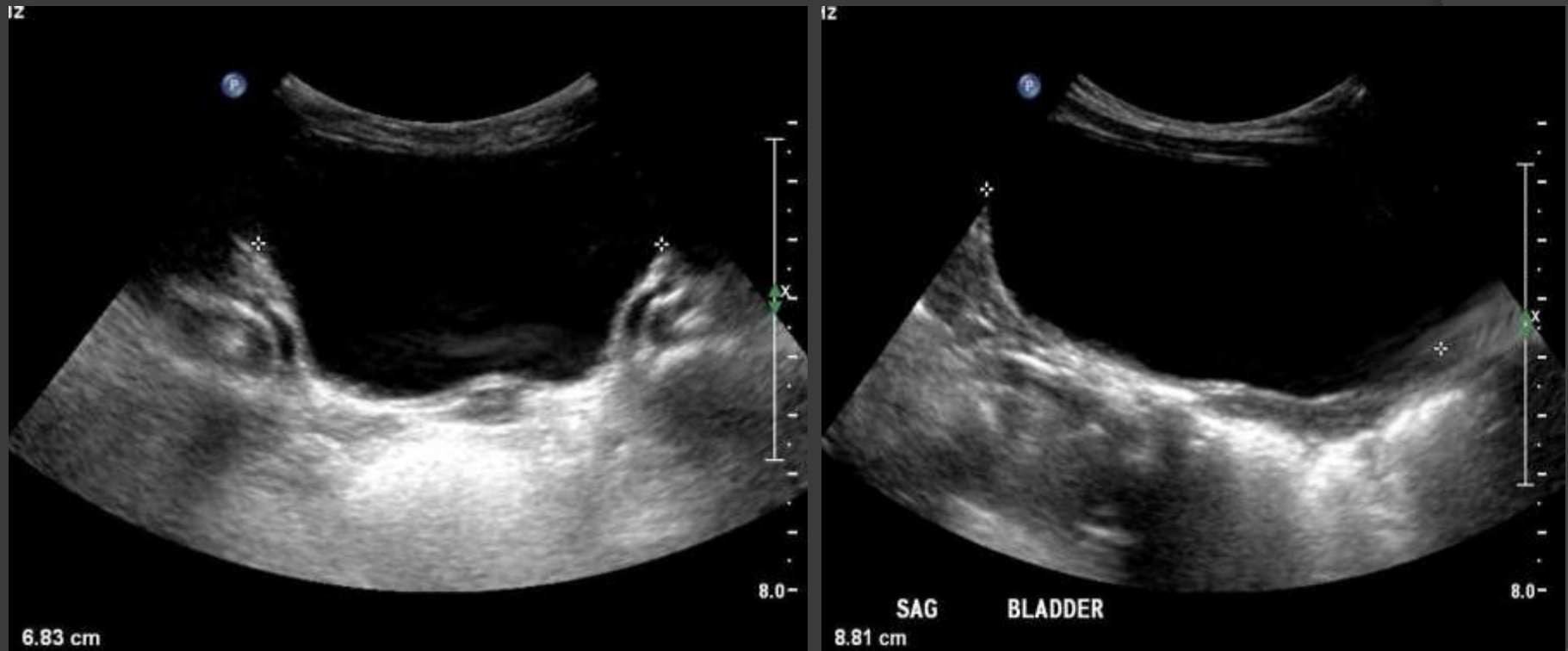
LEFT KIDNEY IS NORMAL IN SIZE WITHOUT HYDRONEPHROSIS

Ultrasound / BLADDER



Asked the toddler if she needed to go to the bathroom and she said “no”
Interrupted the exam and had mother take child for a walk and gave more fluids for 45 minutes, still the toddler denied need to go to the bathroom
Resumed exam.....

Ultrasound /Distended BLADDER

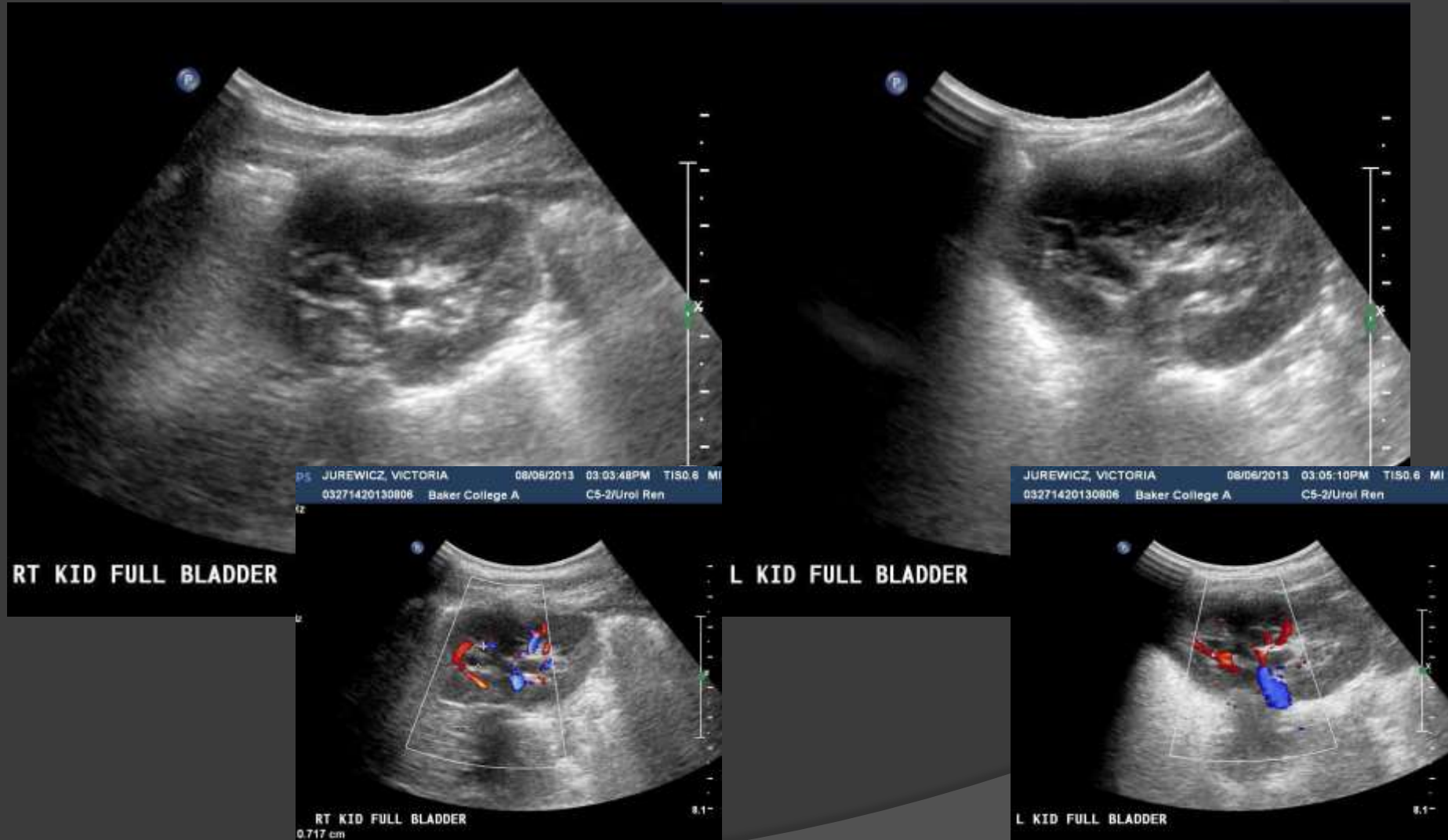


Bladder Volume calculated at 250 ml

Age appropriate bladder size calculated: *
 $[3 \text{ yr}] + 1 \times 30 = 120 \text{ ml}$

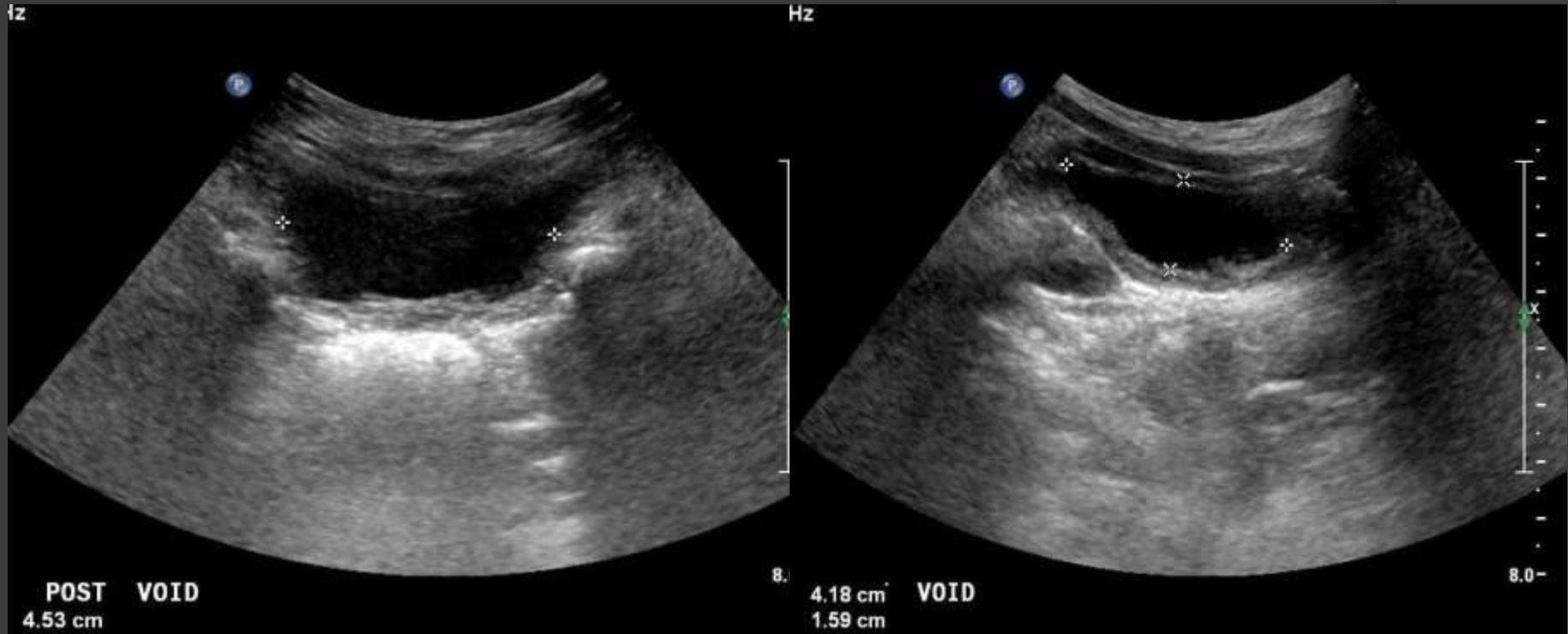
* Med J Australia 2005; 182 (4): 190-195

Renal images/ BLADDER distended



Mild Hydronephrosis at maximum bladder distention

Ultrasound exam / post void BLADDER



Post void bladder volume :30 ml
which is greater than 10% of maximum bladder volume *
Second Post Void was not successful after 20 minutes of trying

*- [J Urol.](#) 2009 Oct;182(4 Suppl):1933-8

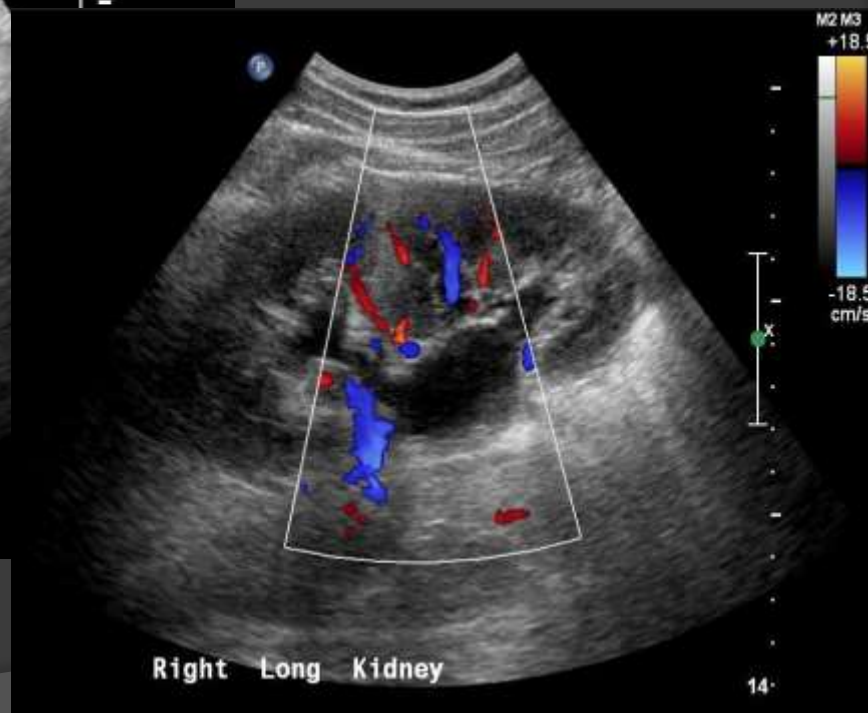
Clinical history Case Study 2

- ① 20 year old man without history of UTI
- ① Volunteered as patient for Ultrasound Students
- ① No symptoms when questioned
 - BUT FINALLY.....
- ① Admitted to occasional flank/back pain.
- ① Admitted infrequent need to void bladder
- ① Admitted bed wetting episodes until age 12
 - Evaluated by urologist and determined that there was nothing wrong.

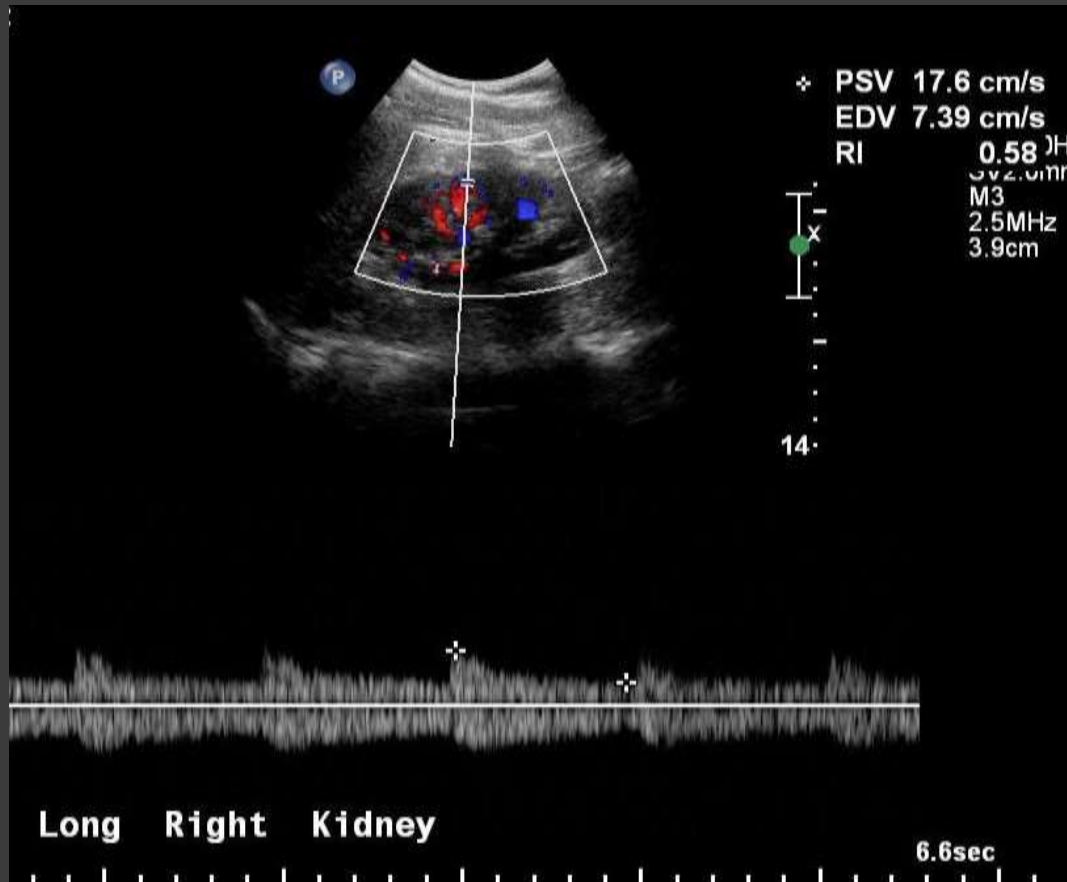
Ultrasound / RIGHT KIDNEY



Kidney Length 11.7cm



Ultrasound / RIGHT KIDNEY



Resistive Index .58

Ultrasound / Left KIDNEY



Kidney Length 14.2cm



Ultrasound / Left KIDNEY

Dual Collection system



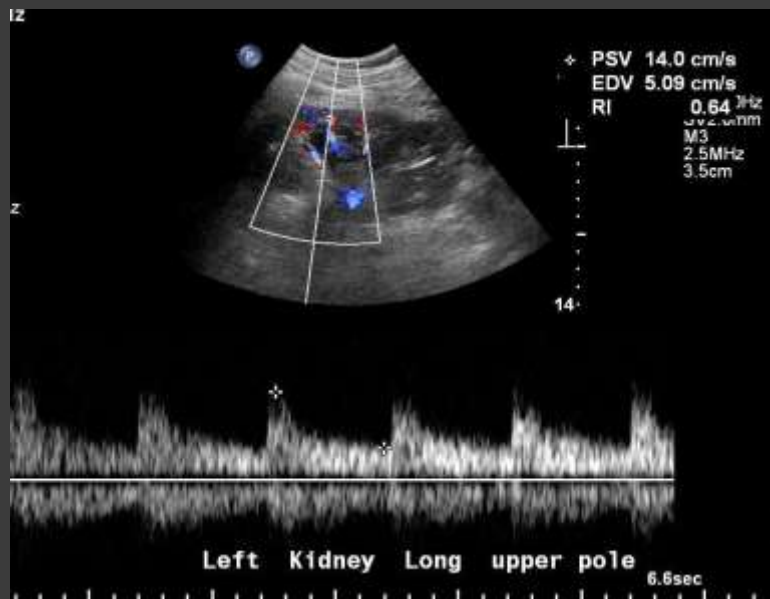
FR 28Hz
RS

2D
50%
C 55
P Low
HPen

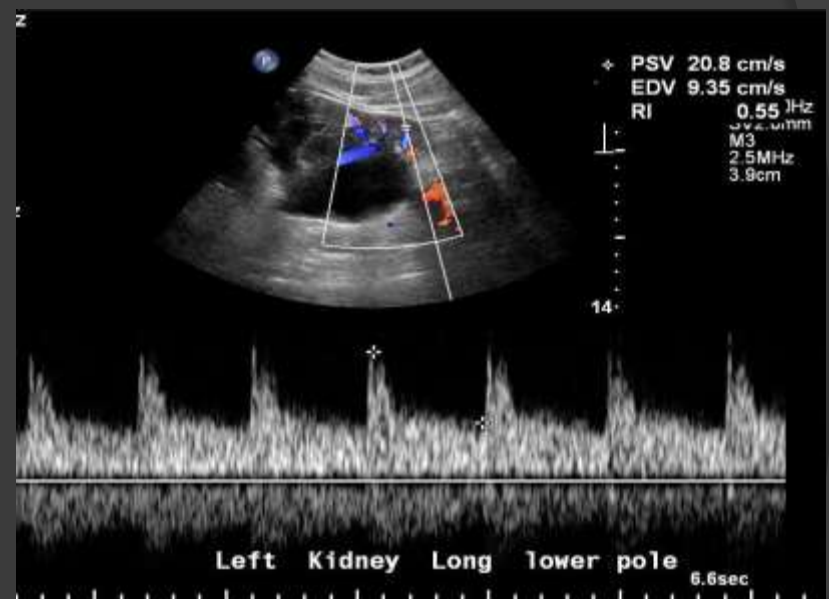
✦ Dist 6.94 cm
✦ Dist 3.60 cm



Ultrasound / Left KIDNEY



Resistive Index .64



Resistive Index .55

PREVOID BLADDER



Bladder Volume 589 ml

Dual left jets

Post void bladder and Hydro



Bladder
volume 38.4 ml

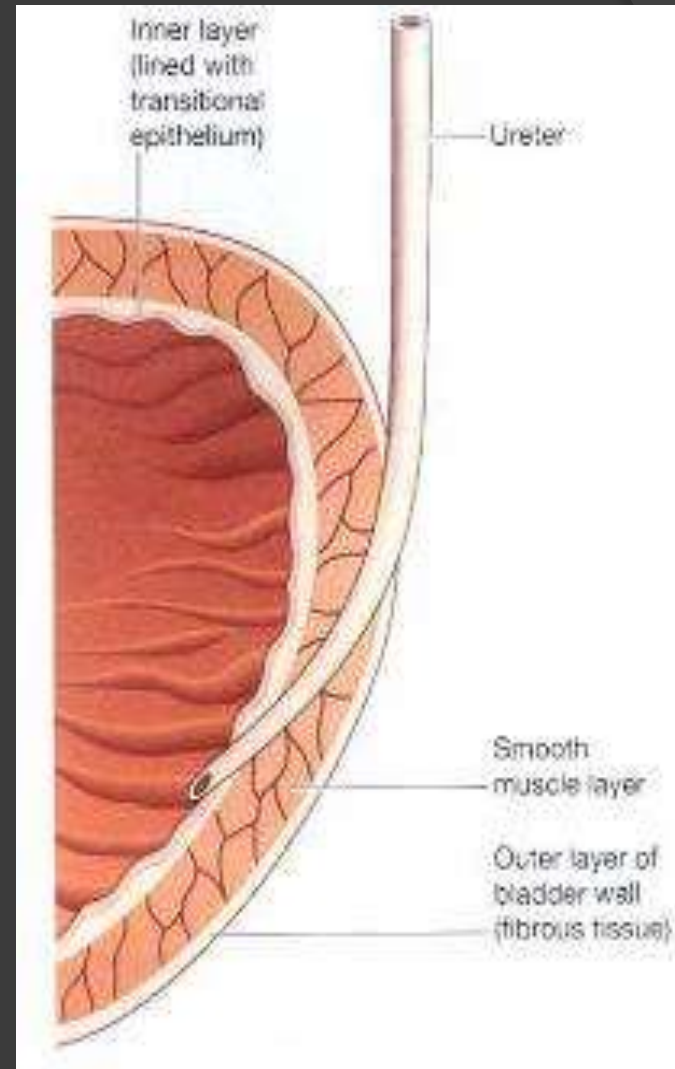


**Most cases of VUR are
PRIMARY**

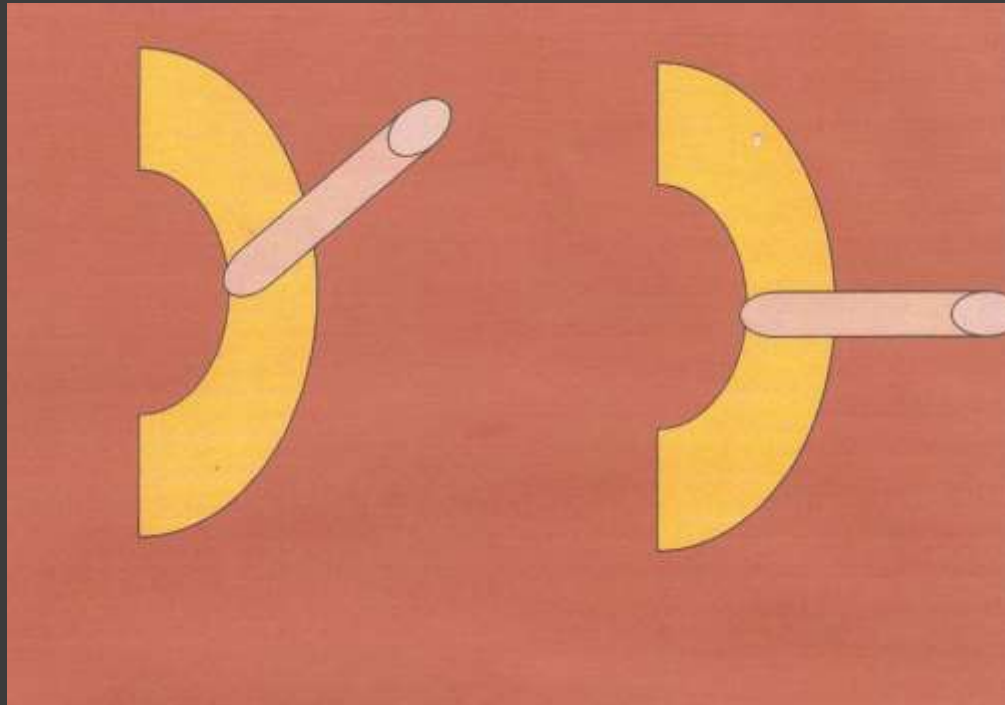
**ureter did not grow long
enough during Fetal
development.**

**Intramural and Submucosal
segment of the ureter is not
long enough to close during
bladder distention**

**This type of VUR can get better
or disappear as a child gets
older. As a child grows, the
ureter gets longer and function
of the valve improves.**

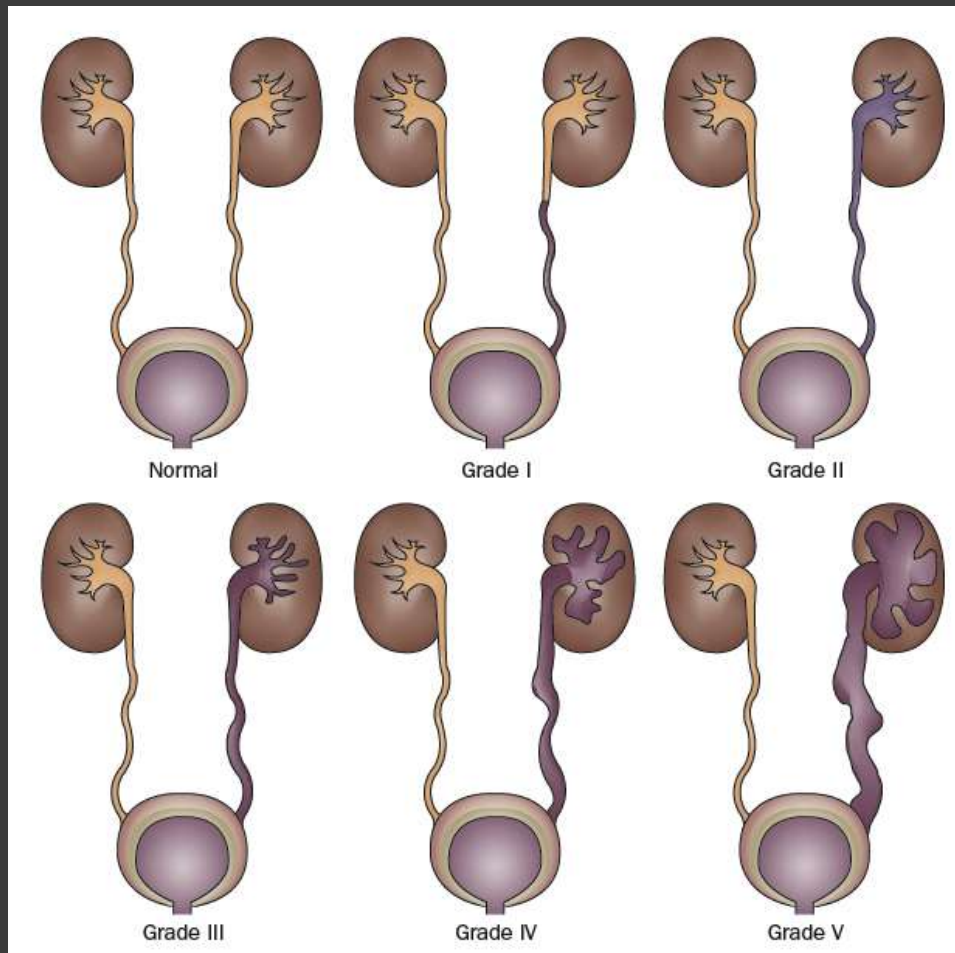


Angle of Bladder / Ureter



The effectiveness of valvular function is dependent on the length of the distal ureteral that lies within the bladder wall: a shorter intramural–submucosal segment increases the likelihood of VUR.

VUR Stages



Diagnostic Testing

- The primary diagnostic procedure for evaluation of VUR is a
- voiding cystourethrogram requiring bladder catheterization



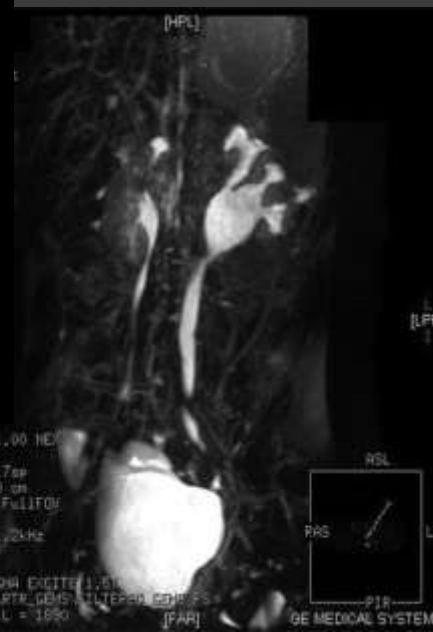
Other Testing for VUR



Nuclear Medicine

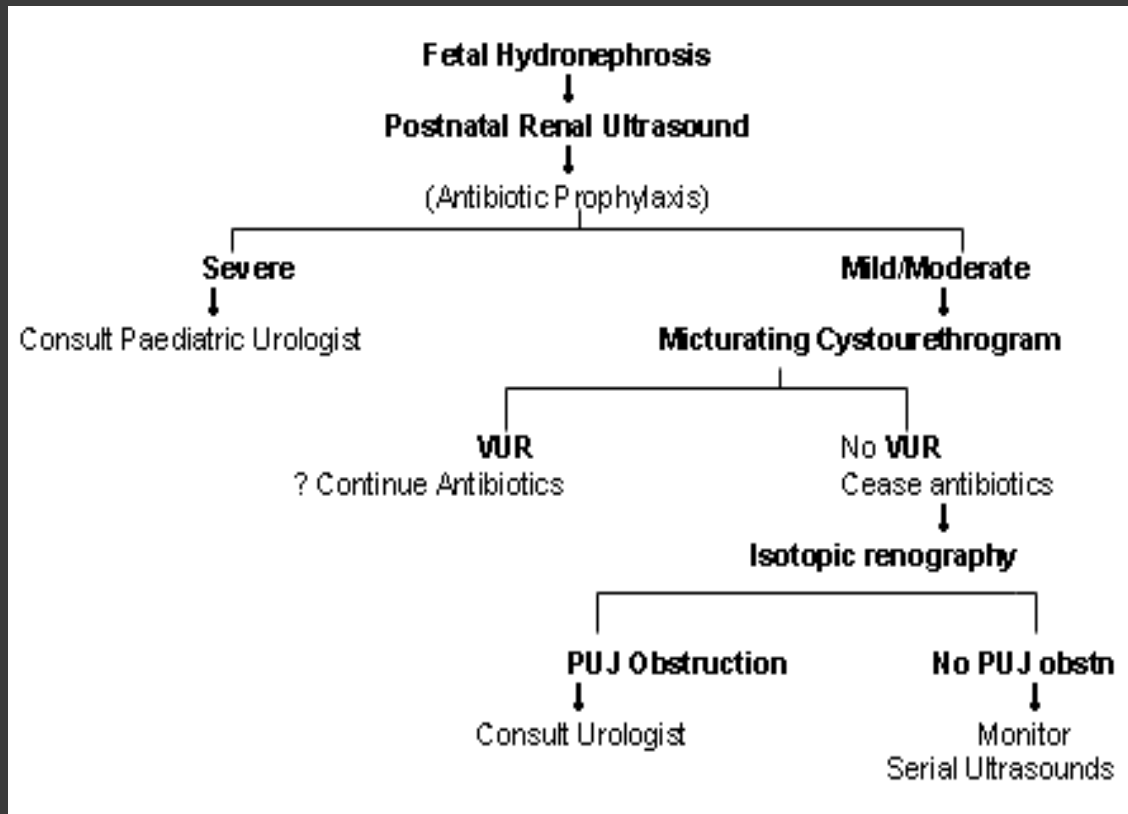


Ultrasound



MRI

Fetal Hydro – First Sign



Prevalence

- VUR is present in more than 10% of the population.
- In children without urinary tract infections 17.2-18.5% have VUR
- Those with urinary tract infections the incidence may be as high as 70%

Age

- Younger children are more prone to VUR due to ureter length
- This decreases with age as ureter length grows
- Children under the age of 1 year with a urinary tract infection, 70% will have VUR
- This number decreases to 15% by the age of 12

Treatment and prognosis

- If reflux is unrecognized patients are likely to develop recurrent UTI
- Infections can result in renal scars and eventually renal failure
- Prophylactic antibiotic treatment in low grades and surgical reimplantation in higher grades are aimed at reducing the risk of scarring and reflux nephropathy