# Ped Urology Review

## ANH and GU anomalies

Surgery 453
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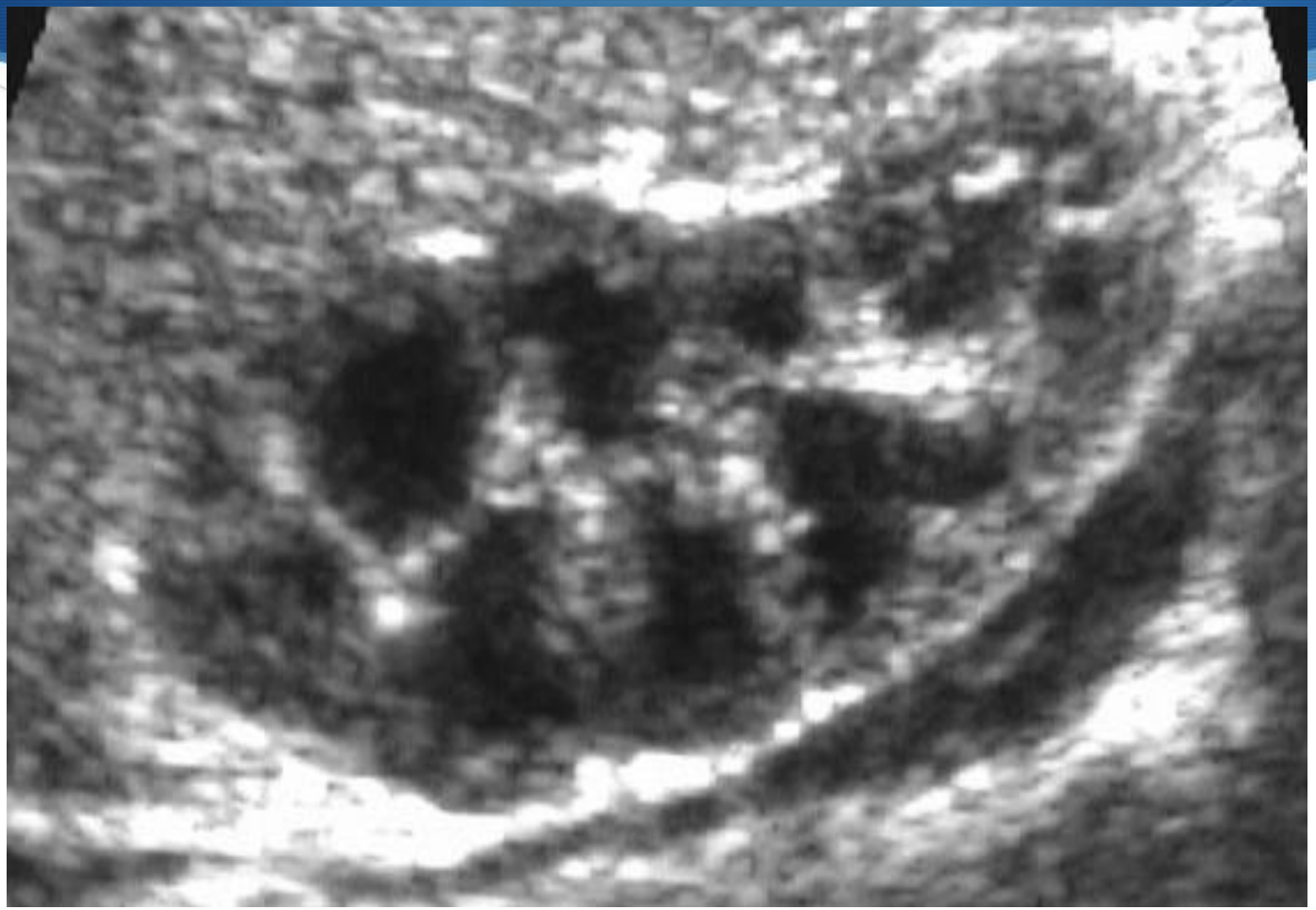
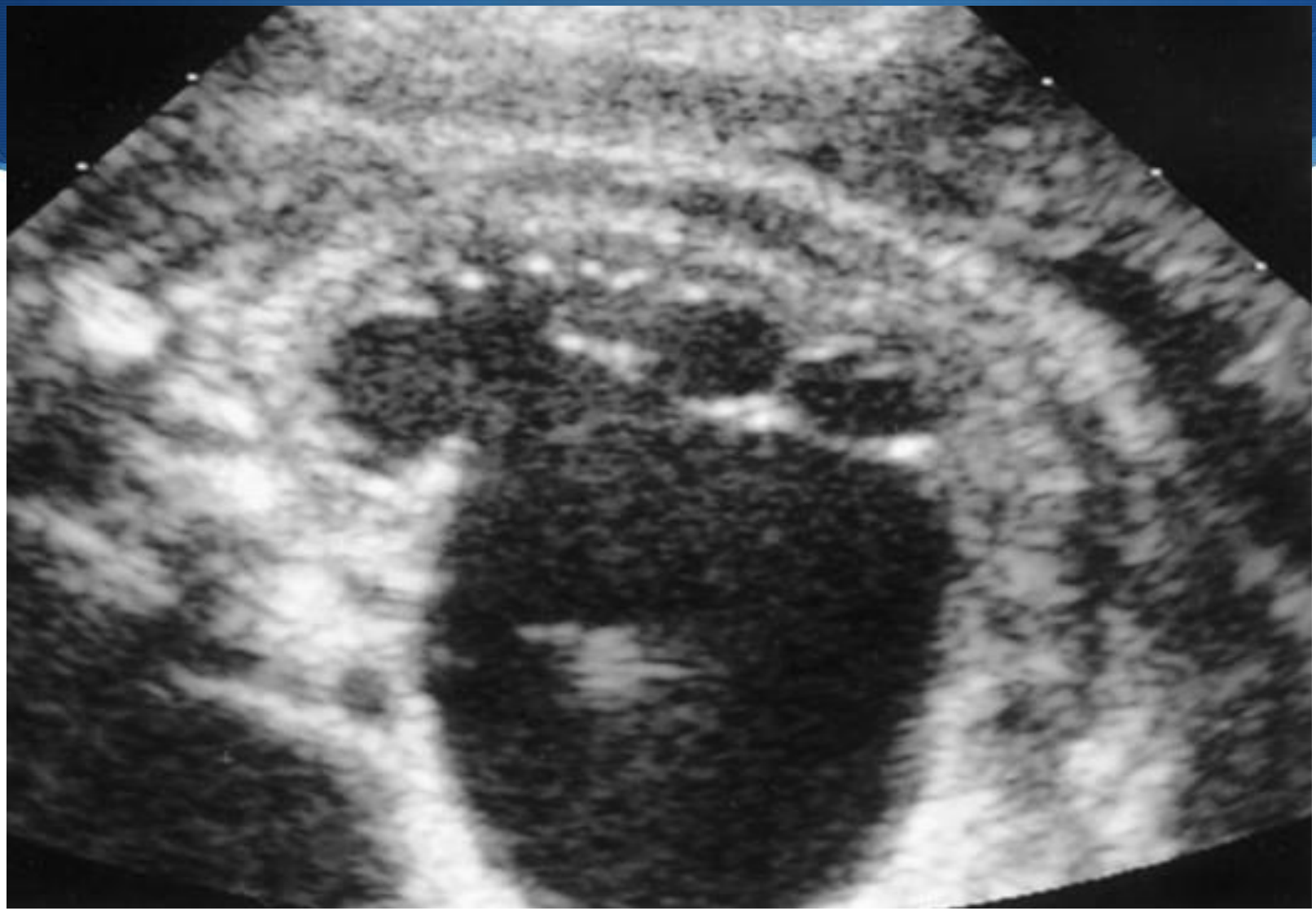
# Antenatal Hydronephrosis

- Def of hydronephrosis?
- Antenatal ?

# Normal Antenatal Renal US





- You have 2 days old boy diagnosed bilateral hydronephrosis on antenatal US, what the possible causes?

- If this was unilateral , what are the possible causes?

# POSTNATAL EVALUATION AND MANAGEMENT

**History**

- Maternal health
- Maternal PMHx & FmHx: GU anomalies, course of pregnancy, DM, Meds
- Previous pregnancies: siblings w/ VUR, hydro
- Gender of the child
- Voiding ( 1st void , straining, wetting the diaper)
- EtOH, drug use

# Pre-natal U/S

- Gender of fetus
- Single vs. multiple
- AF volume
- Kidneys: degree of hydro, variation in hydro b/w exams, unilateral/bilateral hydro.
- Ureters: hydroureter
- Bladder: presence, fullness, size, thickness, emptying
- Urethra: dilated posterior urethra
- Other abnormalities
- Overall growth and development

# Oligohydramnios

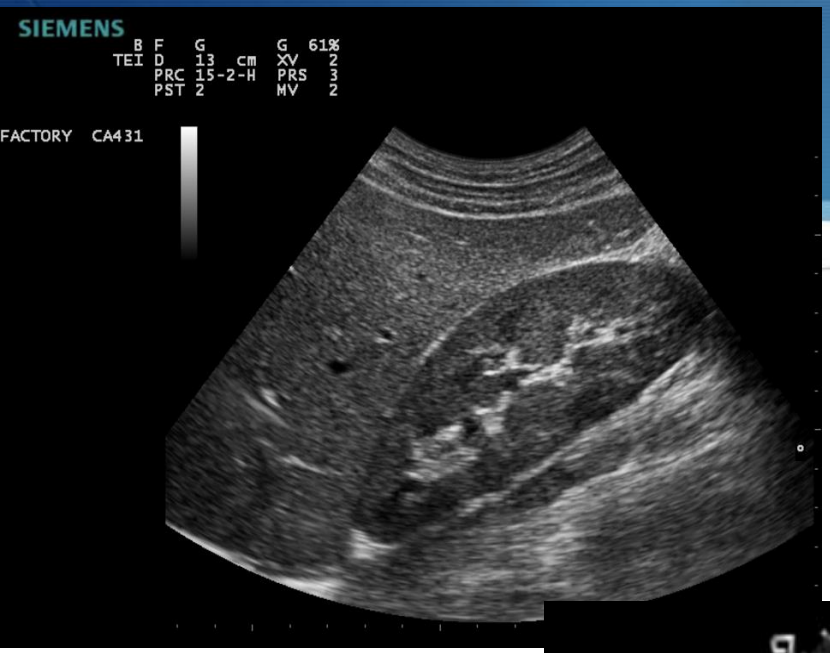
- OLIGOHYDRAMNIOS = amniotic fluid <500cc (pocket <2cm)
- Before 16-18 wks, most of AF is a placental transudate
- By 20-22 wks, most of AF is fetal urine (urine production starts at ~12 wks)
- oligohydramnios that develops only after 18-20 weeks likely represents GU tract obstruction or abnormal renal development.

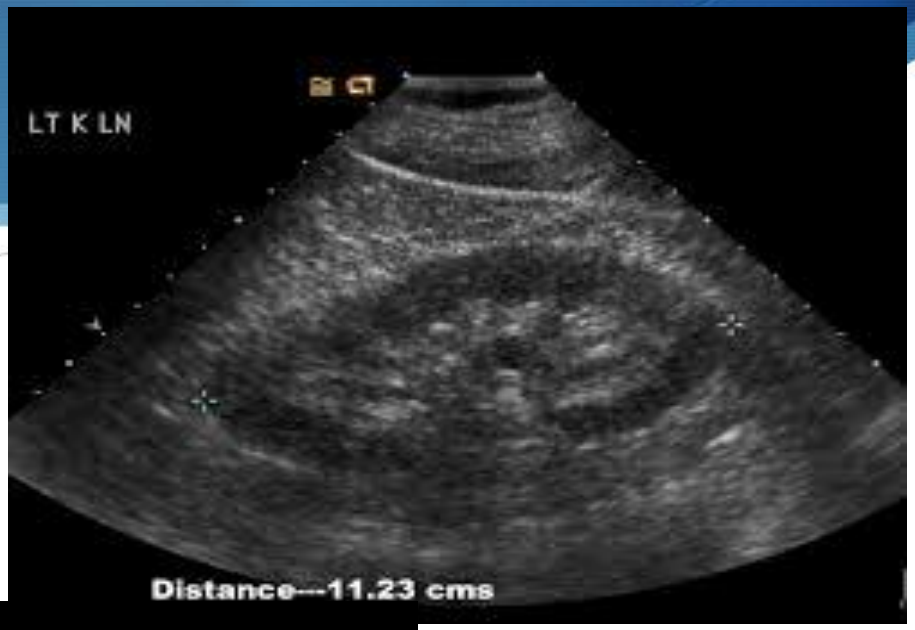
# Investigations

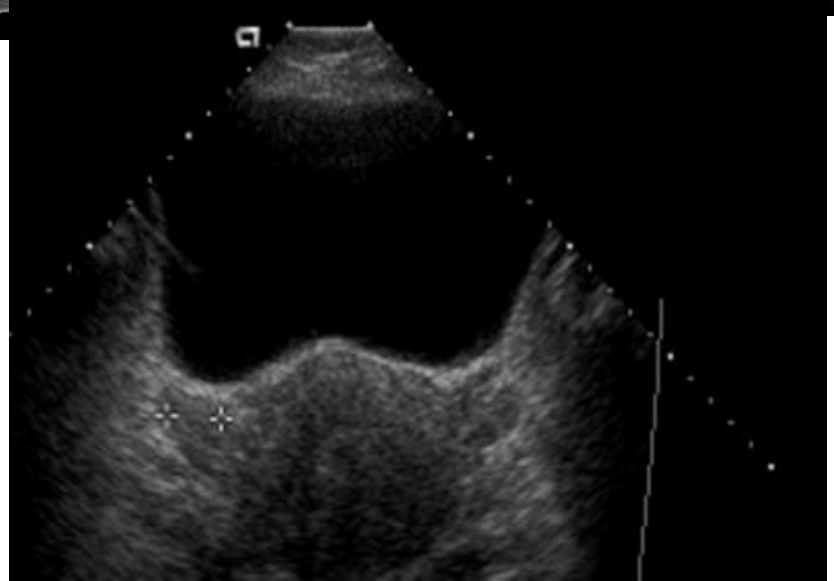
- US
- VCUG
- Nuclear scan

**No IVP**

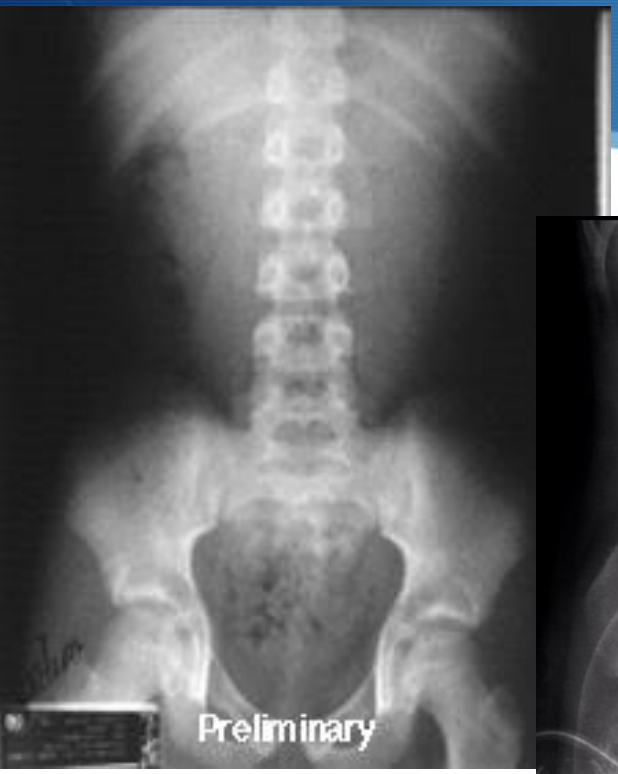
# Normal Renal & Bladder US

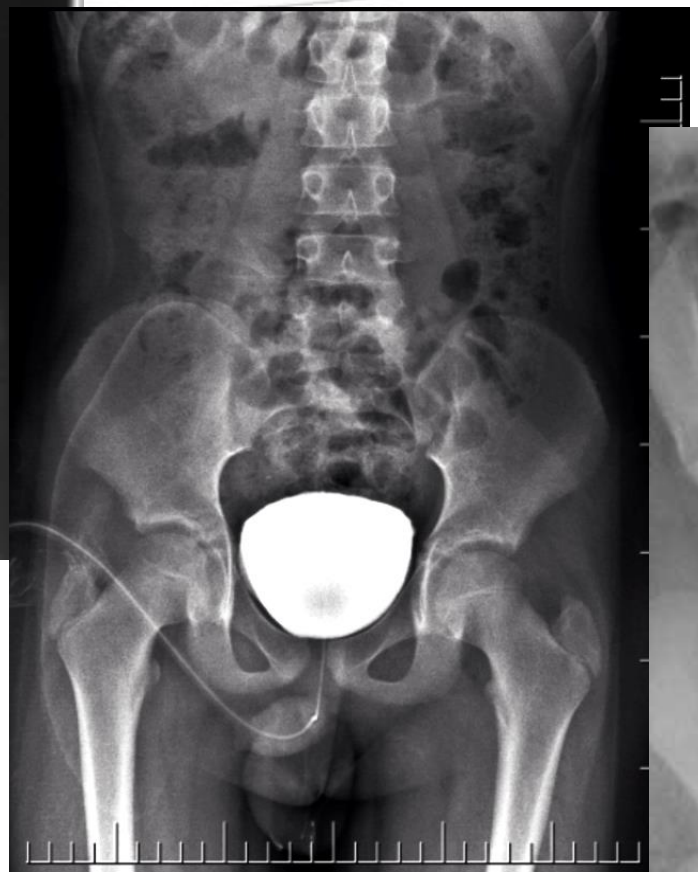


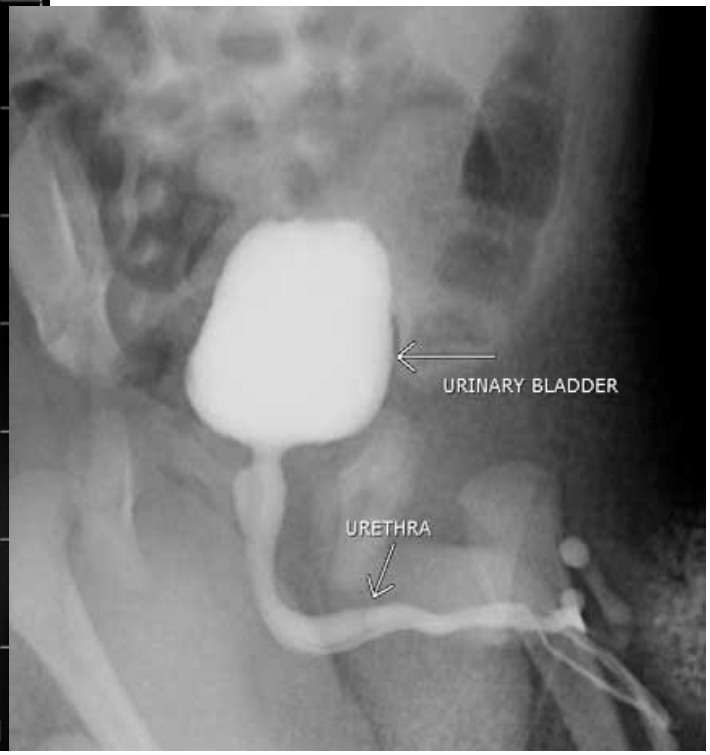



# Voiding cystourethrogram (VCUG)

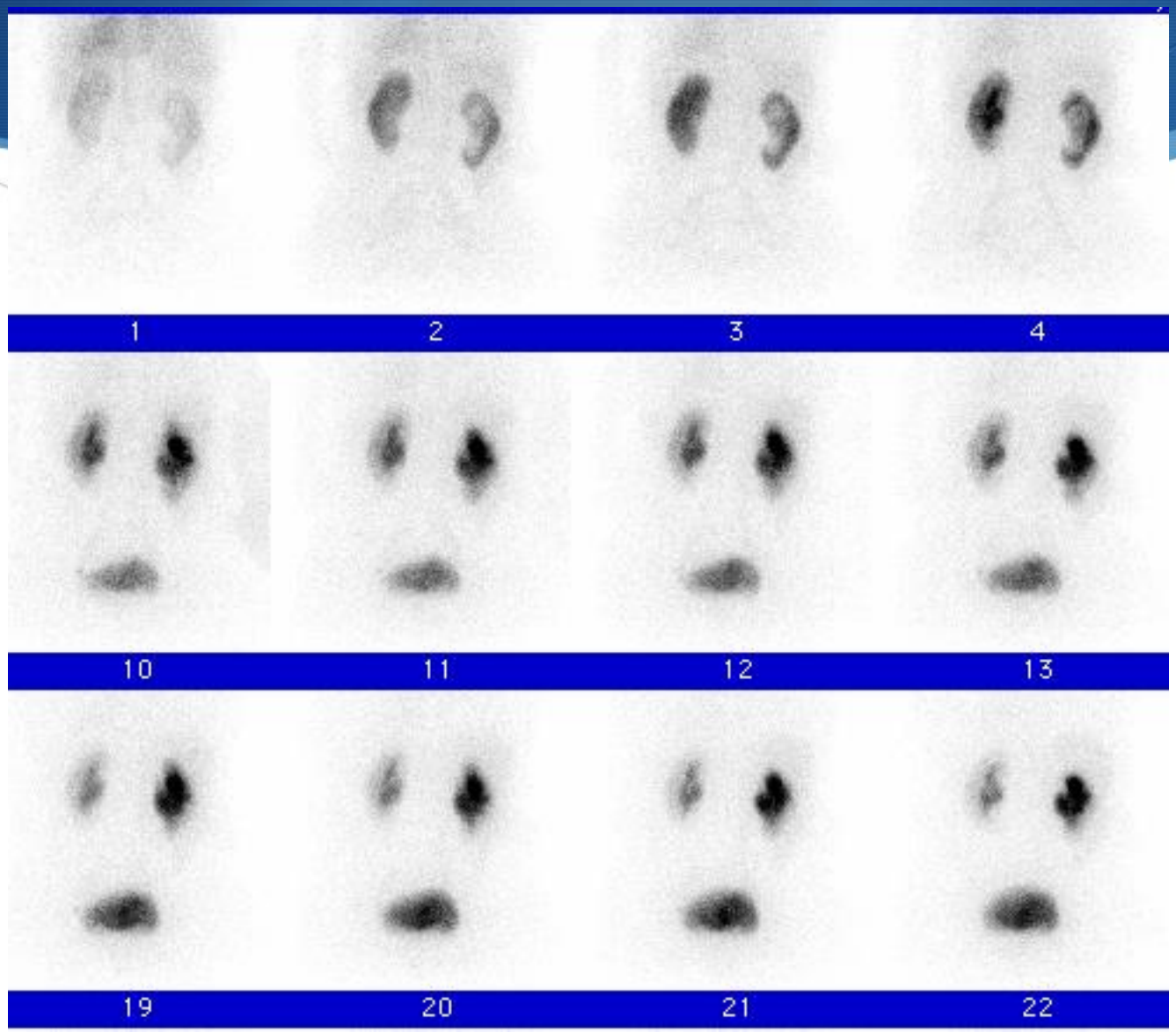


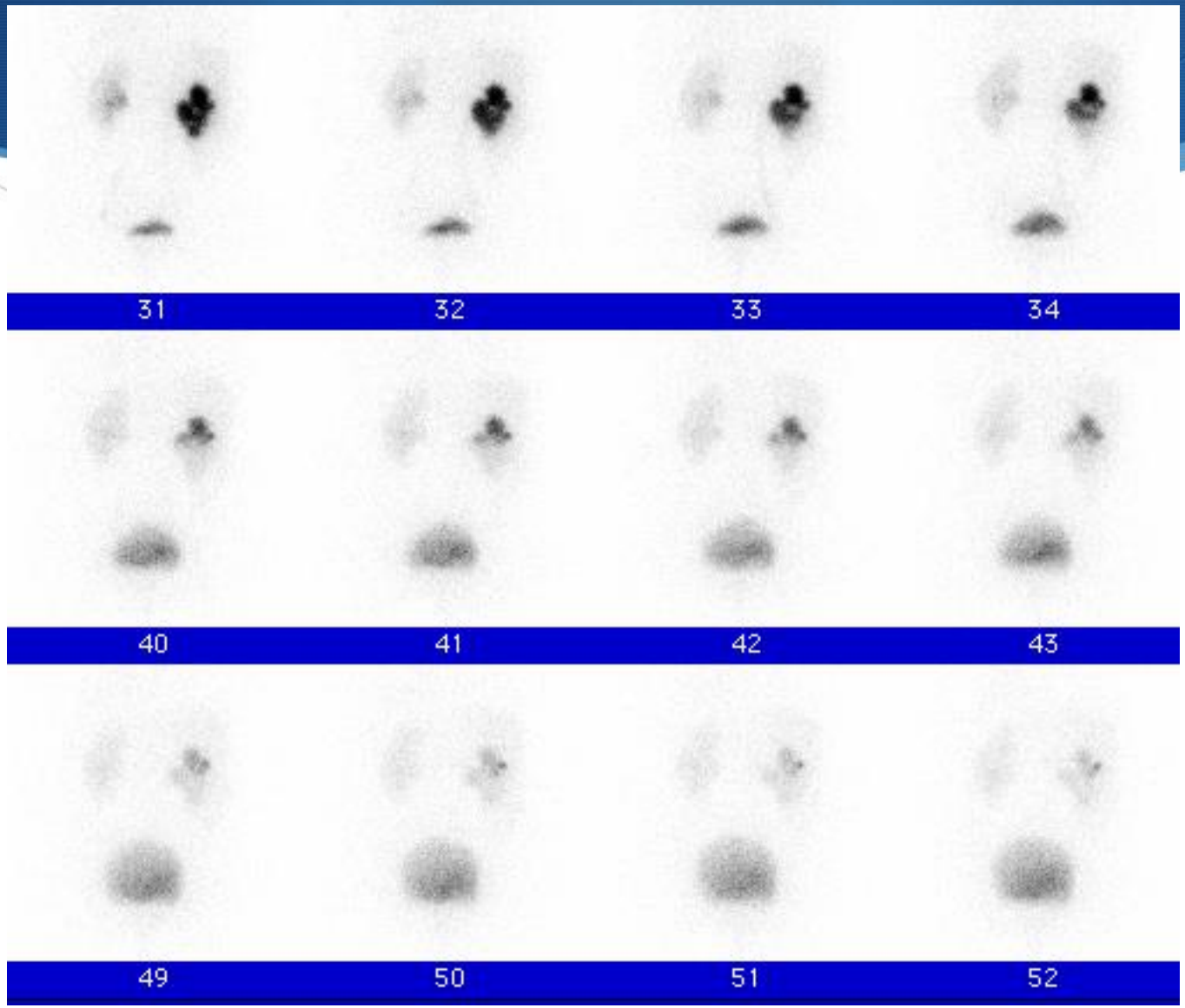


# Diuretic renal scan

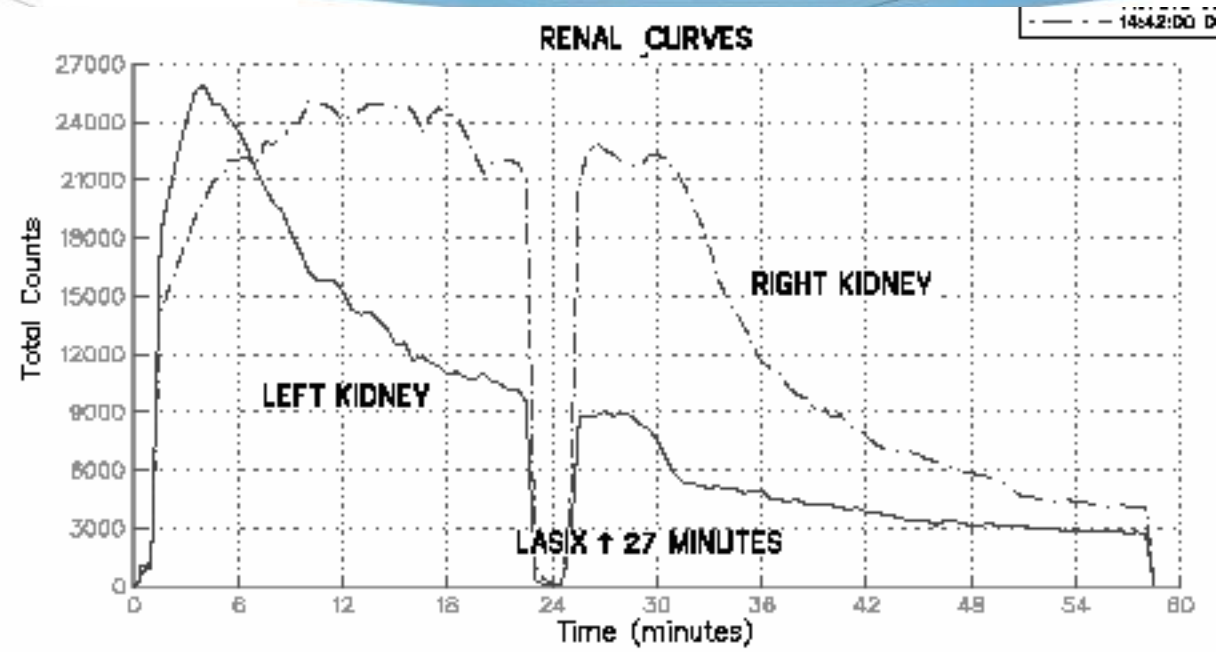
# pre-Lasix



# post-Lasix



# No UPJ obstruction




**T1/2**
**R = 6'**
**L = 2'**

# Post natal workup

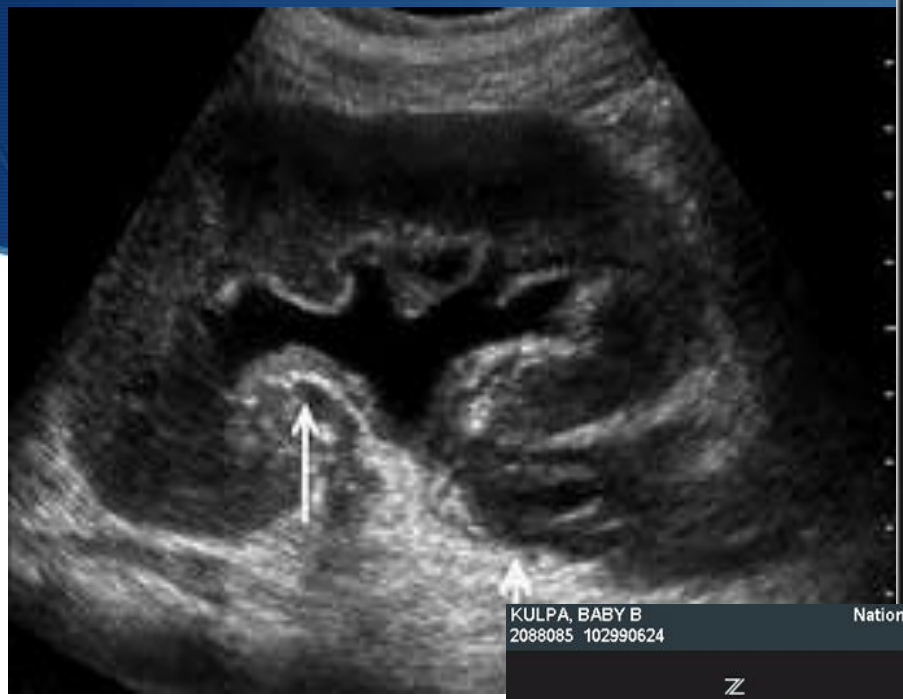
Post-natal

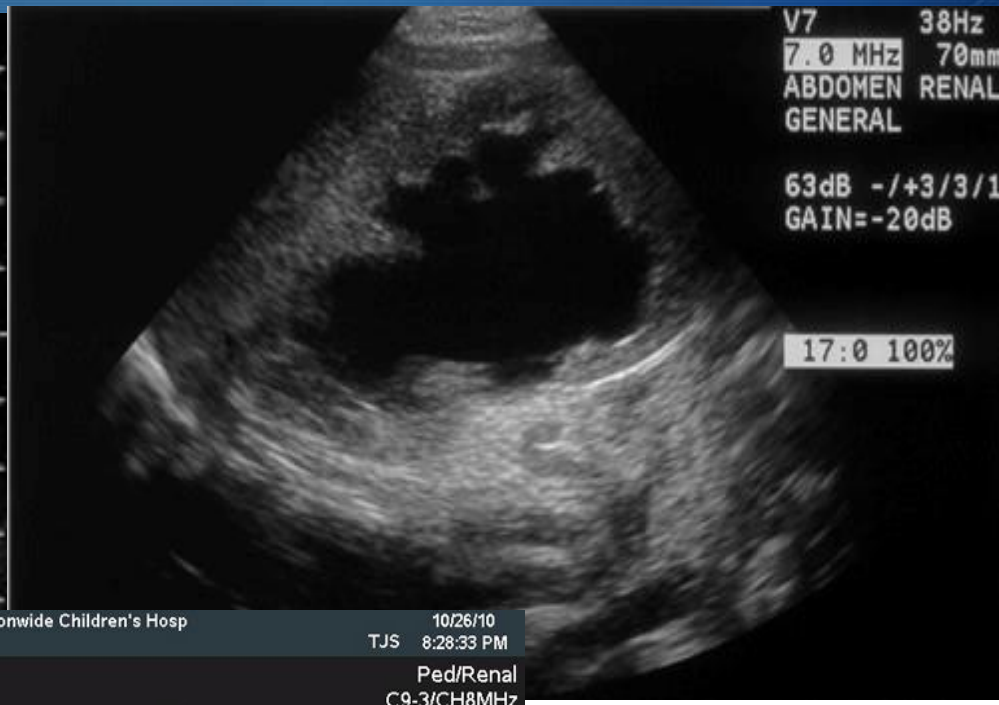
- Observe child voiding.
- Serum Cr. (When and why?)
- Prophylactic antibiotic.
- Repeat US +/- VCUG or nuclear scan .

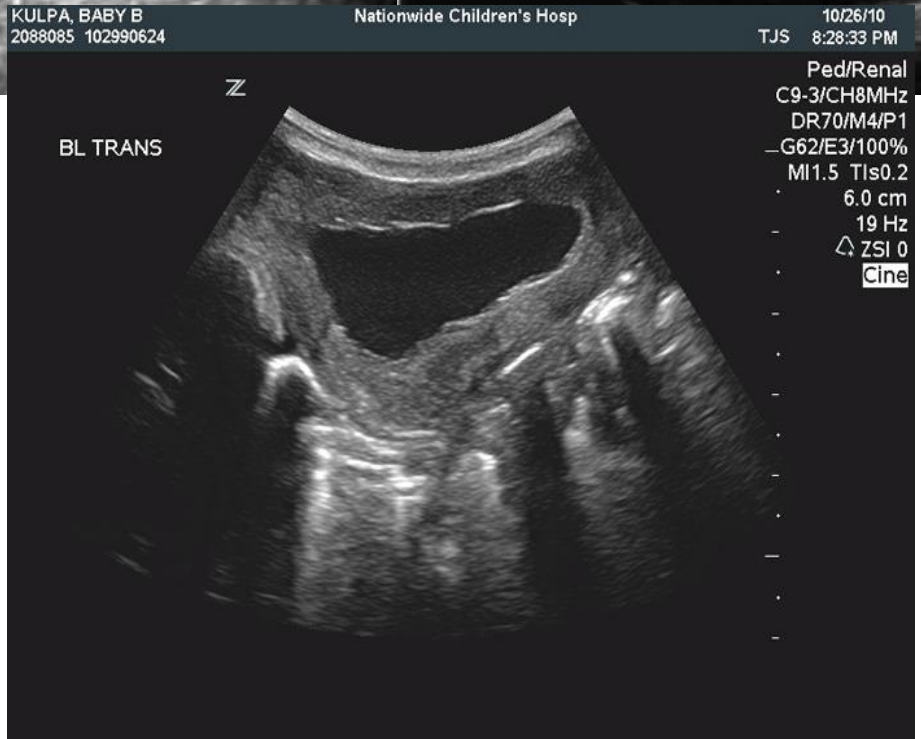
- Divide your self in 3 teams , each team will be responsible for a case scenario.

# Case 1

- 2 days old term boy (SVD), found to have bilateral hydronephrosis on antenatal US?
- What are the possible causes ?
- How would you manage this case?




V7 38Hz
7.0 MHz 70mm
ABDOMEN RENAL
GENERAL
63dB -/+3/3/1
GAIN=-20dB
17:0 100%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2088085 102990624
Nationwide Children's Hosp
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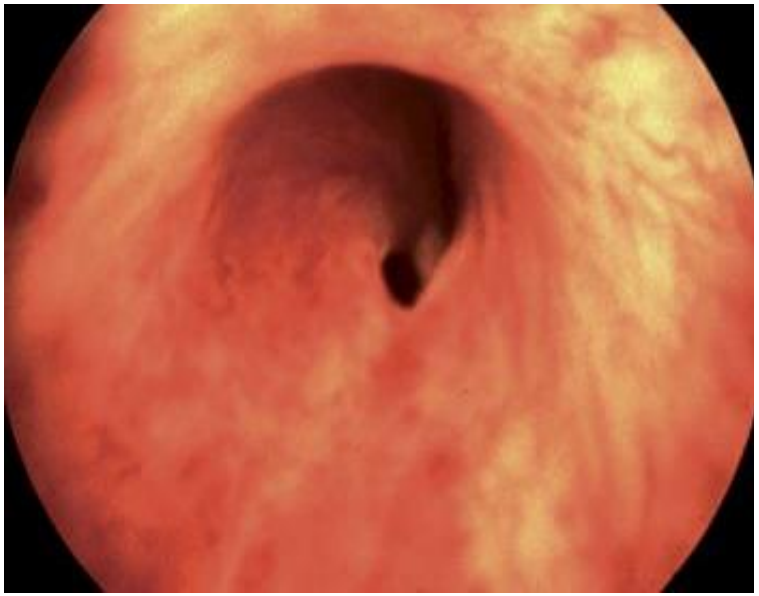
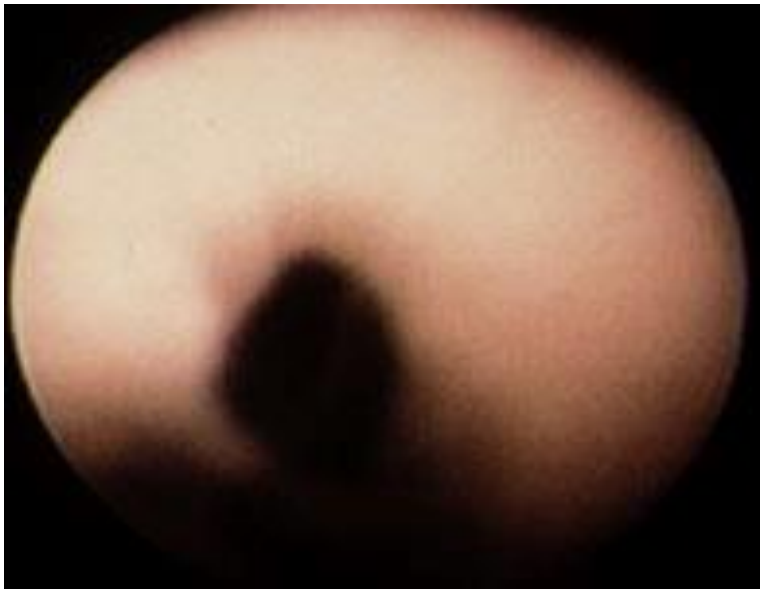
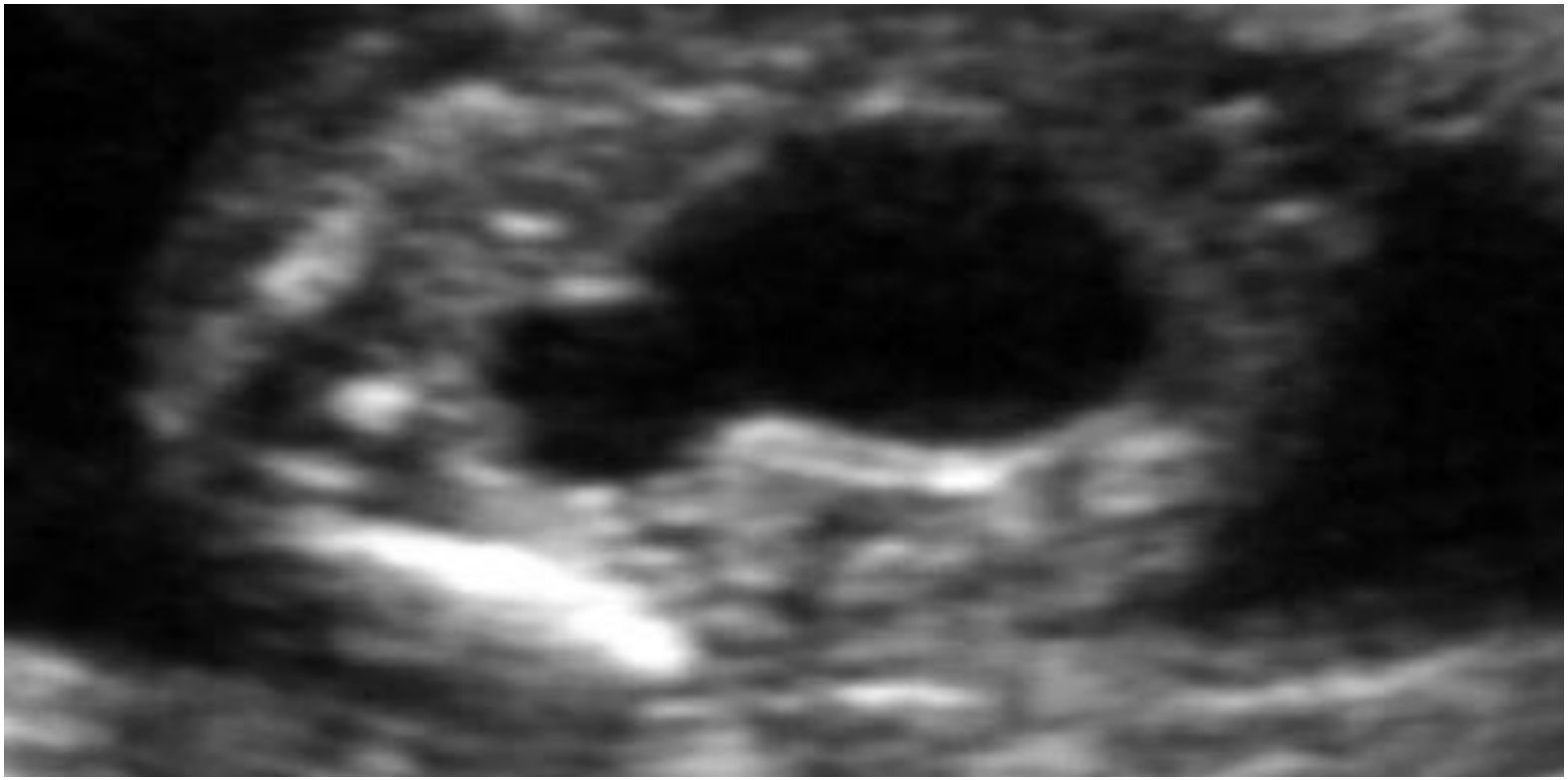
TJS 8:28:33 PM
BL TRANS
Ped/Renal
C9-3/CH8MHz
DR70/M4/P1
G62/E3/100%
MI1.5 TIs0.2
6.0 cm
19 Hz
ZSI 0
Cine

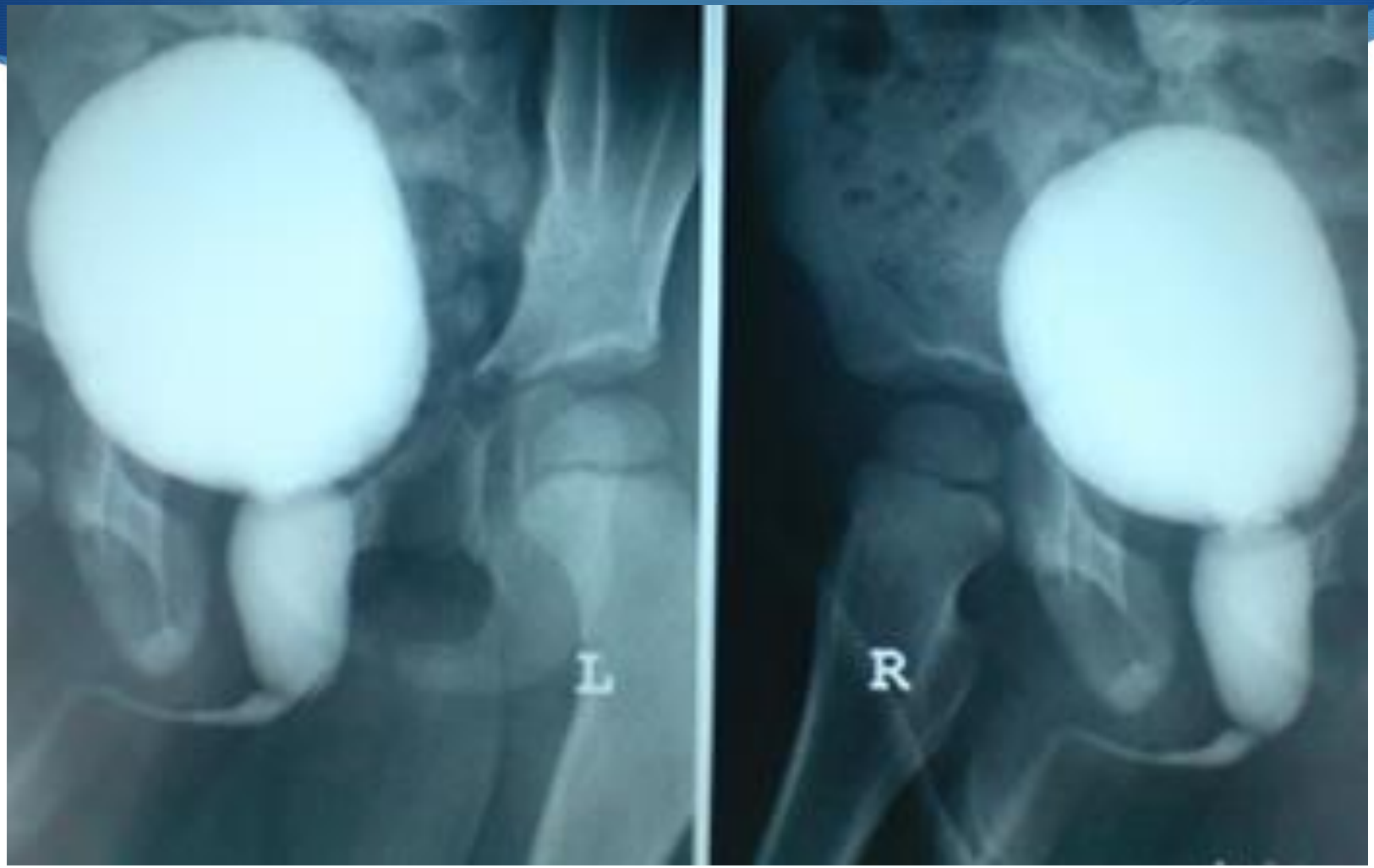
# Posterior urethral valve (PUV)

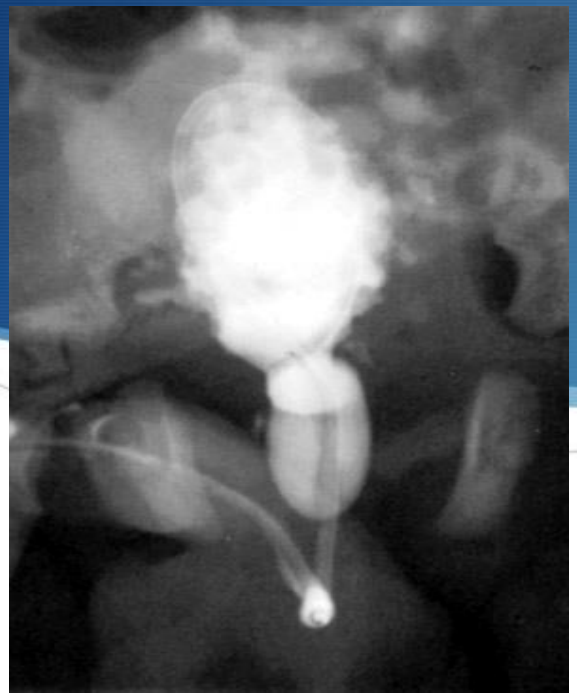
- **congenital obstructive membrane** in posterior urethra that impedes antegrade flow of urine.
- occurs in 1 in 8,000-25,000 live male births.

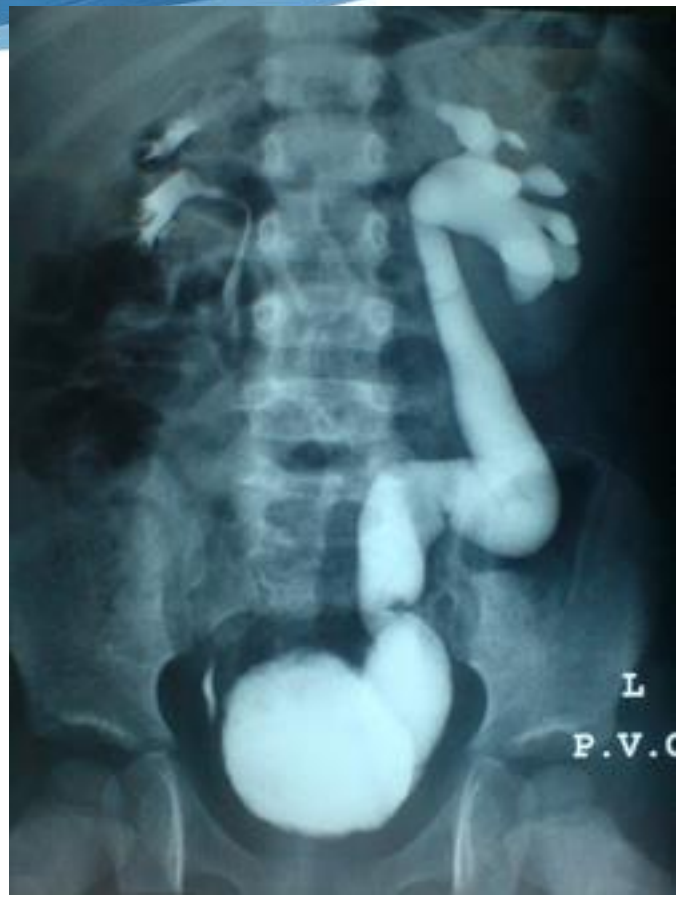







L
R




L
P.V.C

# Initial Management of PUV

1) **1ST step of management :** Bladder drainage (permits medical stabilization)

2) Effective NICU support for issues with pulmonary hypoplasia & renal insufficiency

3) Lab investigations

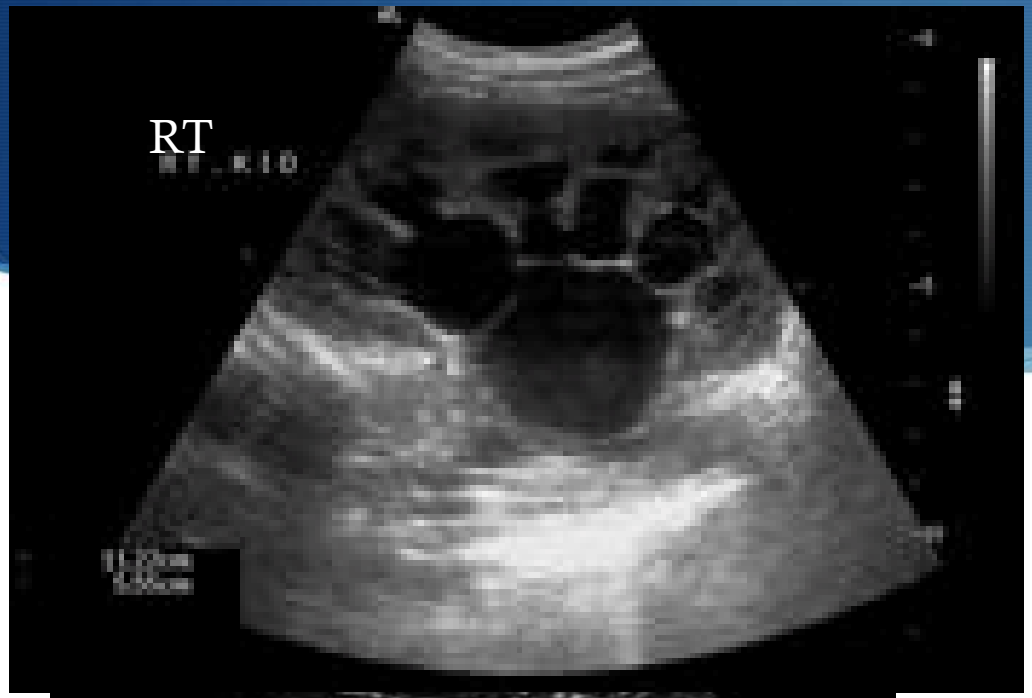
   - Electrolyte, creatinine , BUN: may take 48hrs to be accurate.

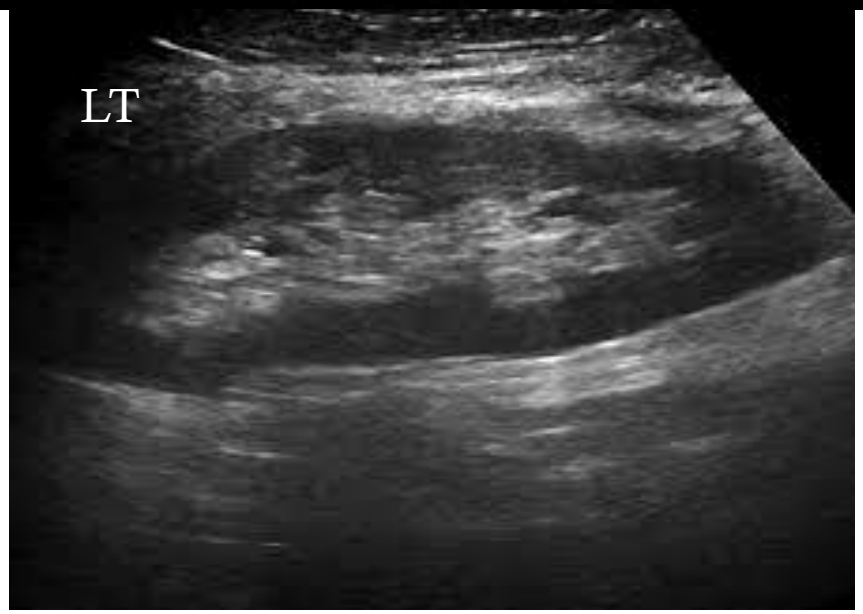
4) Prophlactic Abx.

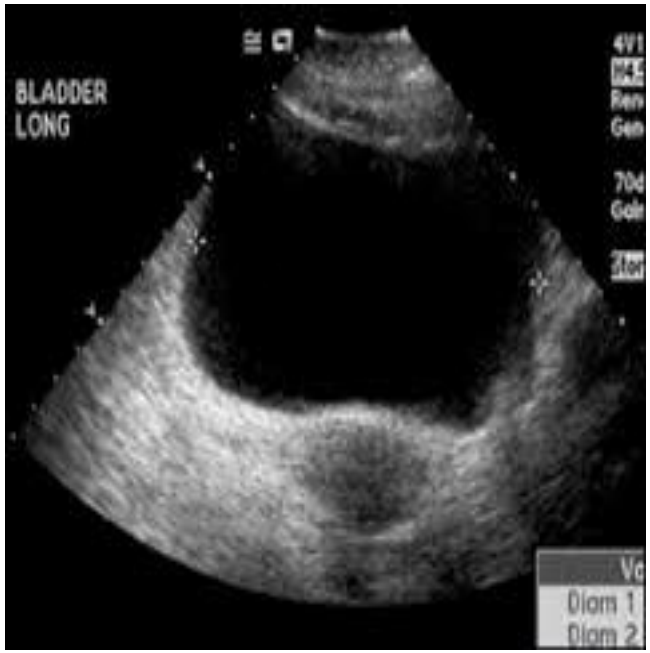
5) **Cystoscopy and Valve ablation**. (Definitive treatment)

# Case 2

- 5 days old boy with unilateral hydronephrosis diagnosed on antenatal US.
- What is the possible causes ?
- How would you approach this case?

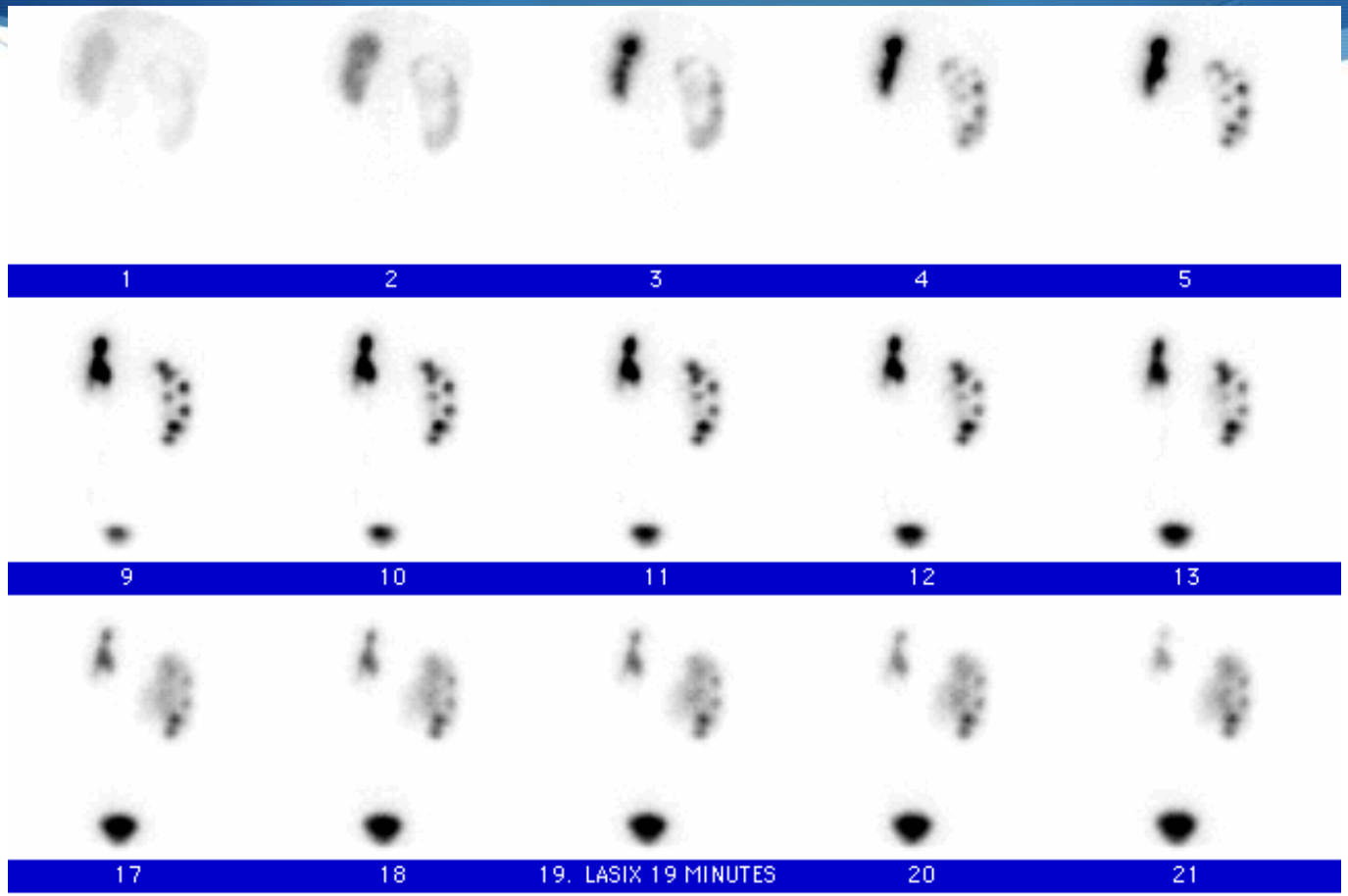

RT


LT

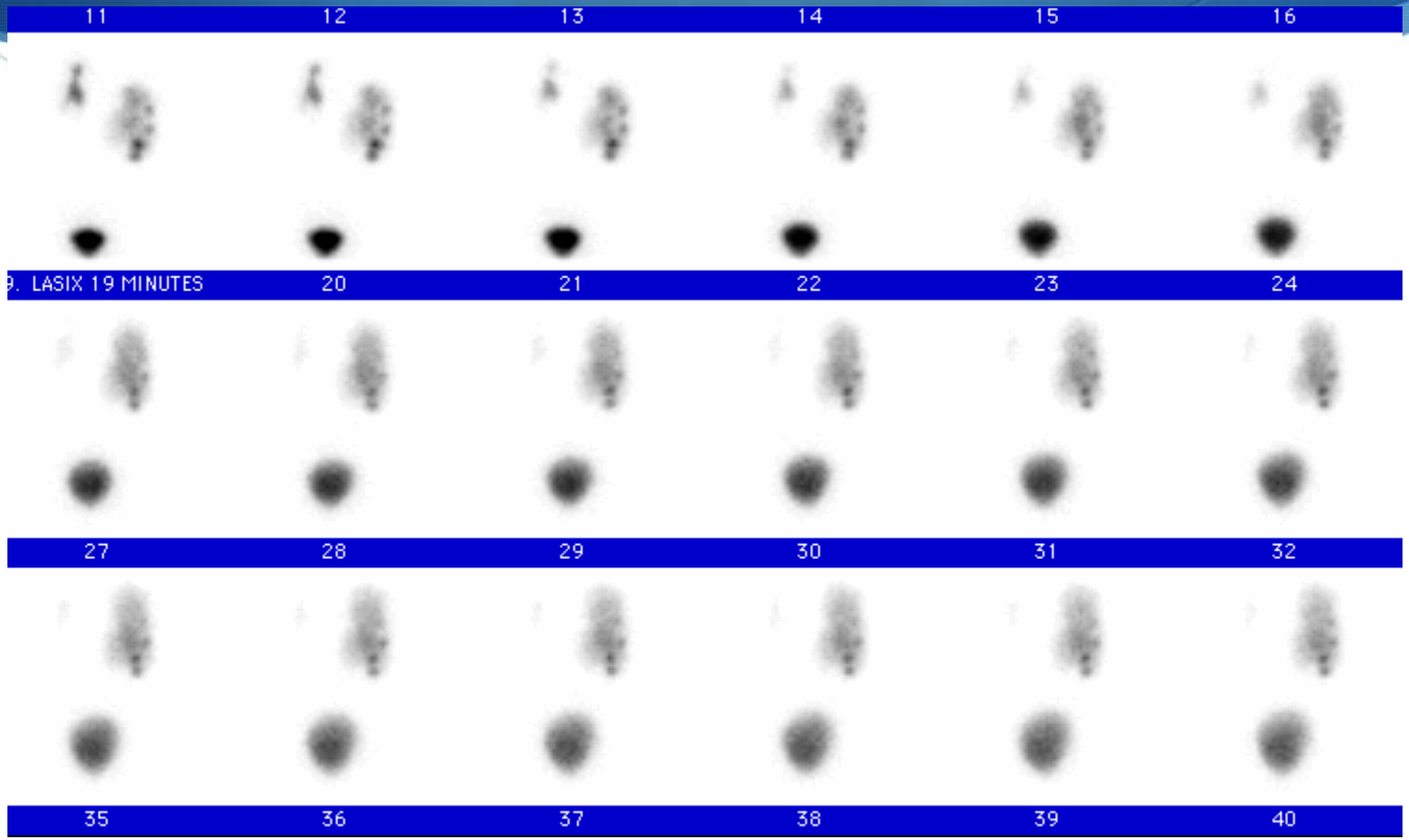

BLADDER
LONG
Diam 1
Diam 2

# WHAT IS NEXT?

# Pre-Lasix



# Post-Lasix


11
12
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16
LASIX 19 MINUTES
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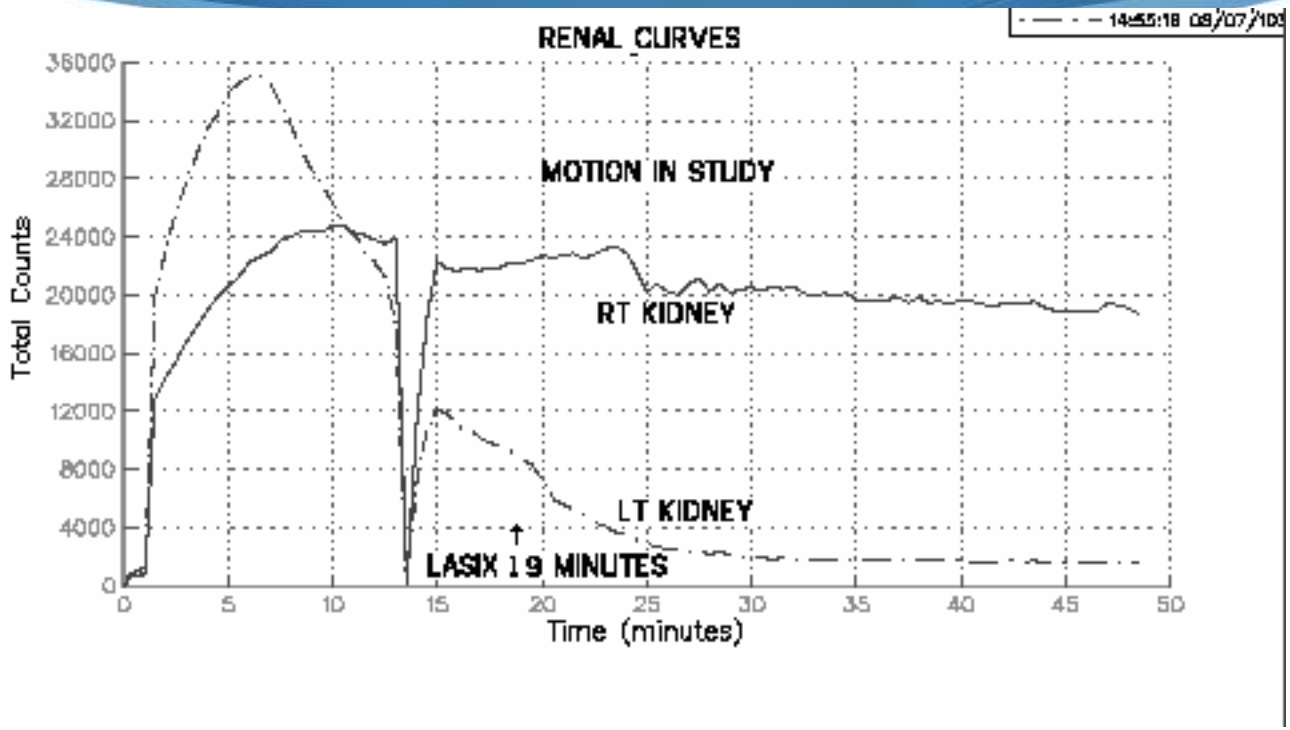
40

# Rt UPJ obstruction

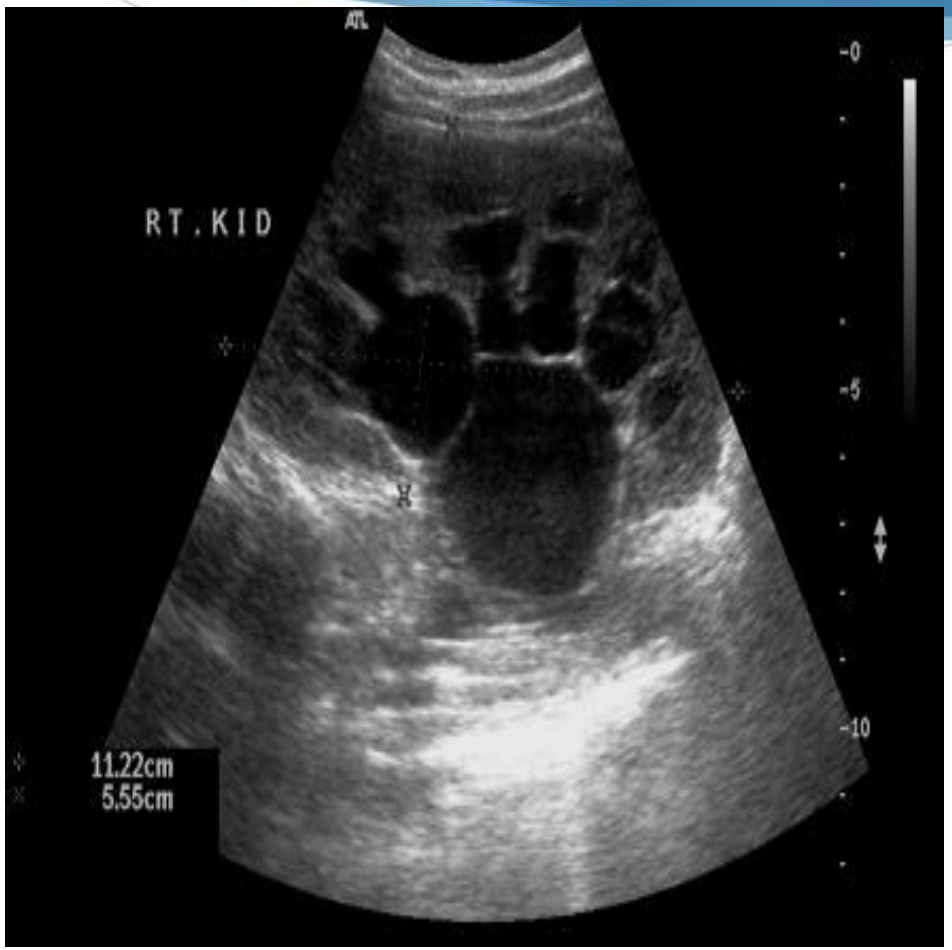


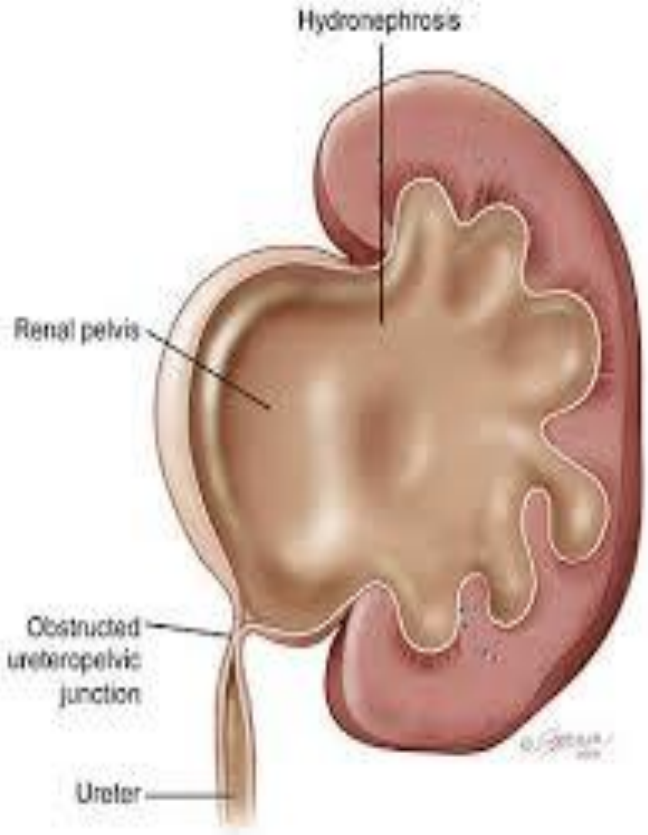

**T1/2**
**R = N/A**

# Ureteropelvic Junction Obstruction

- **Most common cause of UNILATERAL hydro in fetal kidney (~50%)**

- More common in Males, **Lt> Rt.**

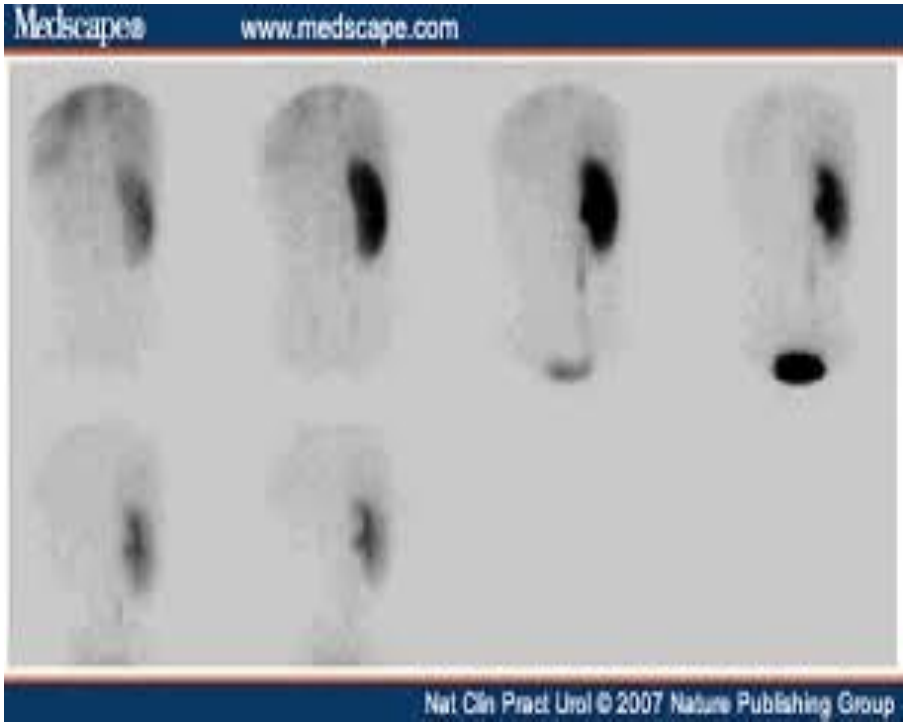

RT.KID
11.22cm
5.55cm


Hydronephrosis
Renal pelvis
Obstructed ureteropelvic junction
Ureter

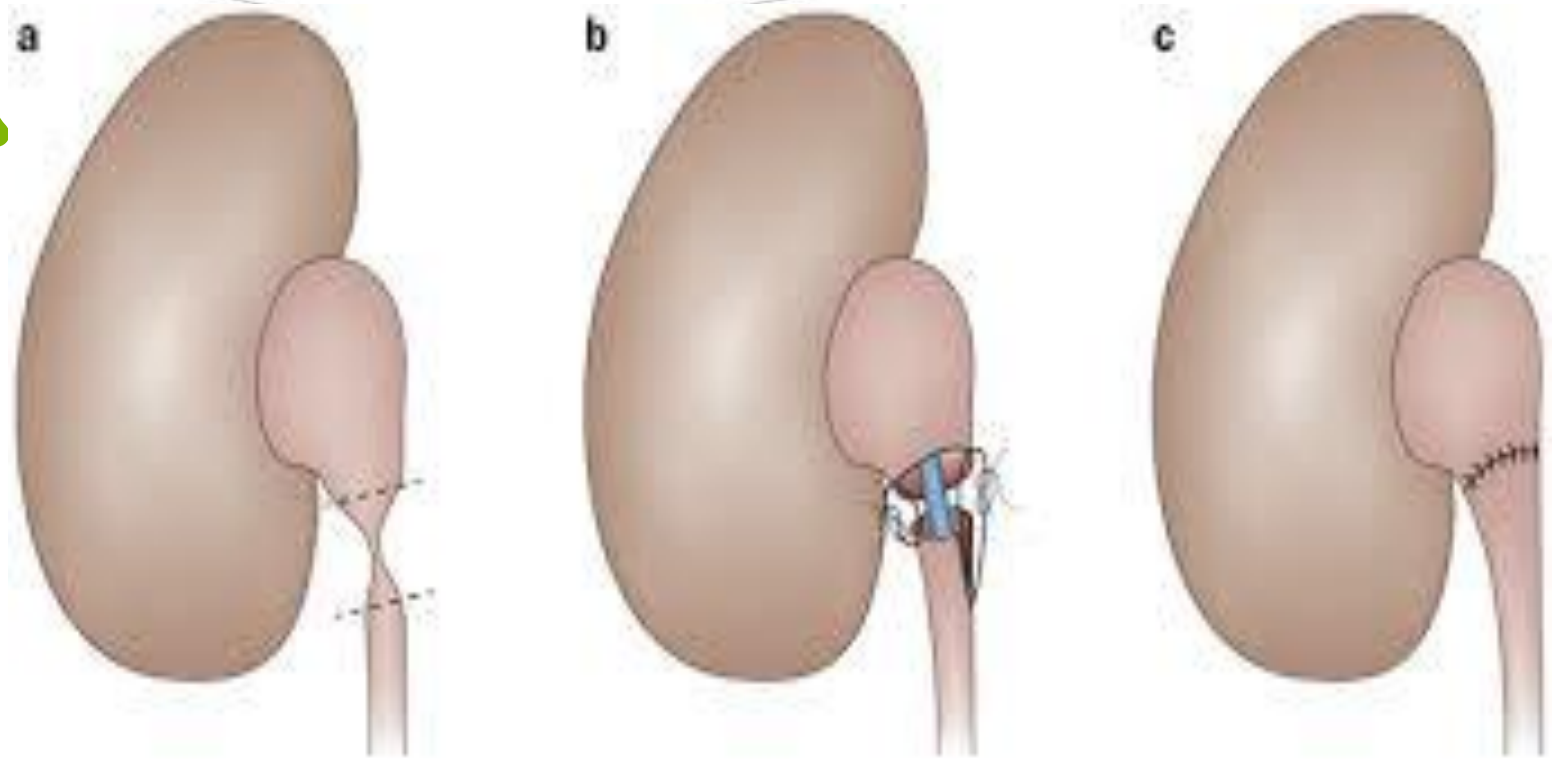
# Work-up

- No need for urgent intervention unless baby develops pyelonephritis (nephrostomy tube or stent).
- Repeat US.
- Diuretic renal scan

  ( MAG3 or DTPA)

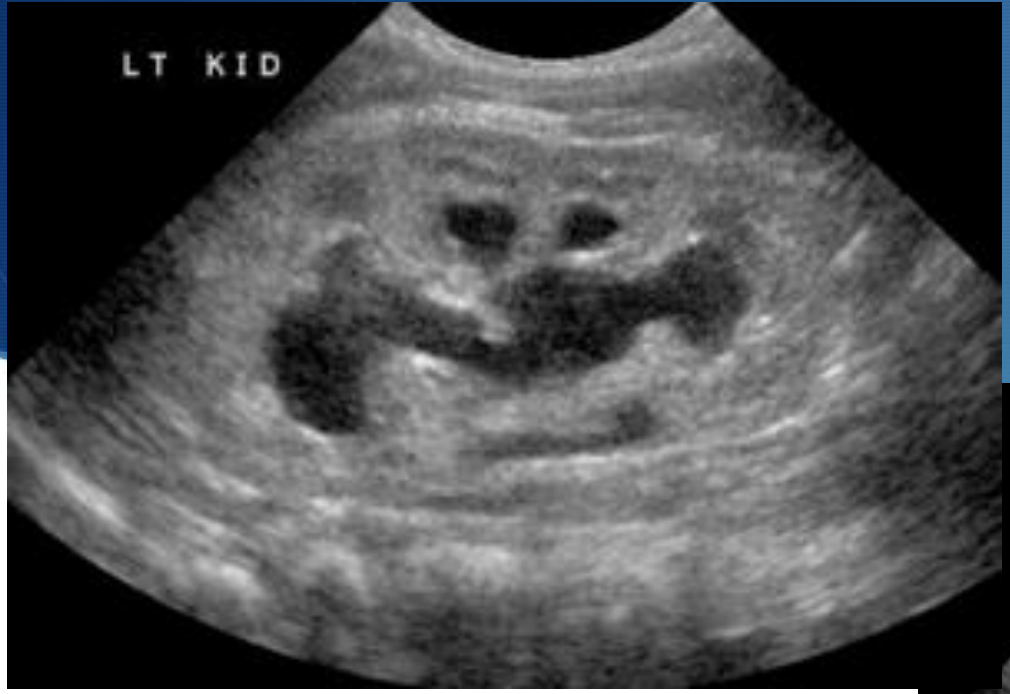


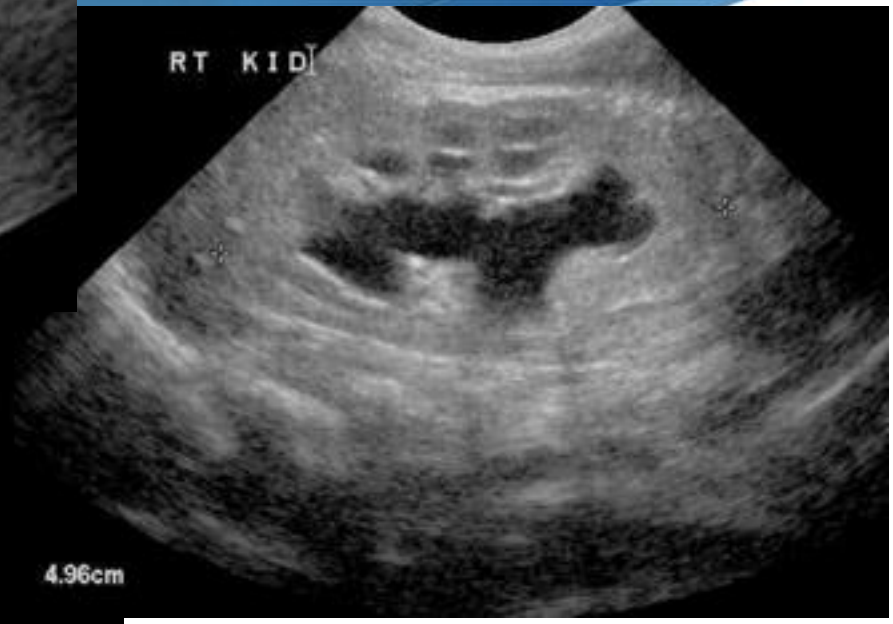
# Pyeloplasty

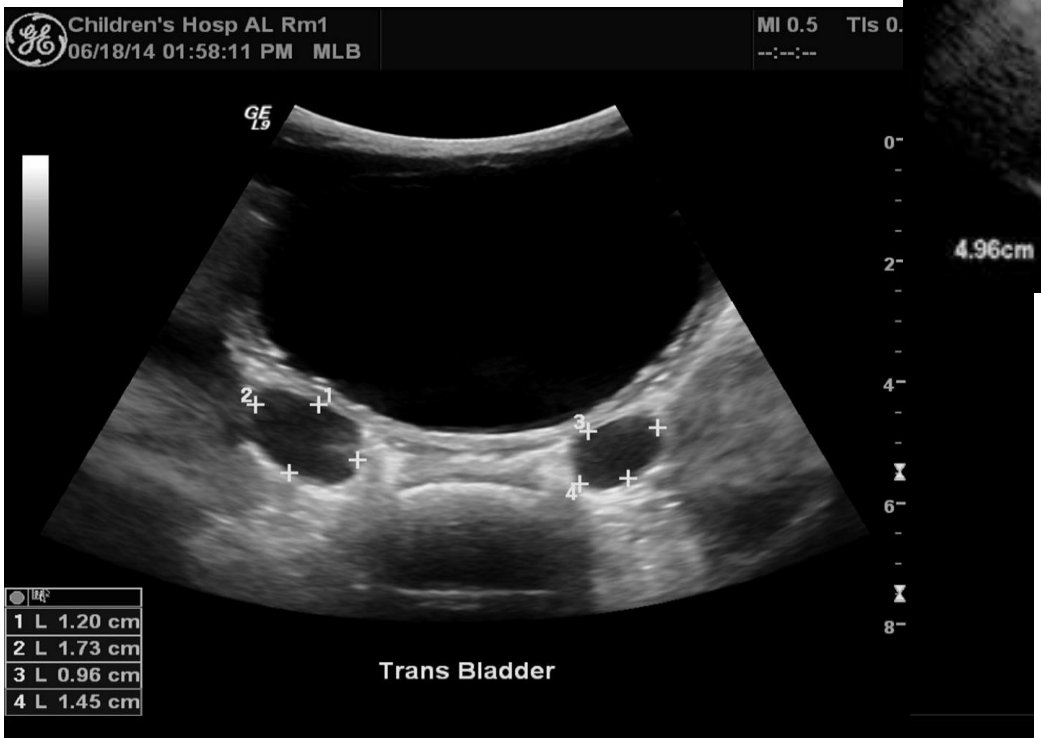


# Case 3

- 5 days old girl fond to have bilateral hydronepohrosis on antenatal US?
- What are the possible causes?
- How would you approach this case?


LT KID


RT KID
4.96cm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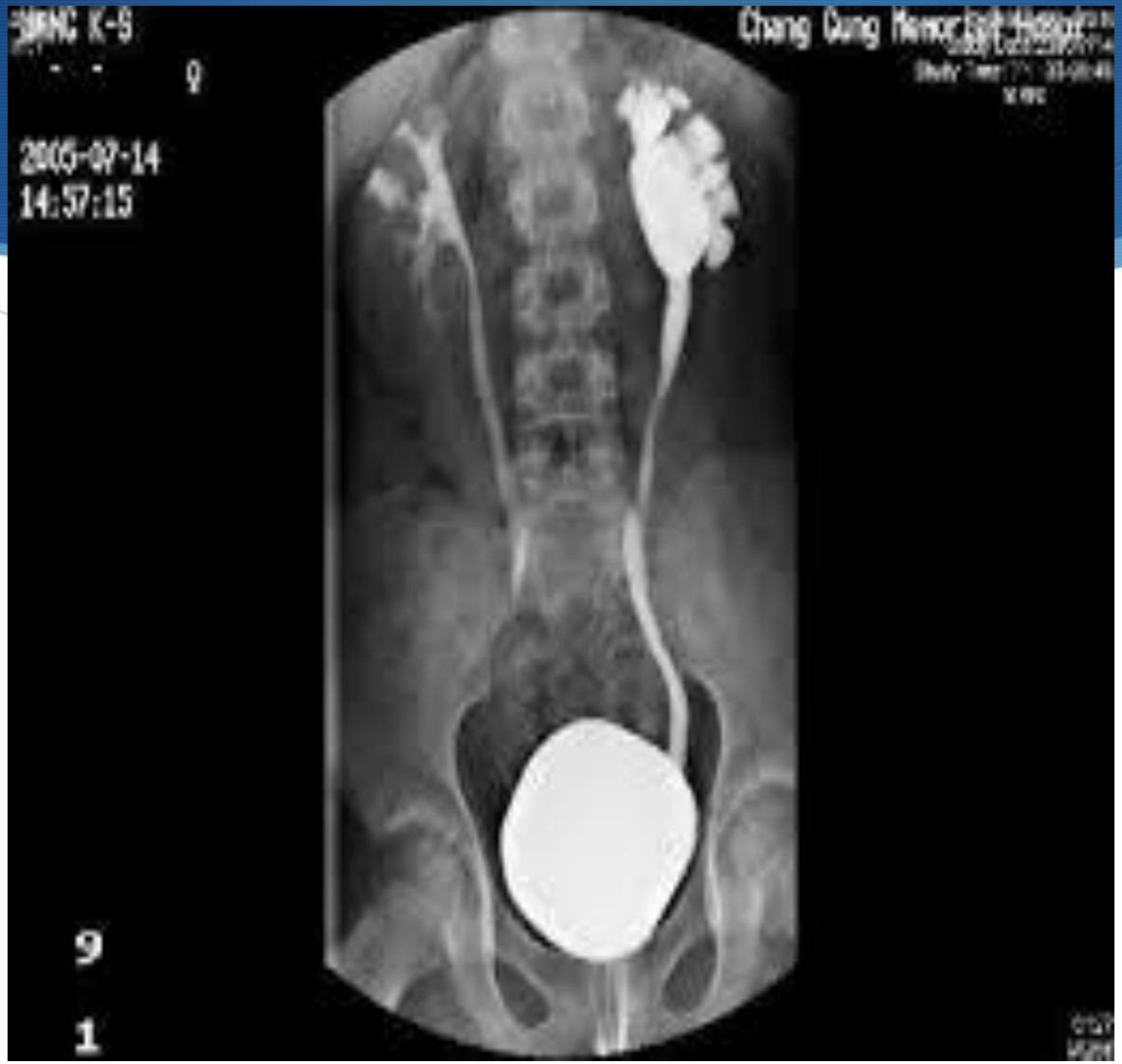
1 L 1.20 cm
2 L 1.73 cm
3 L 0.96 cm
4 L 1.45 cm
Trans Bladder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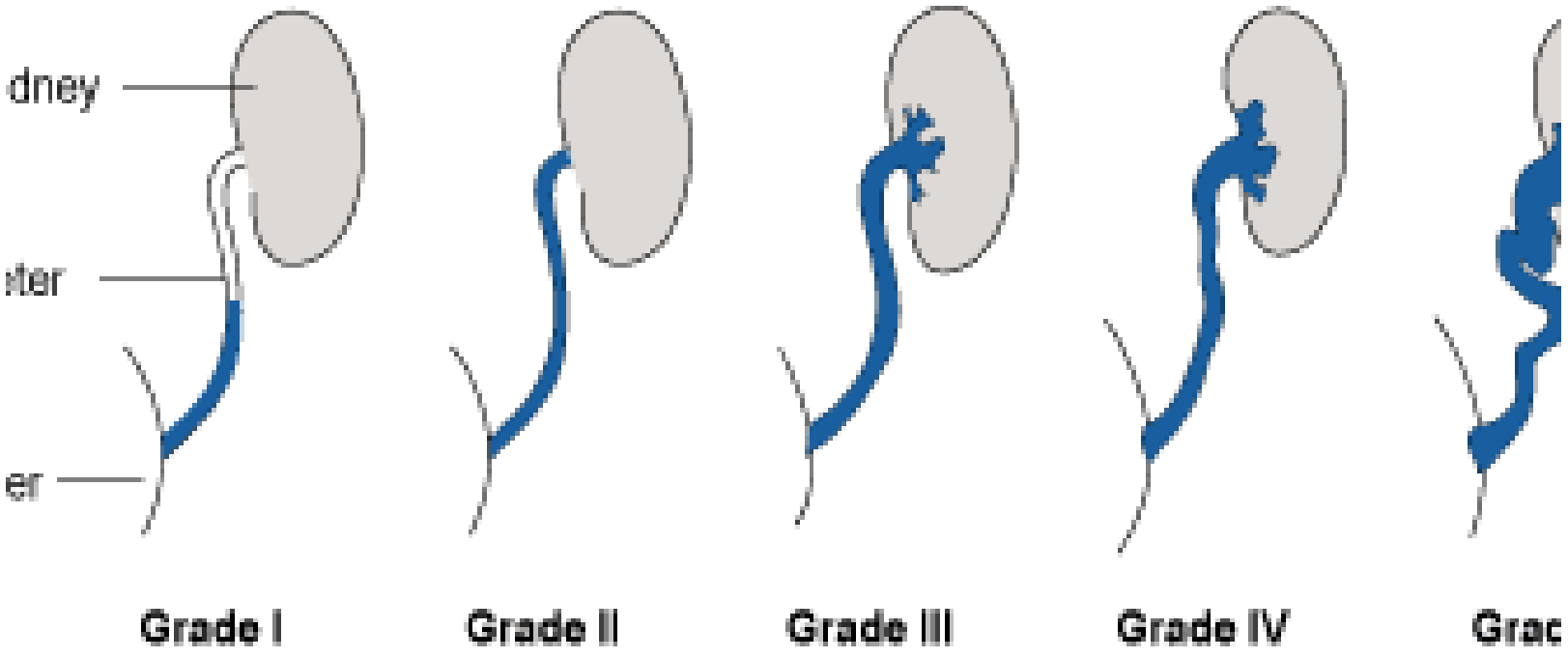
9
1

# Vesicoureteral Reflux (VUR)

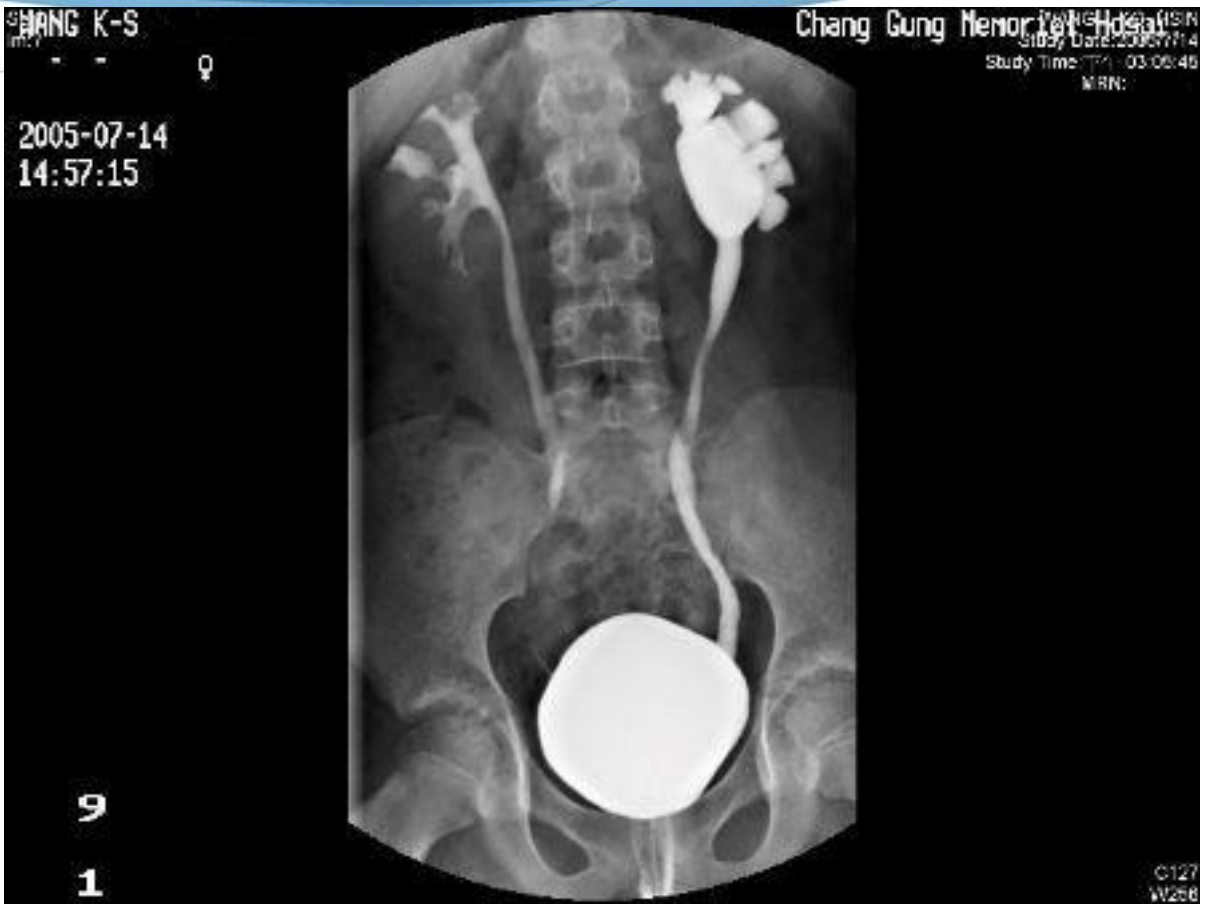


# Vesicoureteral Reflux (VUR)

- 30-40% of ANH is due to VUR.
- Presentation : ANH or UTIs.
- Family Hx (30%) .

# Work-up for vur

- US
- VCUG.



# Treatment options

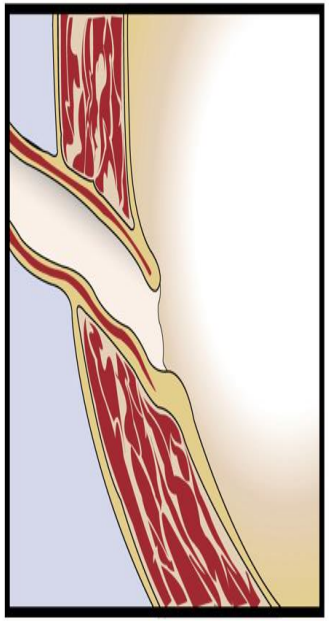
- Observation
- Prophylactic antibiotics.
- Surgical:

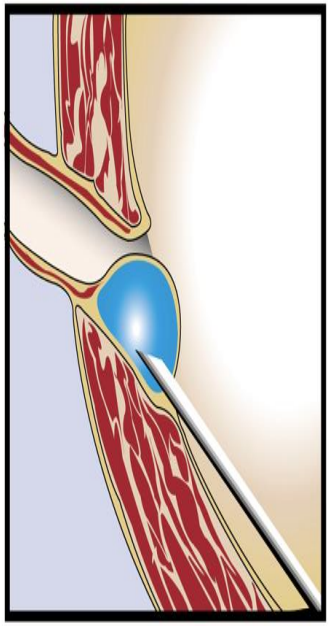
  - Deflux injection

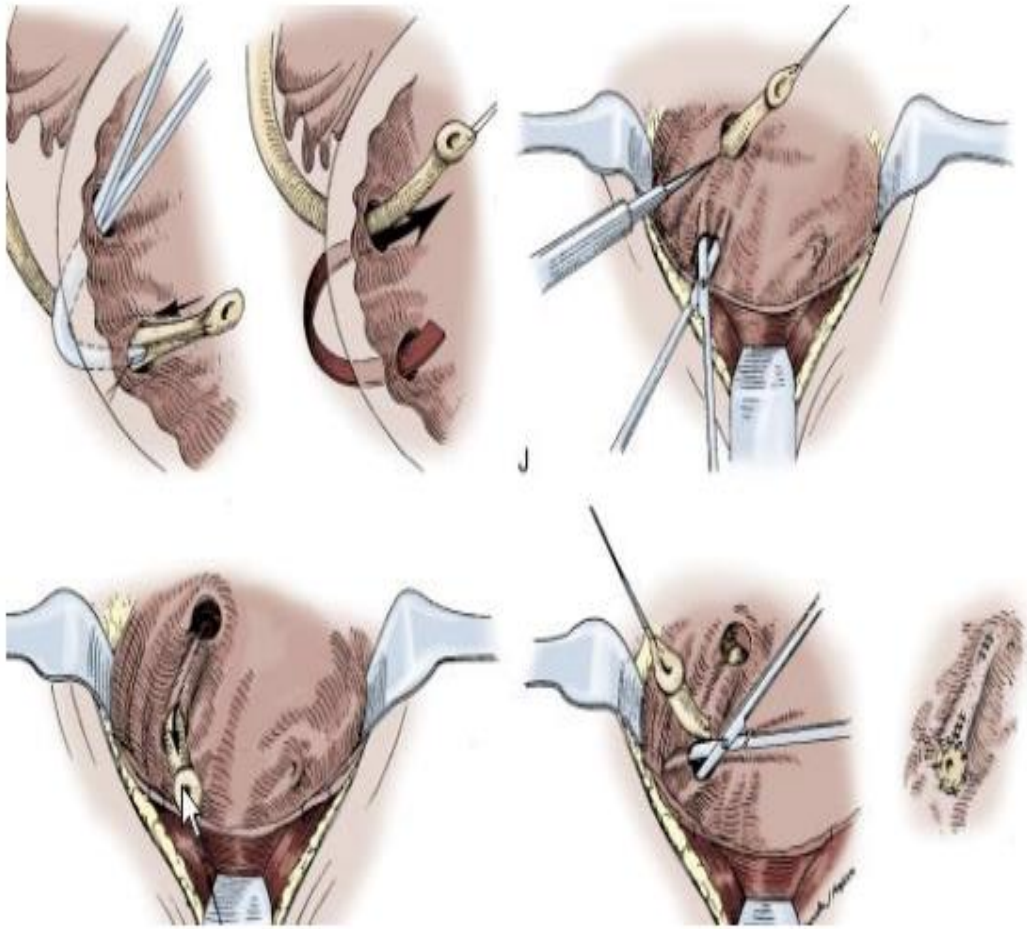
  - Ureteric reimplantation

# Principles of Management of VUR

1. Spontaneous resolution is very common
2. High-grade VUR is less likely to resolve spontaneously
3. Extended use of prophylactic ABx is benign
4. Success rate with surgical correction is very high







# Hypospadias

What is hypospadias?

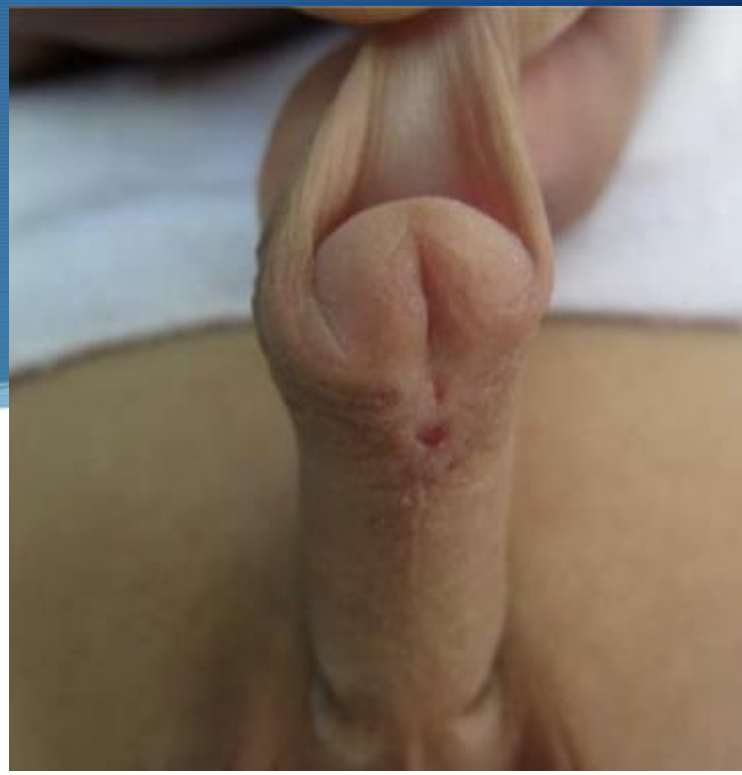
Association of 3 anomalies of the penis

1) Abnormal ventral opening of urethral meatus (glans to perineum)

2) Abnormal ventral curvture.

3) Abnormal distribution of foreskin with a dorsal “hood” and deficient ventral foreskin

# Hypospadias



What is hypospadias?

Association of 3 anomalies of the penis

1) Abnormal ventral opening of urethral meatus (glans to perineum)

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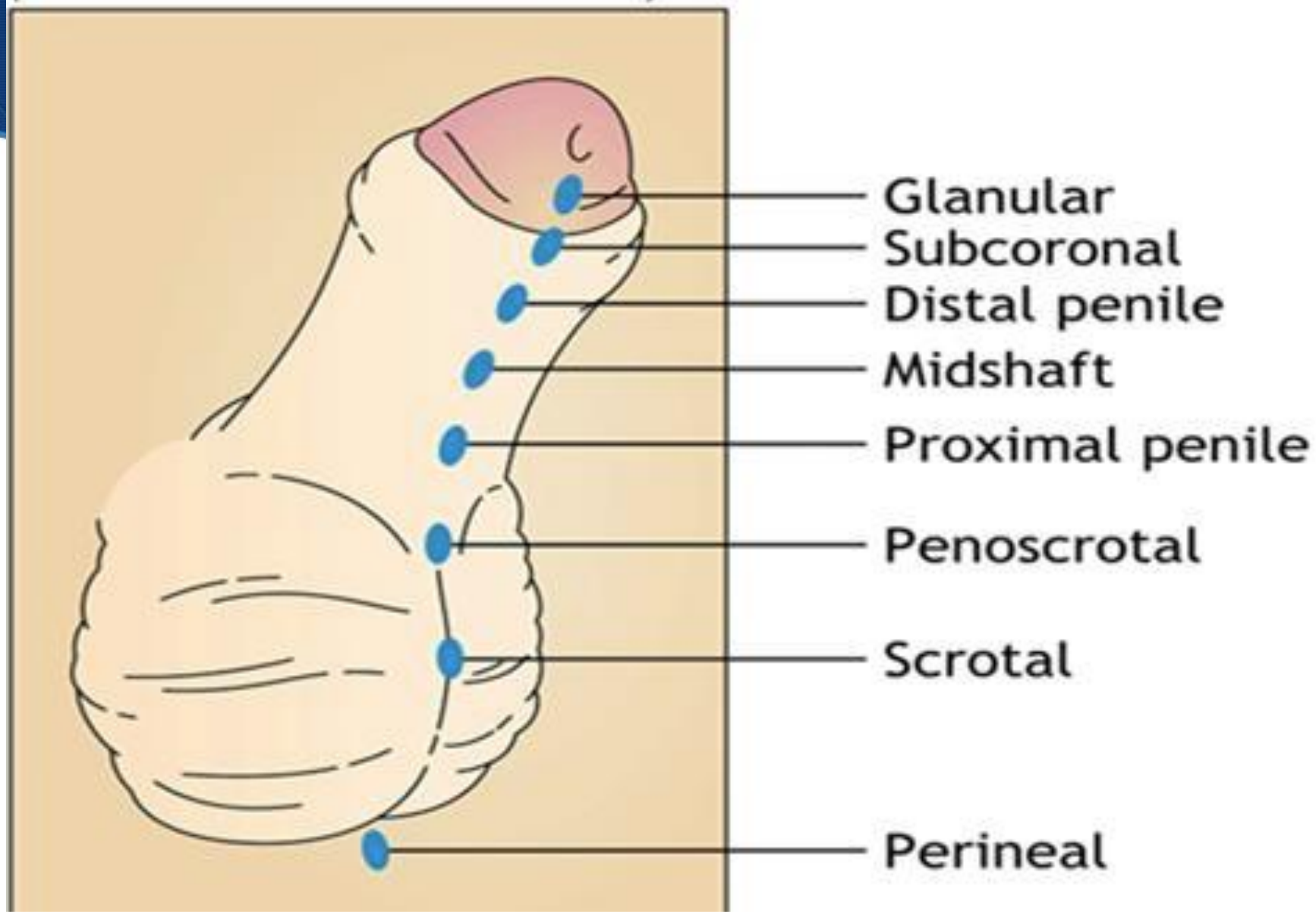
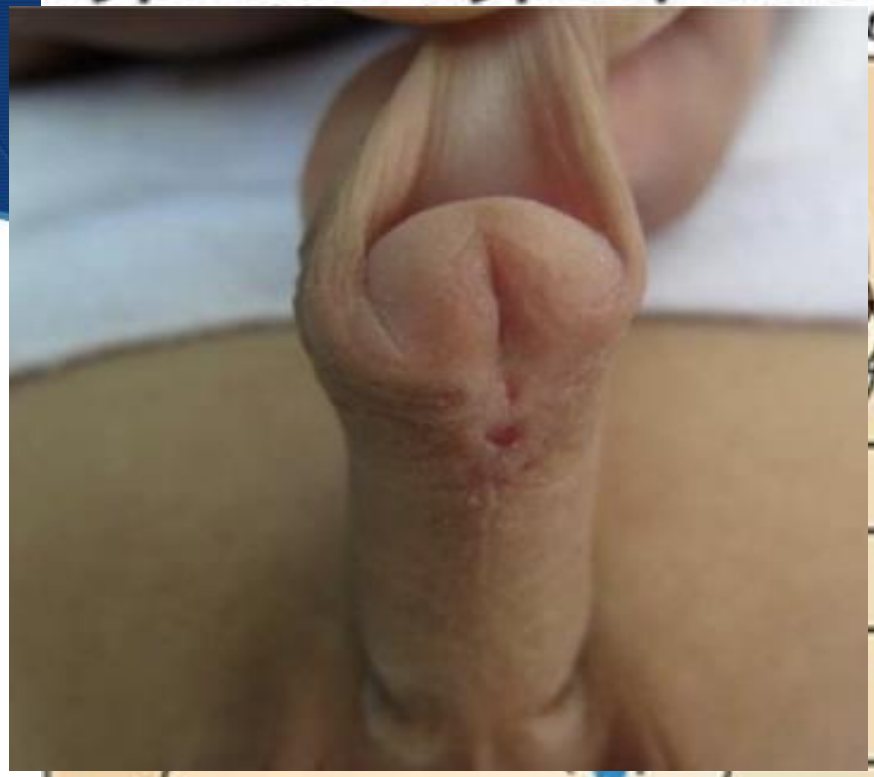
# Types of hypospadias

*(shows where the urine comes out)*



# Types of hypospadias



# Epidemiology

- Approximately **1 in 250 live male birth**
- The majority are distal hypospadias.
- It can be familial.
- More in twins.

# Diagnosis

- Most found at newborn P/E.
- Some cases are diagnosed at later age or after circumscion.
- Look for associated anomalies like UDT or intersex

- **No routine imaging for isolated hypospadias.**

# Physical exam

- Abdominal exam: masses, SP/flank tenderness, full bladder.

- External genitalia:

micropenis, meatal location, deficiency of spongiosum, hernia, hydrocele, **and UDT**

- ✓ **In cases of non palpable UDT and hypospadias what you should think about?**


CIRCUMCISION

# Reasons of Hypospadias Repair

1) To allow micturition in standing position.
2) To allow sexual intercourse.
3) To allow effective insemination.
4) Cosmesis.

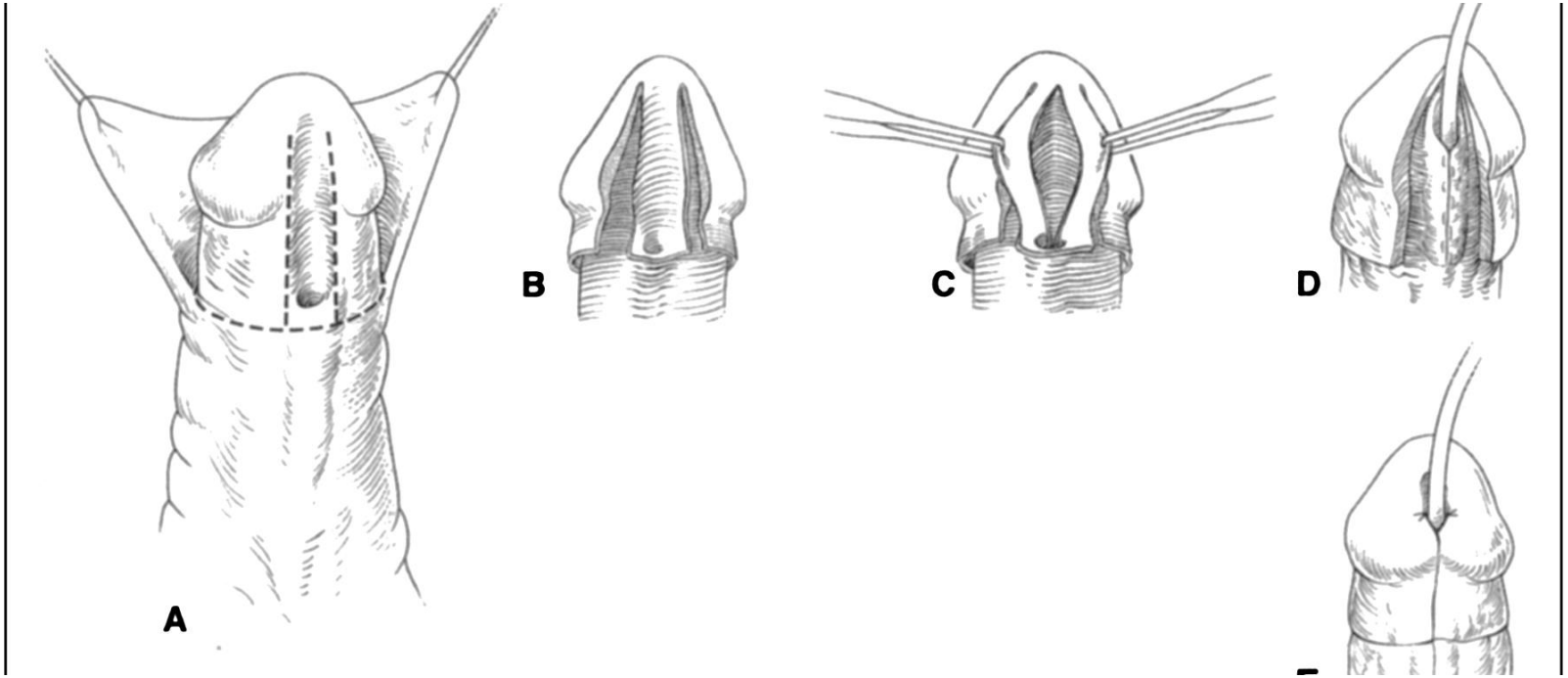
→ most males with distal hypospadias have no medical indications for repair other than cosmesis

# Surgical Repair

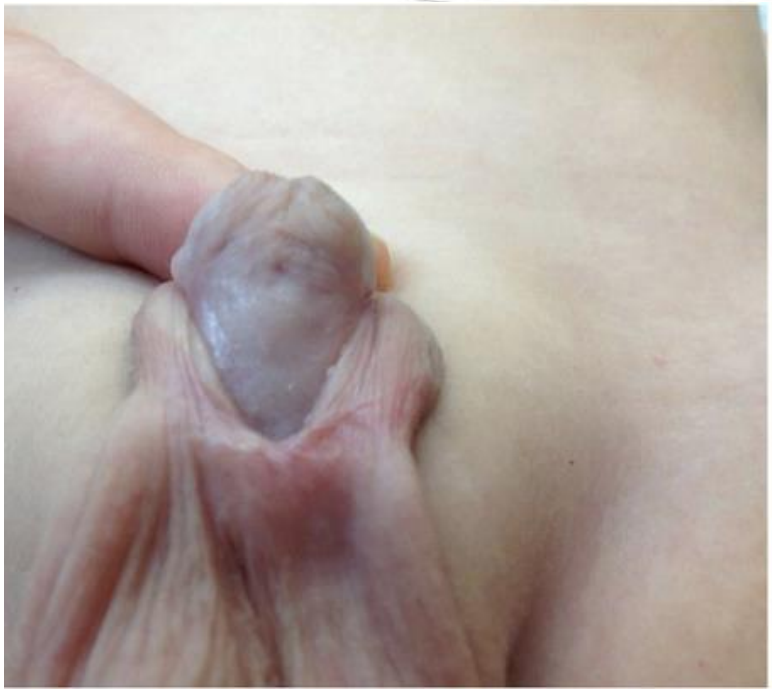
- Idealy it should be done after the age of 6 months (6-12months)

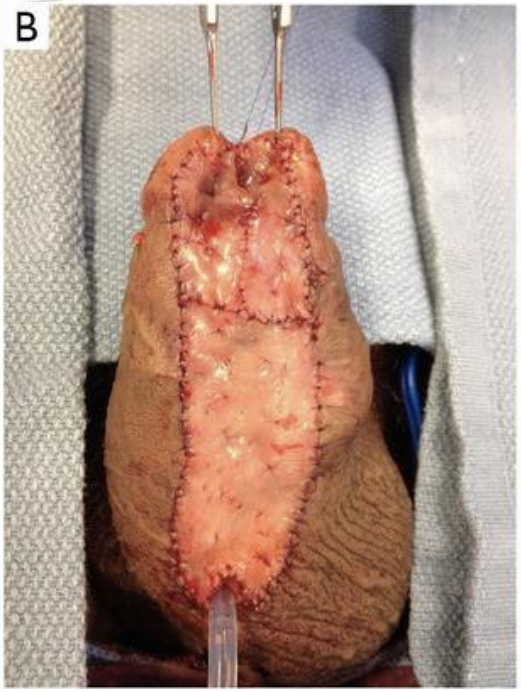
- It can be done in 1 or 2 stages.

# One Stage Repair



# Staged repair



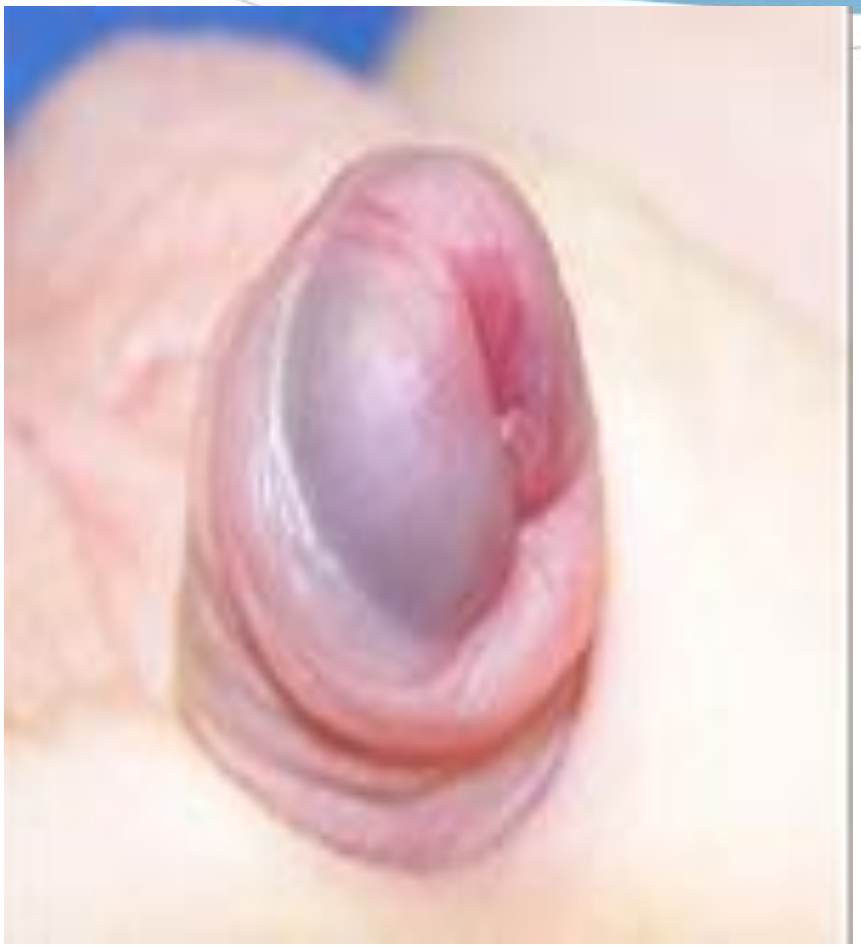



# EXSTROPHY-EPISPADIAS COMPLEX

- **3 main variants**

1) Epispadias
2) bladder exstrophy } accounts for >50% of kids born with this complex
3) cloacal exstrophy } much more GI involvement

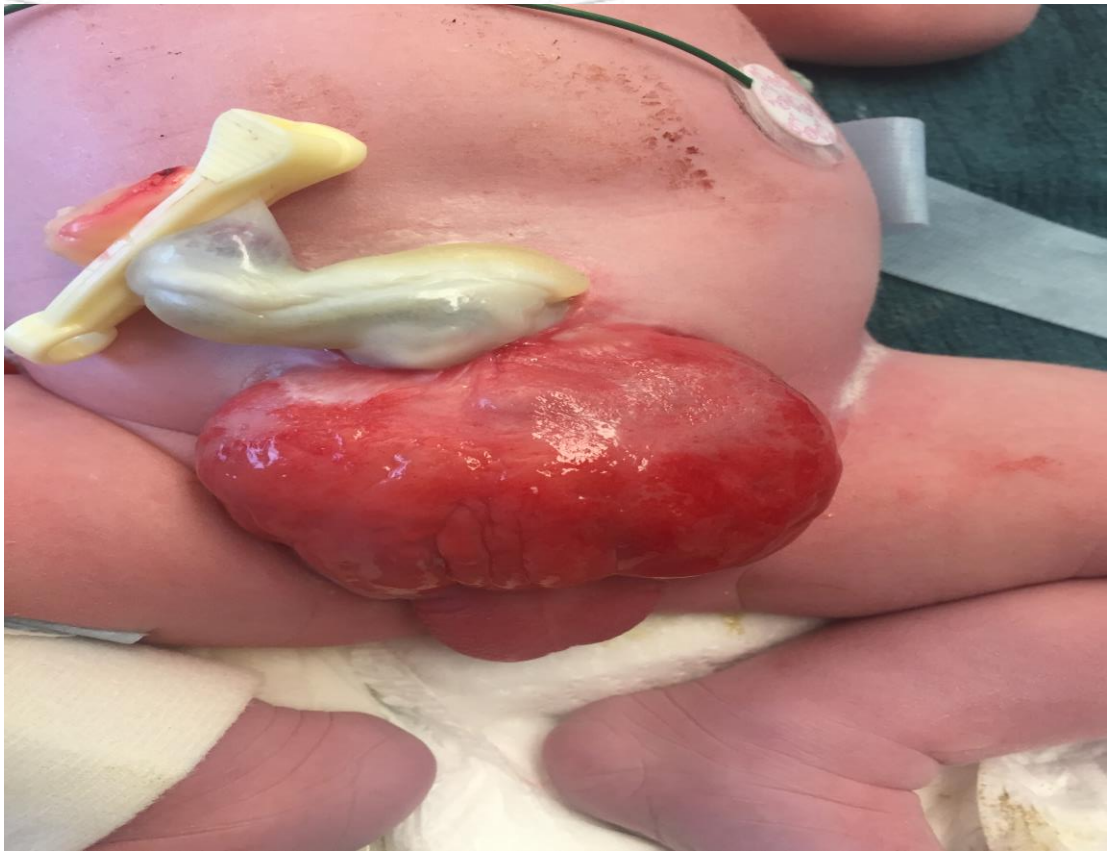
# Epispadias



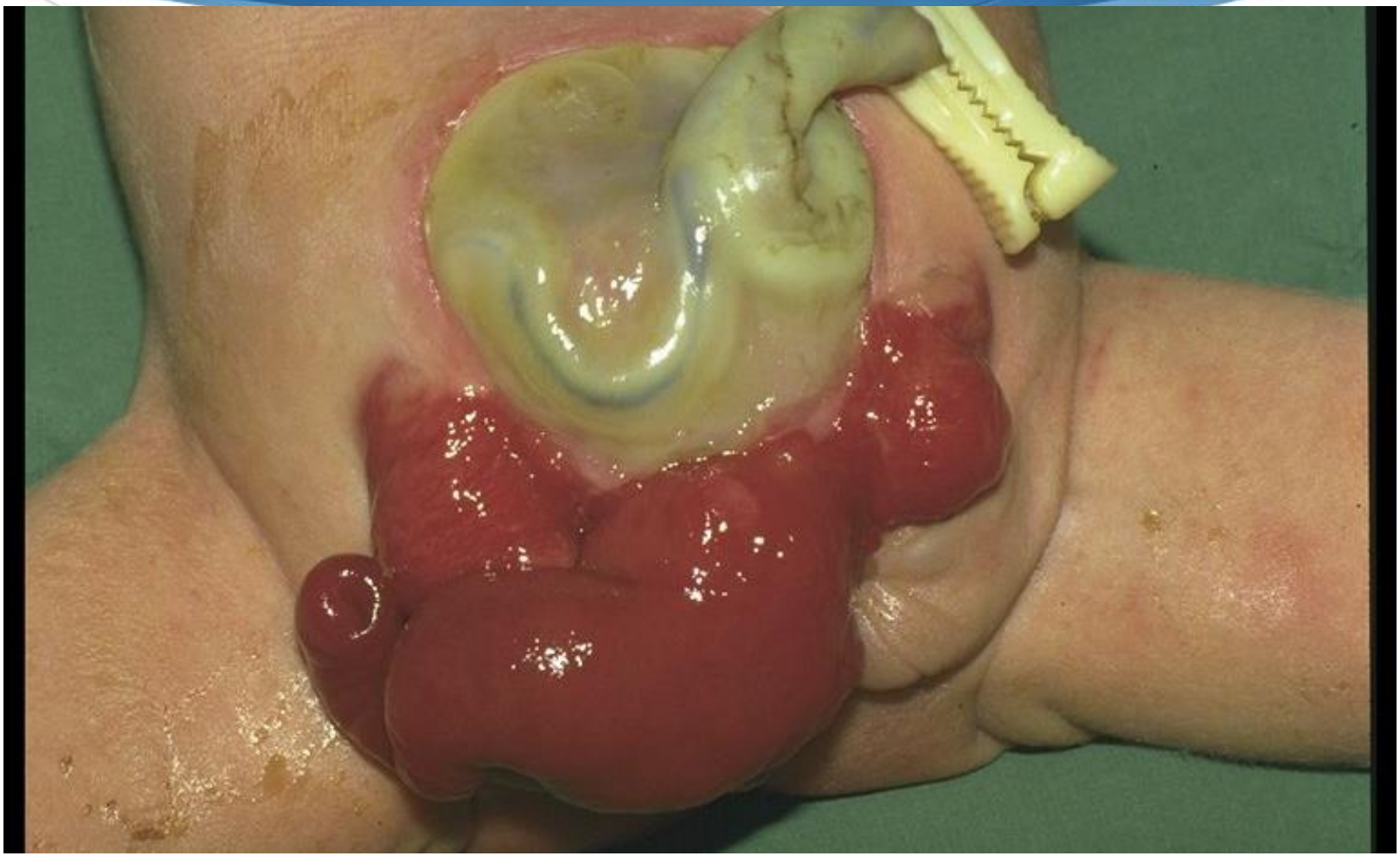
# Epispadias

- Males >Females X 3-5 times.
- Males : 1 in 150,000
- It require surgical repair after the age of 1 year.
- Some patients will have issues with incontinence

# CLASSIC BLADDER EXSTROPHY



# CLOACAL EXSTROPHY



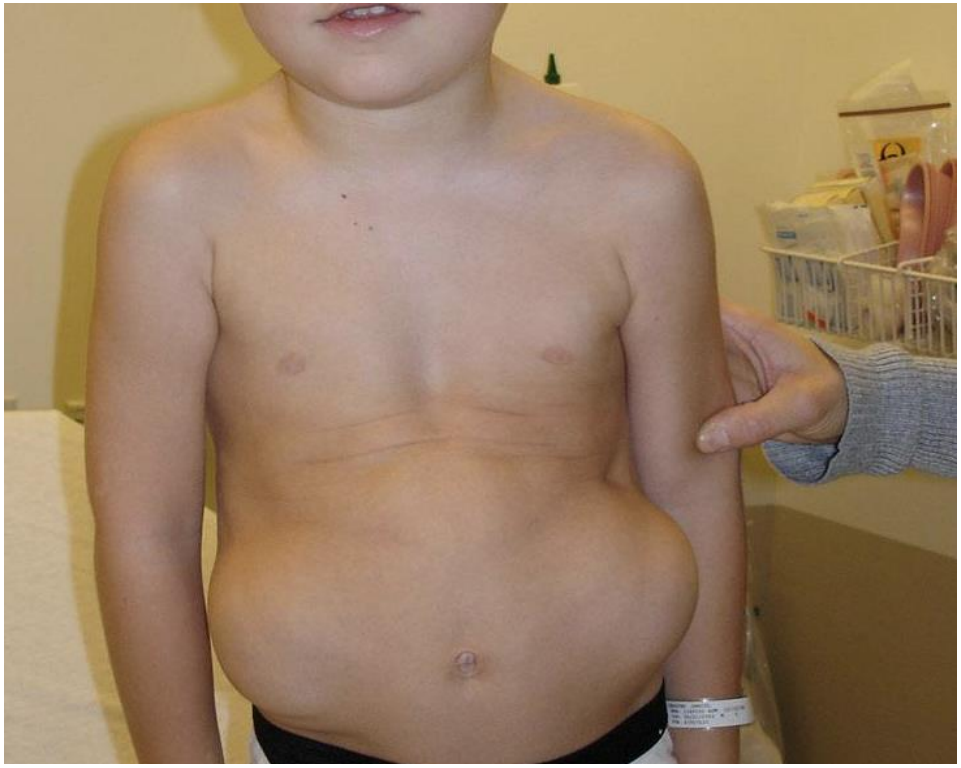
# Prune Belly Syndrome

- It affects 1 per 30,000-40,000 live births. (Boys>Girls)
- Usually patients will have the triad

1. Weak/absent abdominal muscles.
2. Bil UDT.
3. Weak and dilated GU organs ( Bladder, ureters, urethra).\

+/- Cardiac anomalies : tetralogy of Fallot (TF) and ventriculoseptal defects (VSD)

- The mortality rate can reach up to 20% in this syndrome.



# Questions