



COMMON CONCERNS IN PEDIATRIC UROLOGY

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CASE 1

Newborn nursery asks you to evaluate a newborn male with prenatally-detected hydronephrosis. Normal amniotic fluid levels. Perfect APGAR. Room air.

Timing of postnatal renal/bladder ultrasound?

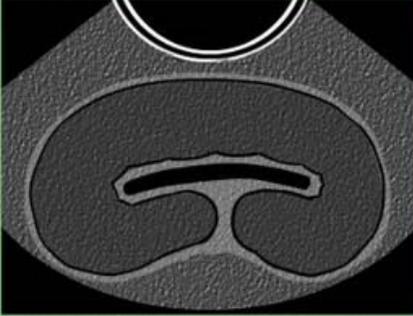
CASE 1: Postnatal RUSD at 48 hours



Unilateral hydronephrosis, no hydroureter

PRENATAL HYDRONEPHROSIS

SFU Grading System for Postnatal Hydronephrosis with Risk Category Color Key

Grade 1	Unilat Grade 2	Bilat Grade 2	Grade 3	Grade 4
				
				
<p>Urine barely splits sinus</p>	<p>Full pelvis, major calyces dilated</p>	<p>Uniformly dilated minor calyces, parenchyma spared</p>	<p>Parenchymal compromise</p>	

CASE 1

Newborn boy with unilateral SFU grade 4 hydronephrosis
without hydroureter

Differential diagnosis?

PRENATAL HYDRONEPHROSIS

Etiologies of Hydronephrosis

Typical Appearance

Transient dilation 41-88%

→ Unilateral mild (SFU 1-2)

UPJ obstruction 10-30%

→ Unilateral severe (SFU 3-4)

Vesicoureteral reflux 10-20%

→ Any ultrasound appearance!!

Megaureter ** 10-20%

→ Very dilated ureter

Posterior urethral valves 1-5%

→ Bilateral HN in male infant

CASE 1

Newborn boy with unilateral SFU grade 4 hydronephrosis without hydroureter, suspected UPJ obstruction

VCUG?

WHICH NEWBORNS NEED EARLY VCUG?

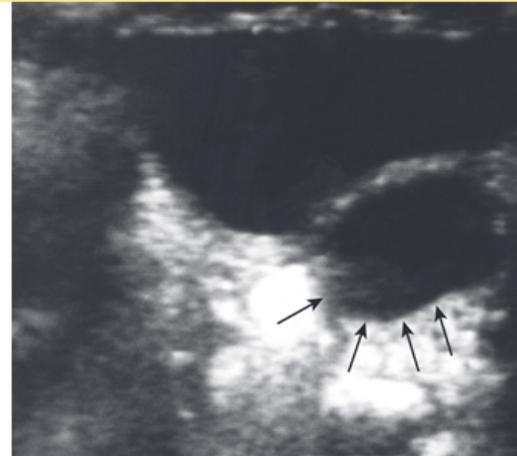
- Bilateral hydronephrosis in male infant
- Ureteral dilation (dilating VUR, ectopic ureter/UVJ obstruction)
- Ureterocele/pyeloureteral duplication
- Hydronephrosis in solitary kidney (dude, obviously)
- Maybe in newborns with spinal dysraphism and hydronephrosis

LOOK AT THE BLADDER TOO!

Intravesical ureterocele



Ectopic ureter



KEY POINTS: PRENATAL HYDRONEPHROSIS



Obtain initial postnatal ultrasound beyond 48 hours of life to allow adequate hydration



Need for early VCUG not necessarily a function of hydronephrosis severity.....call us!



Consider prophylaxis and early VCUG if hydroureter, duplication, ureterocele, or bilateral HN in boys



Unilateral SFU grade 1 hydronephrosis may not require specialist referral

CASE 2

13 month old girl with fever of 103°F, no URI sx, very ill.

Catheterized urine specimen

+LE, -nitrite, -blood

Culture 10^4 E-coli

Sufficient data to diagnose UTI?

UTI GUIDELINES

Guideline Summary: Management of Initial UTI in Children						
	2011 AAP	ISPN	NICE (under 6 mo)	NICE (over 6 mo)	RCH Melbourne	TDA
Cx	50,000 CFU + pyuria SPA or cath specimen	Cath: 10,000 Mid CC: 100,000			SPA: Any gram – Cath: 1000 CFU	
US	Yes	Yes	Yes	If recurrent or atypical	Yes	No
VCUG	Only if positive ultrasound	Only if pos US or risk factors	Only if pos US or atypical UTI	Only if risk factors	Only if positive US In boys under 6 mo	Only if positive acute DMSA
Late DMSA	No	If positive US or VUR	Only if atypical	If atypical or recurrent	No	Only if positive acute DMSA
Notes	Children less than 2		Atypical UTI: Septic, AKI, abx failure, abdominal, bladder mass, non-E coli	Risk factors: Dilation, poor urine flow, E-coli, fam hx VUR		

CASE 2, continued

13 month old girl with fever of 103°F, no URI sx.

Catheterized urine specimen:

+LE, -nitrite, -blood

347 WBC, 1-5 RBC, many bacteria/hpf

Culture 50K E-coli

Next steps in management?

CASE 2: RUSD

Is this a “positive” US warranting VCUG?



Left kidney 8cm,
no hydronephrosis



Right kidney 6.5cm,
no hydronephrosis

CASE 2, continued

13 month old girl hospitalized with febrile UTI;
ultrasound demonstrates left pyeloureteral duplication.

Timing of VCUG?

THIS HOSPITALIZATION?

- more convenient
- may show bladder dynamics during inflammation
- unlikely to make child sicker

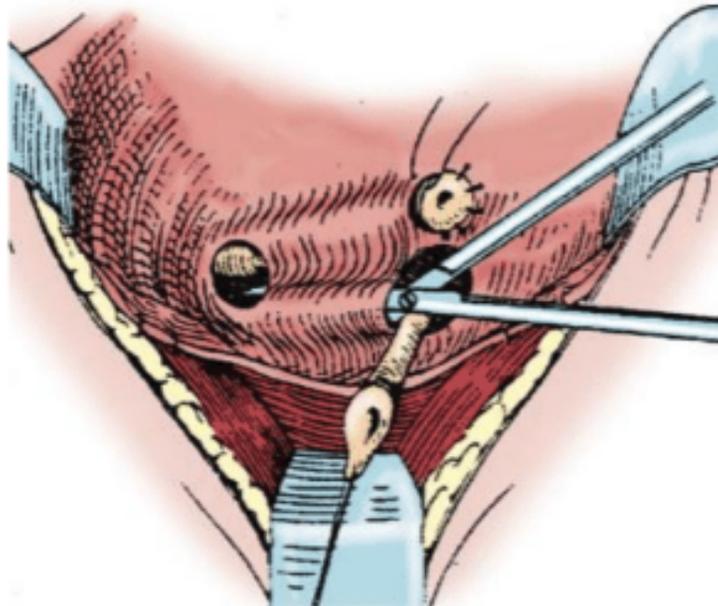
CASE 2: VCUG



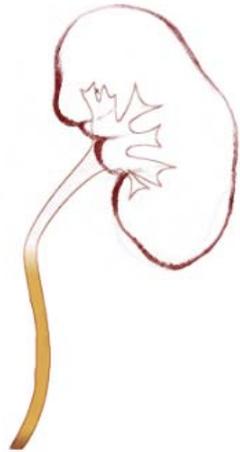
Left duplication,
grade 4 VUR into
lower moiety

SURGICAL INTERVENTION FOR VUR

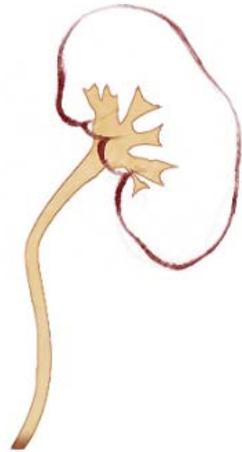
Cohen Cross-Trigonal



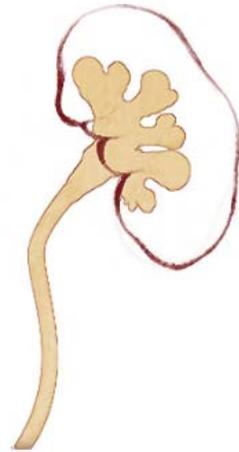
OK REFLUX VS BAD REFLUX



Grade I



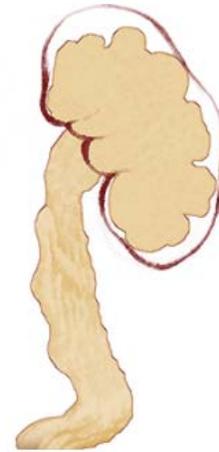
Grade II



Grade III



Grade IV



Grade V

LOW GRADE

Usually benign in absence of febrile UTI

Usually short tunnel

HIGH GRADE

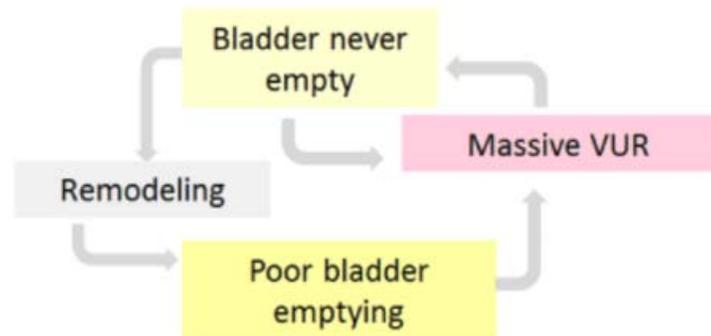
Usually not benign

Consider secondary reflux!

PUV, NGB (especially if bilateral)

OK REFLUX VS BAD REFLUX

Congenital Renal Damage			
Grade	1-3	4	5
Normal	100%	50%	15%
Slight	-	30%	35%
Severe	-	20%	50%



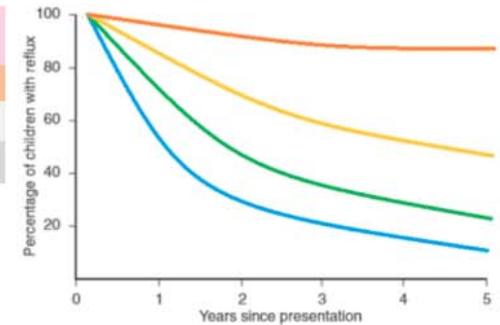
OK REFLUX VS BAD REFLUX

Resolution by Grade

	Grade 1	Grade 2	Grade 4 unilat	Grade 4 bilateral
2 years	60%	40%	20%	5%
5 years	>90%	80%	50%	5%

-At birth, spontaneous resolution inversely proportional to initial grade

- Most cases of grade 1 and 2 VUR resolve
- Unilateral grade 3 VUR resolves in 50% of cases
- Very few cases of bilateral 3, grade 4 or grade 5 VUR resolve



Resolution by Age

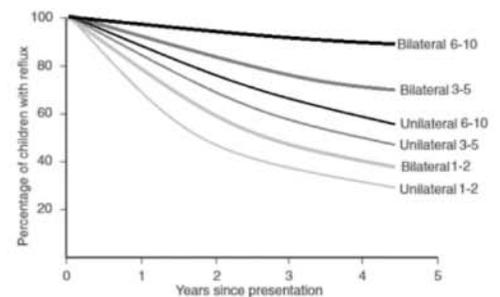
	Age 1-2	Age 3-5	Age 6-10
Unilateral Grade 3	75%	50%	40%
Bilateral Grade 3	60%	25%	<10%

VUR is most prevalent in young children and most likely to resolve in this group

~30% of patients resolve their VUR every year, babies resolve quicker

When reflux resolves, it tends to do so in first few years of life

By age 5, the greatest proportion of UVJ remodeling is complete



PROPHYLACTIC ANTIBIOTICS

Prophylactic Antibiotics

- Neither AAP or NICE recommend routine prophylaxis in infants and children after their first UTI
- Antibiotic exposure increases likelihood that subsequent UTI will be with resistant organism (x3)
- After treatment of UTI, choose a prophylactic antibiotic different from the one used for therapy
- In general, prophylaxis is about ¼ the dose, given at bedtime to maximize bladder dwelling time
- Compliance is an issue. One study showed that 1/3 children take antibiotics regularly.
- Circumcision reduces risk of UTIs in infants and toddlers.
- Risk reduction greatest in pts with recurrent UTI and dilating VUR
- Some say circ indications include: recurrent febrile UTI, obstructive pathology, HN/HU, high grade VUR

RIVUR Trial

- Compared TMP-SMX to placebo in 600 children with grade I-IV VUR after UTI
- Prophylaxis significantly reduced risk of recurrent UTI
- Recurrent UTI risk reduction was greatest in children with:
 - Bowel and bladder dysfunction at baseline
 - History of febrile UTI
 - Higher grades of VUR

Uncircumcised male infant with VUR, febrile UTI:

“Should be considered malpractice if one does not address physiologic phimosis”
--unnamed esteemed mentor

KEY POINTS: UTI/VUR



Microscopic UA (pyuria) + culture (50K CFU) from cath specimen necessary to diagnose UTI in child (AAP)



Consider VCUG after initial febrile UTI if severe infection or abnormal RUSD



Address physiologic phimosis in male infants with febrile UTI + VUR (circumcision or topical steroid)



Antibiotic prophylaxis is particularly important in children with VUR + bowel and bladder dysfunction

CASE 3

5 year old boy with foreskin which will not reduce

Diagnosis?

Physiologic phimosis



CARE OF UNCIRCUMCISED PENIS

Topical steroids are the first line of treatment for physiological phimosis with good success rates and low risk of complications (Level 1b/2b, Grade A).

Vigorous retraction has potential to cause micro-tears leading to scarring and iatrogenic true phimosis.

Therefore, normal foreskin care in early childhood starts once the foreskin is retractable, and this occurs at varying ages.



CASE 4

5 year old boy with foreskin which will not reduce

Diagnosis?

Pathologic phimosis
Lichen sclerosis/BXO



PATHOLOGIC PHIMOSIS

Indications for urology consult:

- Suspicion of true phimosis with evident scarring
- Lichen sclerosus of the foreskin
- Recurrent balanoposthitis or recurrent UTIs
- Delayed retraction of foreskin past 8–10 years



PENILE SKIN PROBLEMS: REFER OR REASSURE?



DORSAL HOODED FORESKIN

REFER

-Hypospadias or chordee repair
Between 6-12 months of age



VOLCANO PENIS!

REFER



PENILE SKIN PROBLEMS: REFER OR REASSURE?



PENILE SKIN BRIDGE

REFER

-Requires surgical excision



PENILE ADHESIONS

REASSURE

-Will resolve with onset of testosterone production at puberty

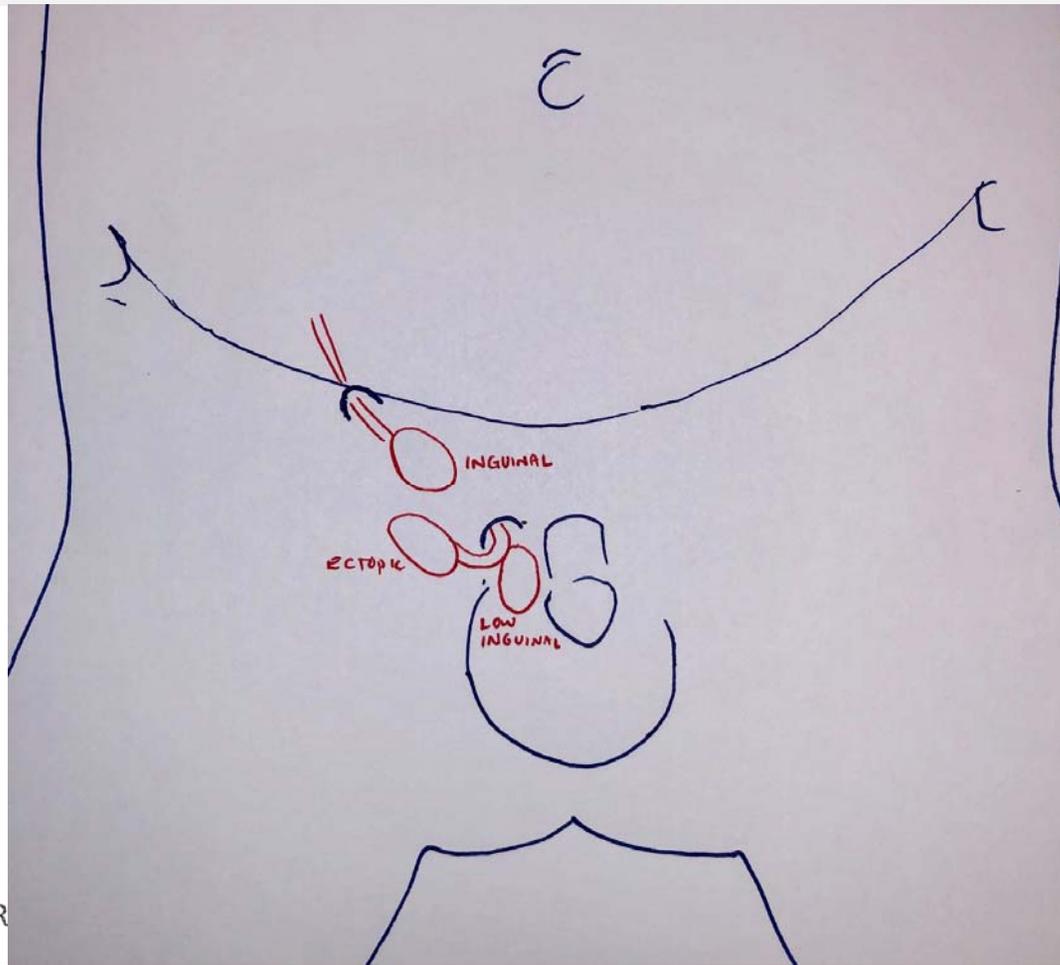
-Can do betamethasone valerate 0.1% BID for 2-4 weeks

CASE 5

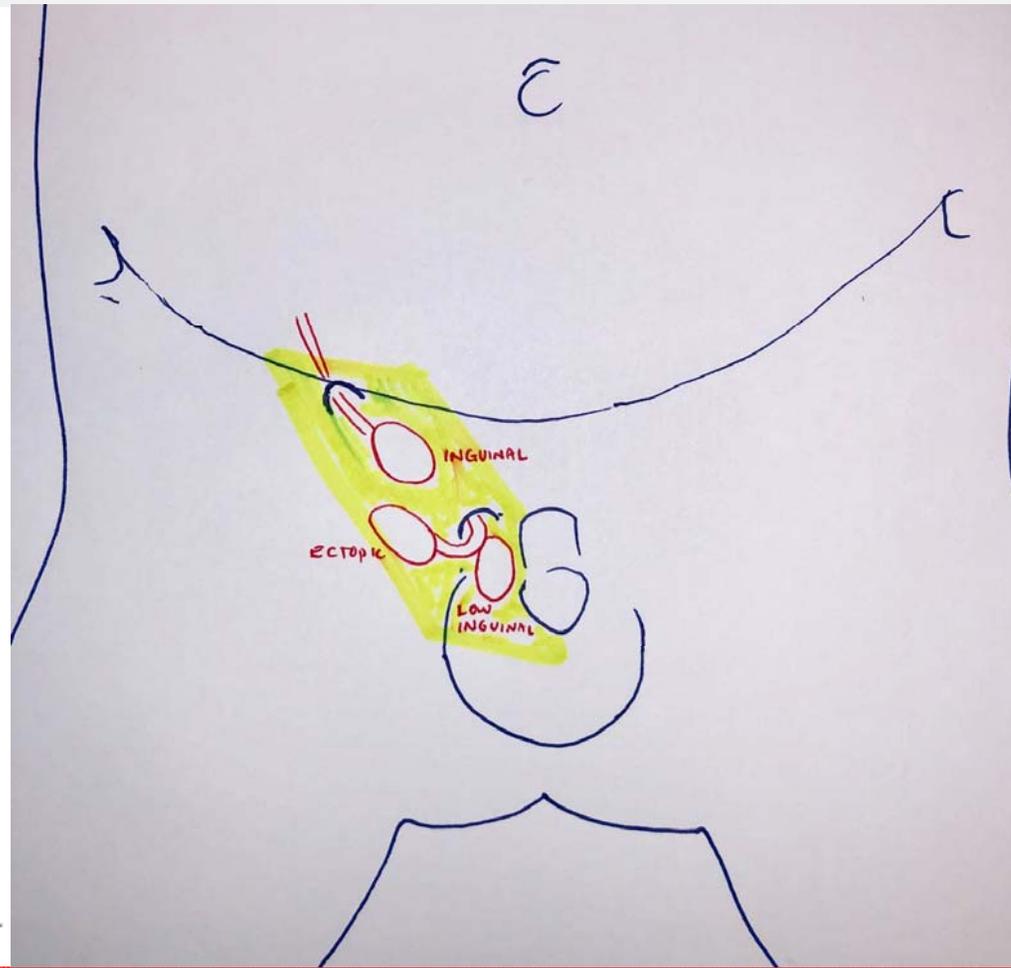
6 month old male with left undescended testis. Normal penis. Occasional intermittent left hemiscrotal swelling.

How do you examine a possible undescended testis?

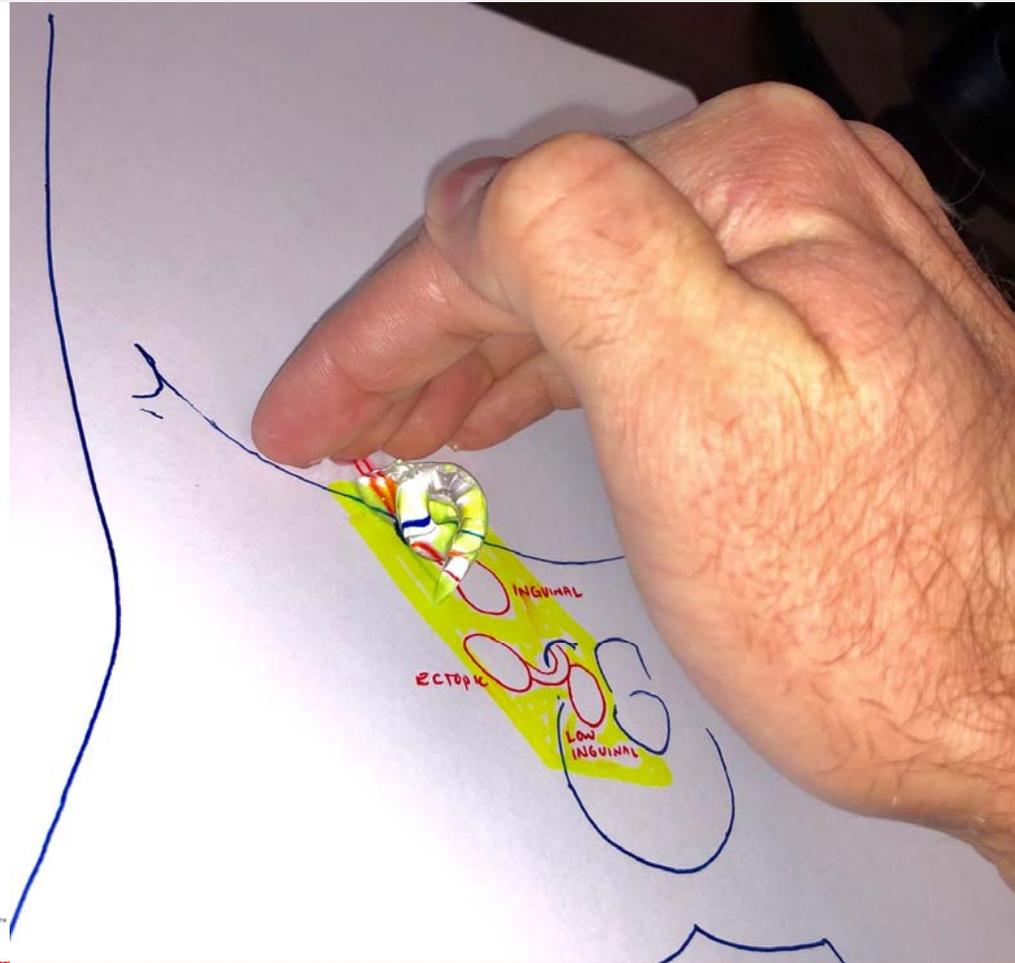
JELLY-SCOOP-POP! TECHNIQUE



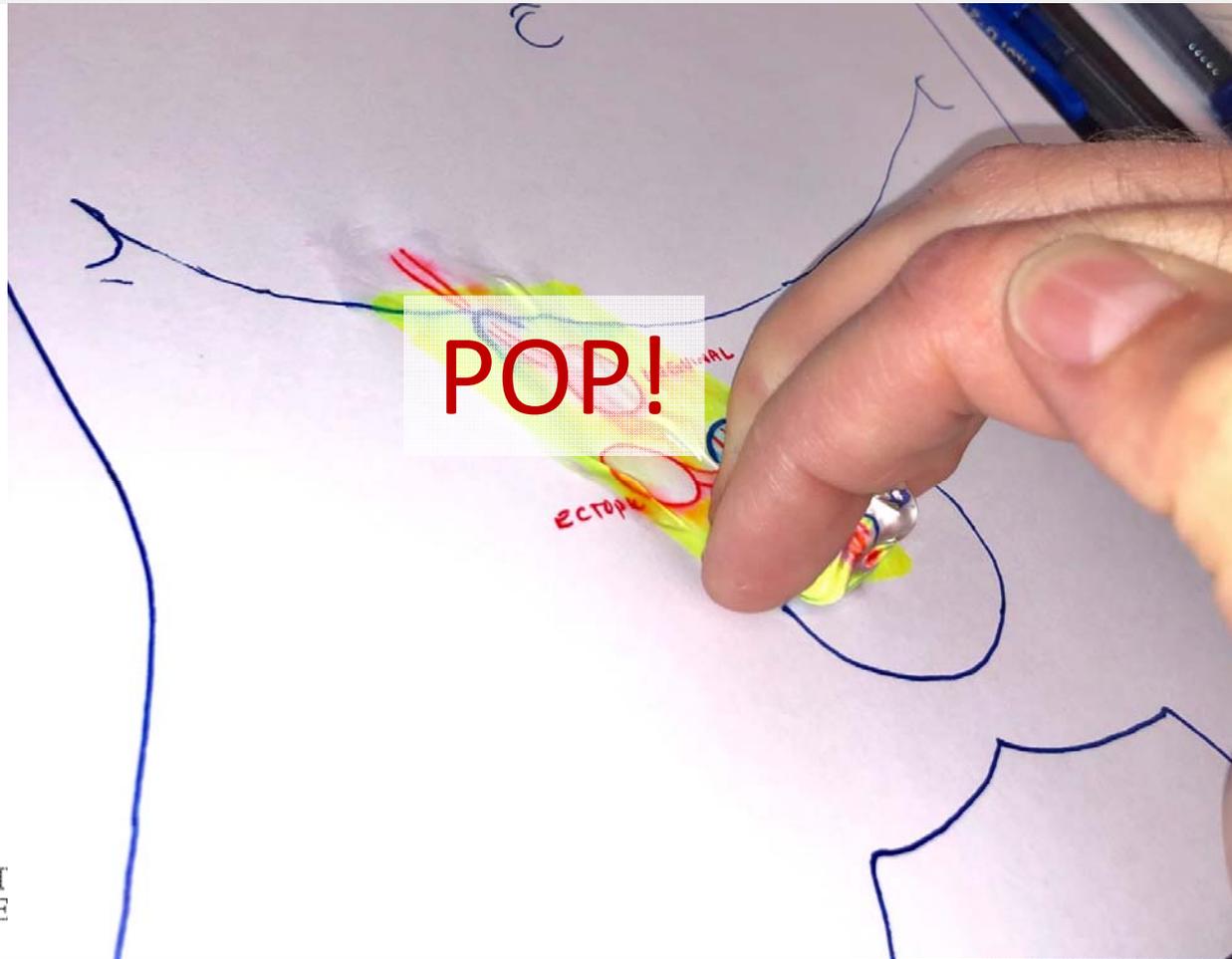
JELLY-SCOOP-POP! TECHNIQUE



JELLY-SCOOP-POP! TECHNIQUE



JELLY-SCOOP-POP! TECHNIQUE



CASE 3

6 month old male with left palpable undescended testis.
Occasional intermittent left hemiscrotal swelling.

Ultrasound?

Nah

Timing of referral?

Now

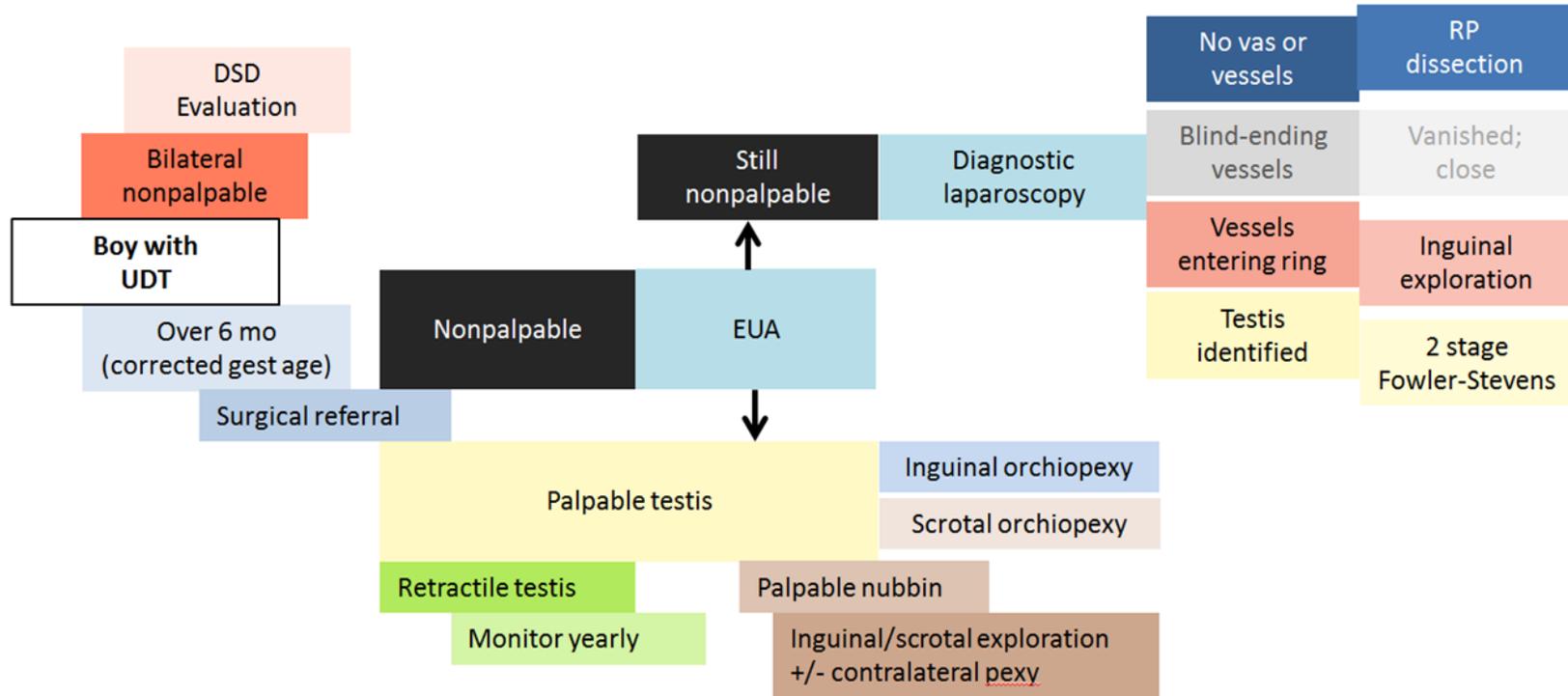
UNDESCENDED TESTIS

Guideline Statements

1. Phenotypic male newborns with bilateral, nonpalpable testes require evaluation for DSD
2. DSD more likely with UDT + increasing severity of hypospadias
3. Measure MIS in boys with bilateral nonpalpable testes (without CAH) and consider additional hormone testing to evaluate for anorchia
4. Obtain gestational history at initial evaluation
5. PCP should palpate testes for quality and position at each well-child visit.
6. Surgical referral for infants with congenital UDT and no descent by 6 months (corrected for gestational age)
7. Surgical referral for boys with newly diagnosed (acquired) UDT after 6 months (optimal to do surgery before 1)
8. No ultrasound (US) or other imaging modalities before referral (rarely aid in decision making)
9. Assess the possibility of DSD when there is increasing severity of hypospadias with cryptorchidism. Grade C
10. Monitor position of retractile testes at least annually to evaluate for secondary ascent. Grade B
11. Hormone therapy not recommended
12. If no spontaneous descent by 6 months, operate within the year
13. Scrotal or inguinal orchidopexy for prepubertal boys with palpable UDT
14. At exploration for a nonpalpable testis, identify the status of vessels to guide decision making
15. If normal contralateral testis, orchiectomy reasonable if short vessels and vas, dysmorphic/hypoplastic testis, or post pubertal age.
16. In prepubertal boys with nonpalpable testes, do EUA to try and find it.
17. If truly nonpalpable, explore and pexy
18. Counsel boys with a history of cryptorchidism and/or monorchidism regarding potential long-term risks and provide education on infertility and cancer risk.

UNDESCENDED TESTIS

UDT AUA Guideline

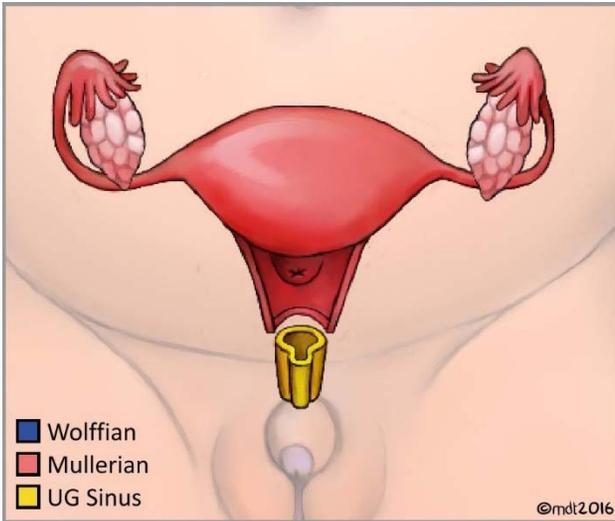


CASE 4

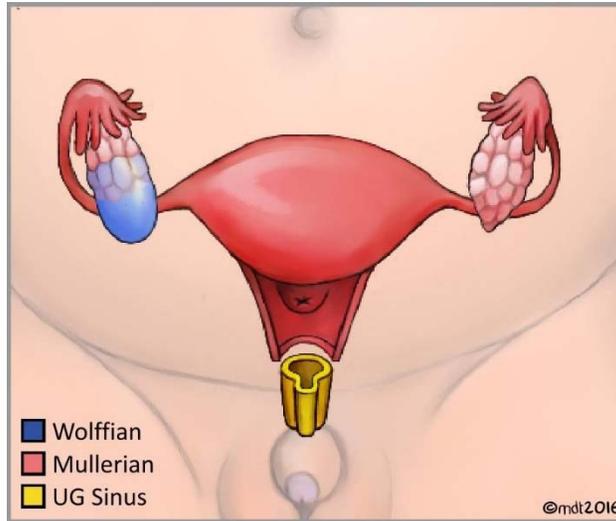
2 day old phenotypic boy with dorsal hooded foreskin,
perineoscrotal hypospadias, bilateral nonpalpable gonads

Differential diagnosis?

AMBIGUOUS GENITALIA 46 XX

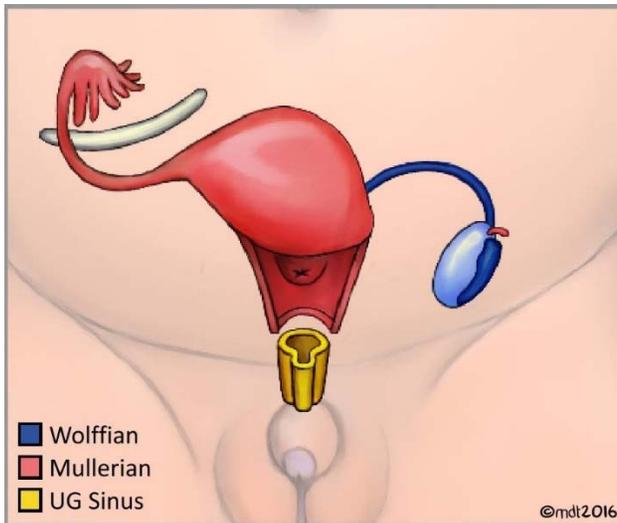


Congenital adrenal hyperplasia
(21-OH deficiency)



Ovotesticular DSD

AMBIGUOUS GENITALIA 45 XO / 46 XY

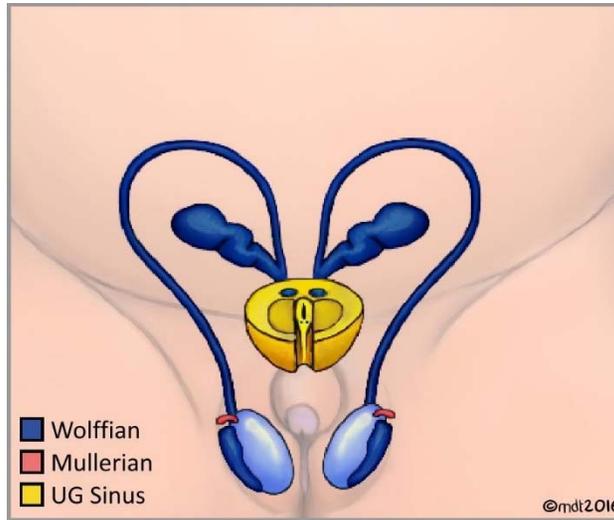


Mixed gonadal dysgenesis

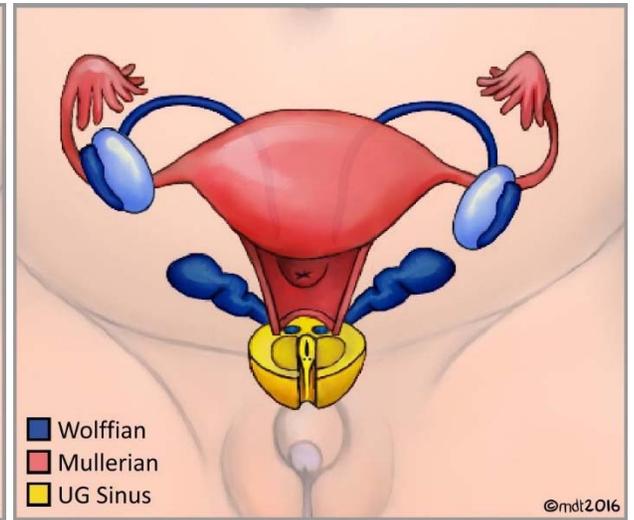
AMBIGUOUS GENITALIA 46 XY



Partial androgen insensitivity syndrome (PAIS)



5-alpha reductase deficiency



Persistent Mullerian duct syndrome

KEY POINTS: UNDESCENDED TESTES



Pediatric urology referral if no descent by 6 months of age



Ultrasound generally not helpful and not recommended for evaluation of UDT



Bilateral palpable inguinal testes in otherwise healthy child → likely retractile testes



Consider intersex condition / DSD in boy with bilateral nonpalpable UDT



QUESTIONS?