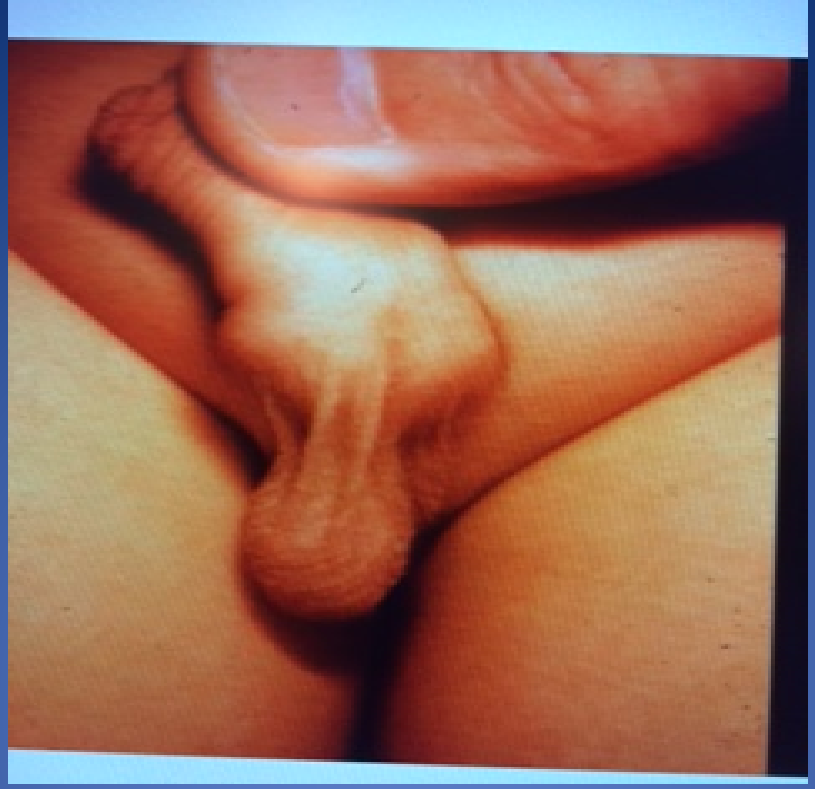
Pediatric Urology in the 21st Century

- Richard Caesar, MD
- Urologic Surgeons of Maine

General Pediatric Urology

- Undescended Testis
- Acute pediatric scrotum
- Urinary Tract Infection
- Vesico-ureteral reflux
- Lower urinary tract dysfunction
- Circumcision
- Hypospadias/labial adhesions
- Varicocele



Terminology

Undescended; abdominal, canal, and pre-scrotal (superficial inguinal ring)

Retractile Testis; palpable in canal; during examination, testis stays in scrotum; observation ; normal histology

Terminology

Ascending Testis;

can be manipulated in to scrotum but does not stay; abnormal histology

Ectopic testis;

testis distal to the external ring but not in the scrotum; femoral, perineal or contralateral scrotum

Infertility/UDT

- Paternity

• Bilateral	65%
• Unilateral	89%
• Control	93%

Lee et al; PSU

UDT

Incidence depends on birth weight and prematurity

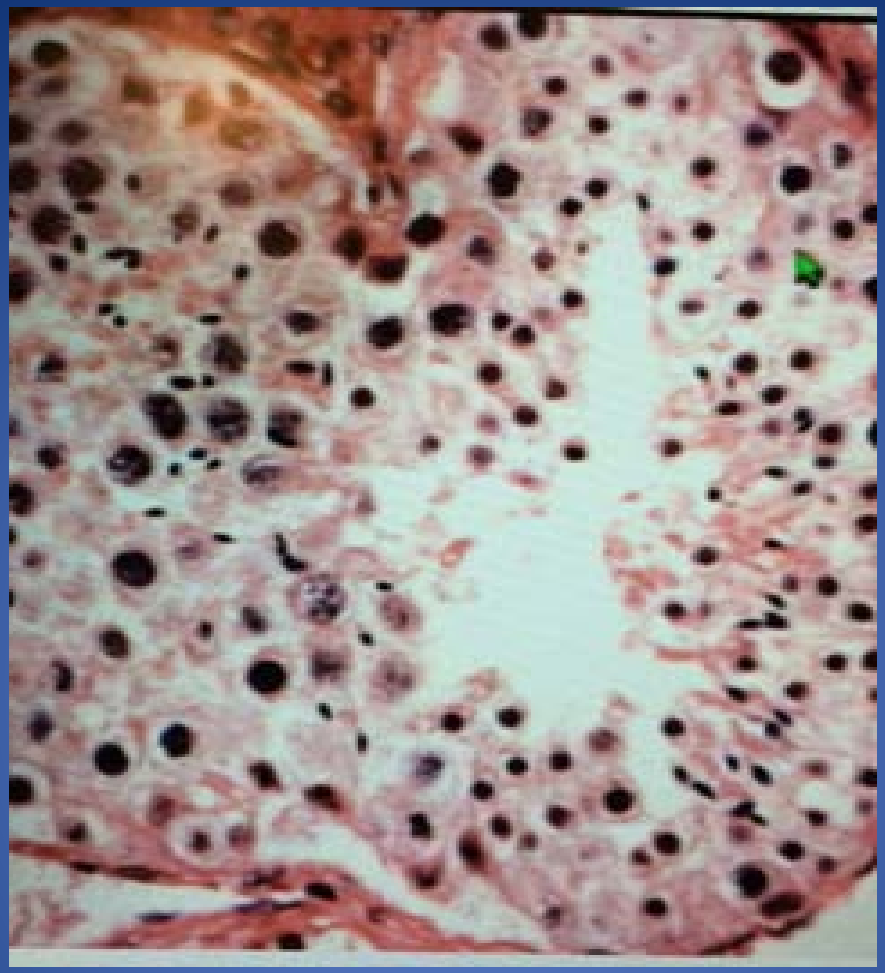
	NB	3 months
Premature	30 %	10%
Term	3 %	1%

Rarely does descent occur past 3 months

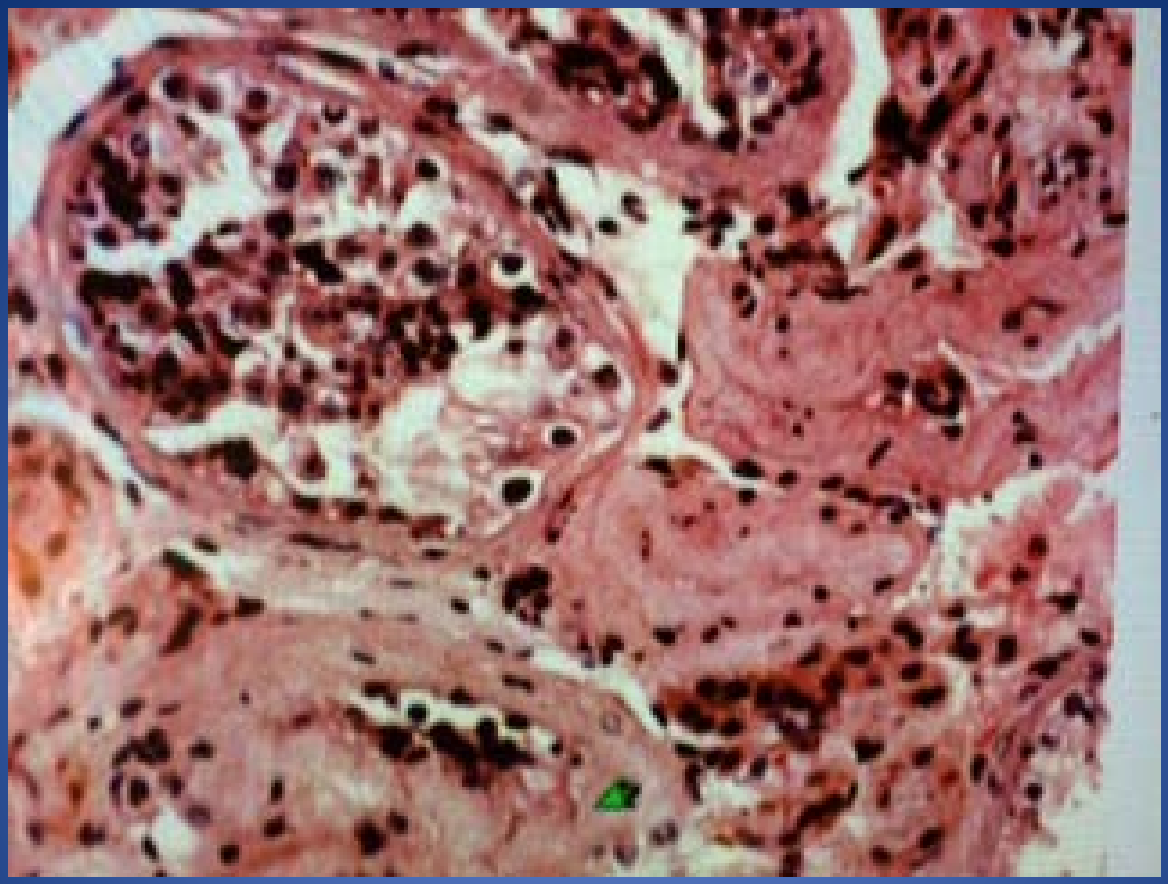
Cancer Risk in UDT

	% DX Testis Ca
USA- AA	0.3%
Scandinavian	0.7%
UDT	3-5%
Contralateral of UDT	1.5-2%

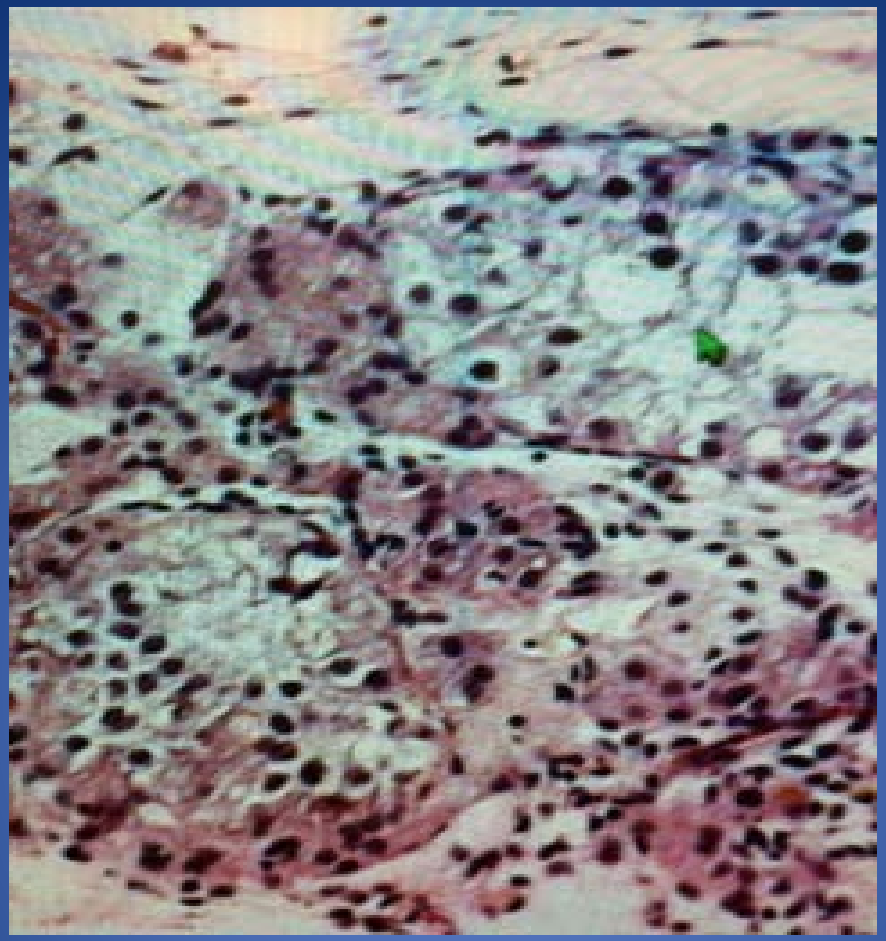
- Hussmann et al Pedi Urol 2001



12 months - delay in germ cell development (Ad spermatogonia)



24 month; peri-tubular fibrosis



3-4 yrs/Adulthood; Germ cell aplasia with vacuolization

AUA Guidelines

Diagnosis

Guideline Statement 1. *Providers should obtain gestational history at initial evaluation of boys with suspected cryptorchidism.* (Standard; Evidence Strength: Grade B)

Guideline Statement 2. *Primary care providers should palpate testes for quality and position at each recommended well-child visit.* (Standard; Evidence Strength: Grade B)

Guideline Statement 3. *Providers should refer infants with a history of cryptorchidism (detected at birth) who do not have spontaneous testicular descent by six months (corrected for gestational age) to an appropriate surgical specialist for timely evaluation.* (Standard; Evidence Strength: Grade B)

Guideline Statement 4. *Providers should refer boys with the possibility of newly diagnosed (acquired) cryptorchidism after six months (corrected for gestational age) to an appropriate surgical specialist.* (Standard; Evidence Strength: Grade B)

Guideline Statement 5. *Providers must immediately consult an appropriate specialist for all phenotypic male newborns with bilateral, non-palpable testes for evaluation of a possible disorder of sex development (DSD).* (Standard; Evidence Strength: Grade A)

Guidelines

Diagnosis

Guideline Statement 6. *Providers should not perform ultrasound (US) or other imaging modalities in the evaluation of boys with cryptorchidism prior to referral as these studies rarely assist in decision making.* (Standard; Evidence Strength: Grade B)

Guideline Statement 7. *Providers should assess the possibility of a disorder of sex development (DSD) when there is increasing severity of hypospadias with cryptorchidism.* (Recommendation; Evidence Strength: Grade C)

Guideline Statement 8. *In boys with bilateral, non-palpable testes who do not have congenital adrenal hyperplasia (CAH), providers should measure Müllerian Inhibiting Substance (MIS or Anti-Müllerian Hormone [AMH]) level), and consider additional hormone testing, to evaluate for anorchia.* (Option; Evidence Strength: Grade C)

Guideline Statement 9. *In boys with retractile testes, providers should monitor the position of the testes at least annually to monitor for secondary ascent.* (Standard; Evidence Strength: Grade B)

Guidelines

Treatment

Guideline Statement 10. *Providers should not use hormonal therapy to induce testicular descent as evidence shows low response rates and lack of evidence for long-term efficacy.* (Standard; Evidence Strength: Grade B)

Guideline Statement 11. *In the absence of spontaneous testicular descent by six months (corrected for gestational age), specialists should perform surgery within the next year.* (Standard; Evidence Strength: Grade B)

Guideline Statement 12. *In pre-pubertal boys with palpable, cryptorchid testes, surgical specialists should perform scrotal or inguinal orchidopexy.* (Standard; Evidence Strength: Grade B)

Guideline Statement 13. *In pre-pubertal boys with non-palpable testes, surgical specialists should perform examination under anesthesia to reassess for palpability of testes. If non-palpable, surgical exploration and, if indicated, abdominal orchidopexy should be performed.* (Standard; Evidence Strength: Grade B)

Differential for Scrotal Pain

- Testicular Torsion 16-31%
- Torsion of Appendix Testis 31-46%
- Epididymitis
- Hernia
- Hydrocele
- Tumor
- Trauma
- Henoch-Schonlein Purpura
- Idiopathic Scrotal Edema
- Varicocele

History

Timing of Onset of Pain

- Torsion; acute/unrelenting
- App testis/epididymitis; indolent
- Pain lasting more than one hour after trauma, torsion or rupture

Physical Exam

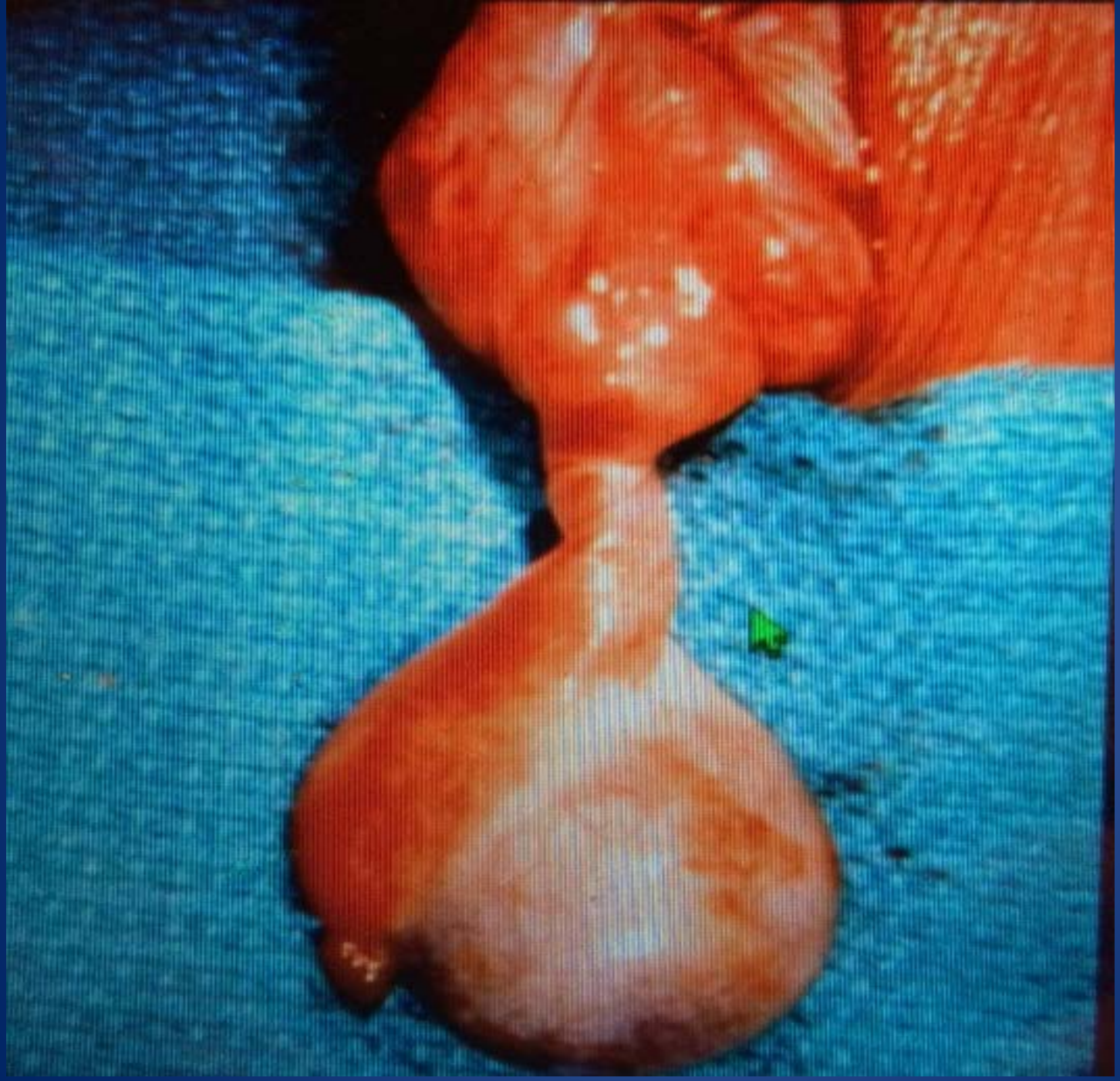
- Scrotum
  - Laterality of swelling, erythema, skin edema, lie of testis
  - Cremasteric reflex
  - Prehn's sign; relief with elevation

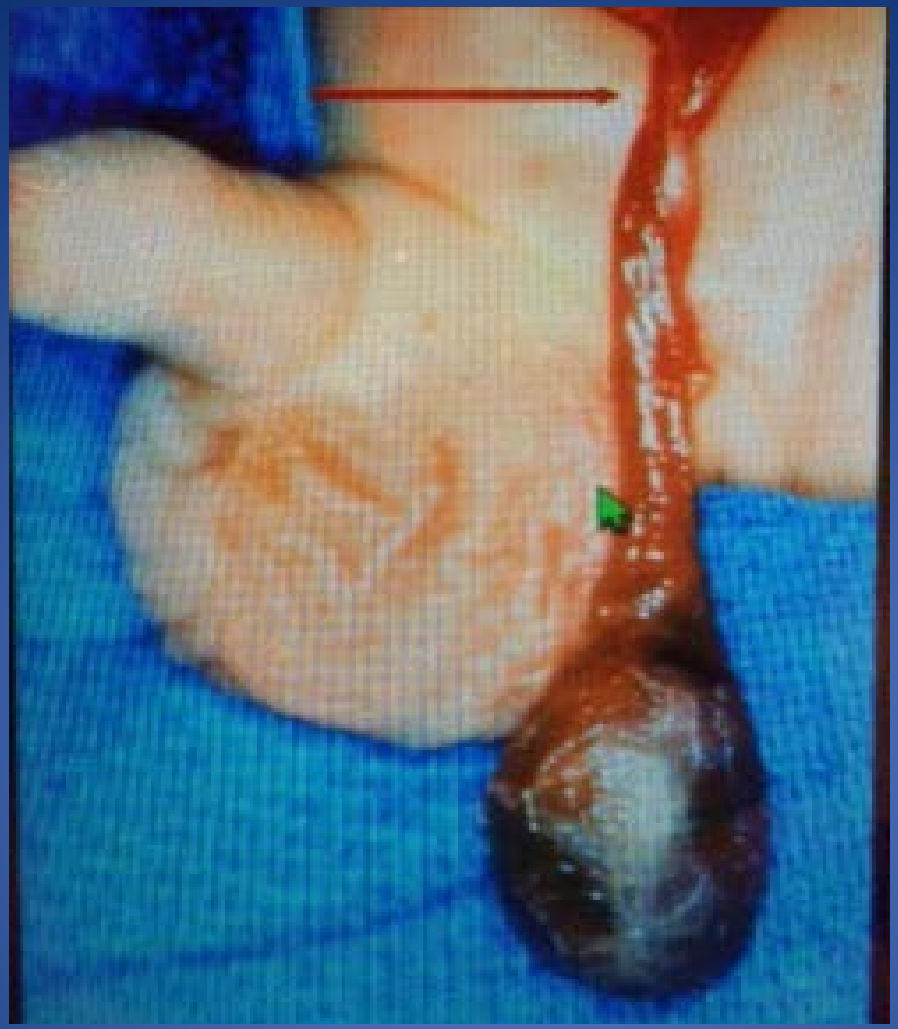
Classic Torsion

- Bell Clapper Deformity
- PE
  - High riding /horizontal lie
  - Swelling/erythema
  - Absent cremasteric reflex

  Management; Detorse; open book exploration within 6 hours

  Intermittent Torsion





Neonatal Torsion

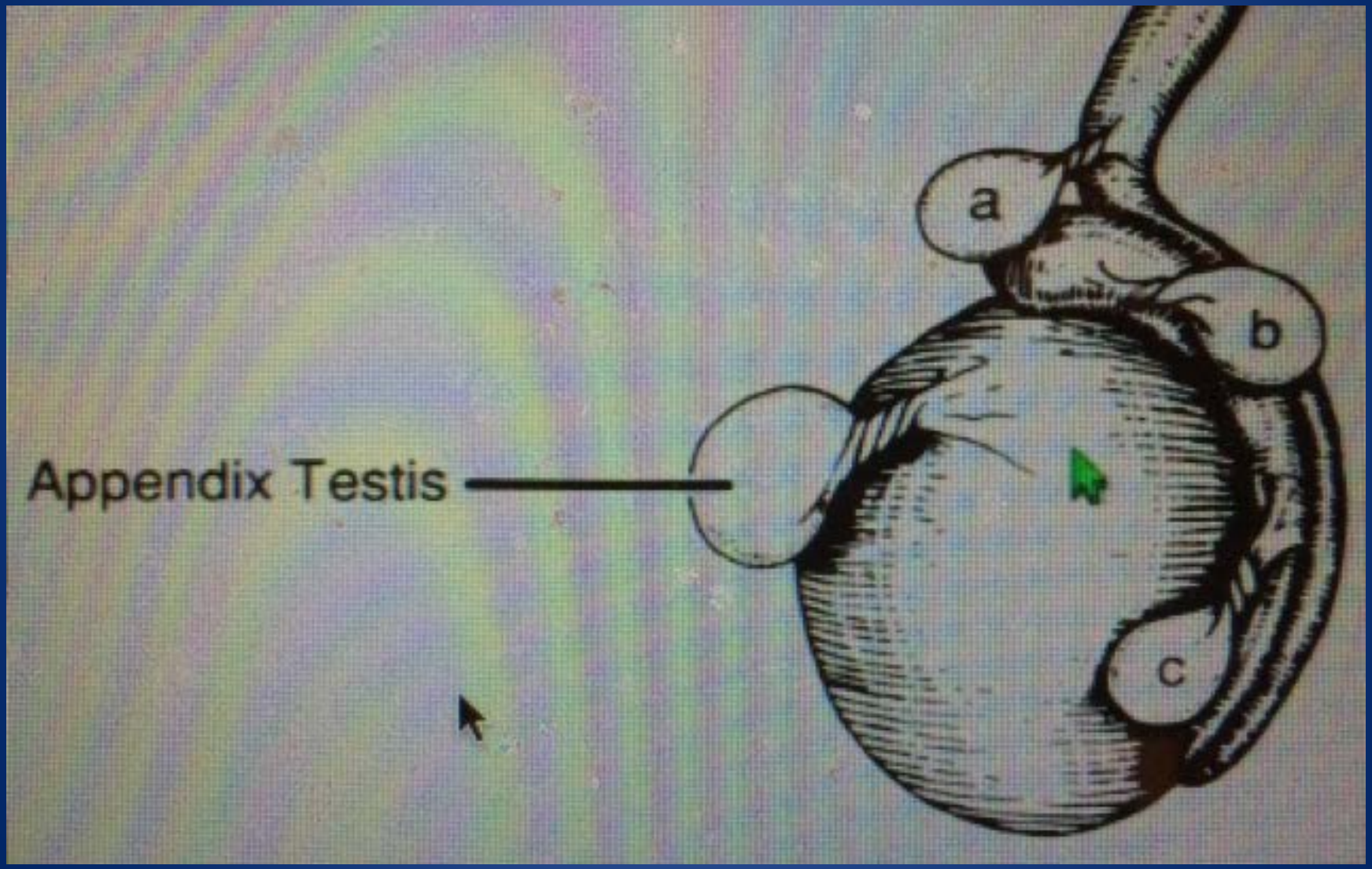
Extravaginal

Contralateral Septopexy prevents catastrophic torsion

Torsion of Appendix Testis

- Mullerian remnant
- “Blue Dot” sign
- Pain and tenderness to upper scrotum
- Minimal swelling

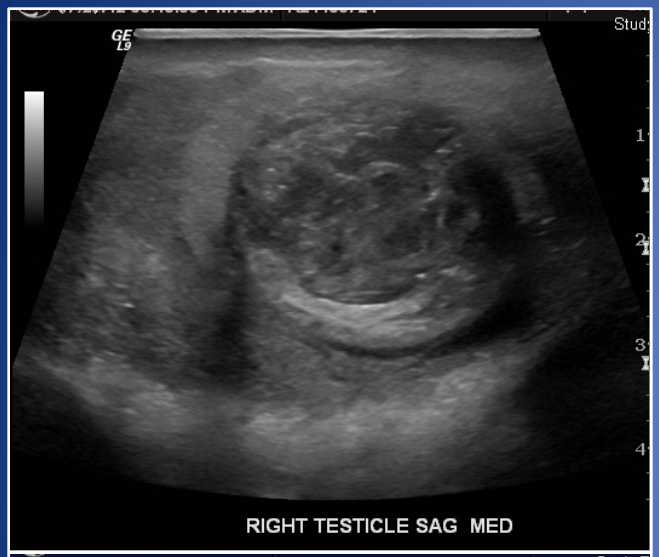
Appendix Testis

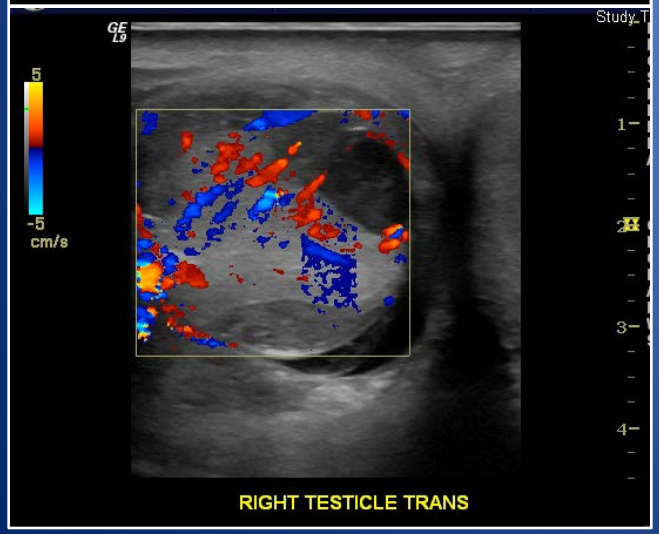


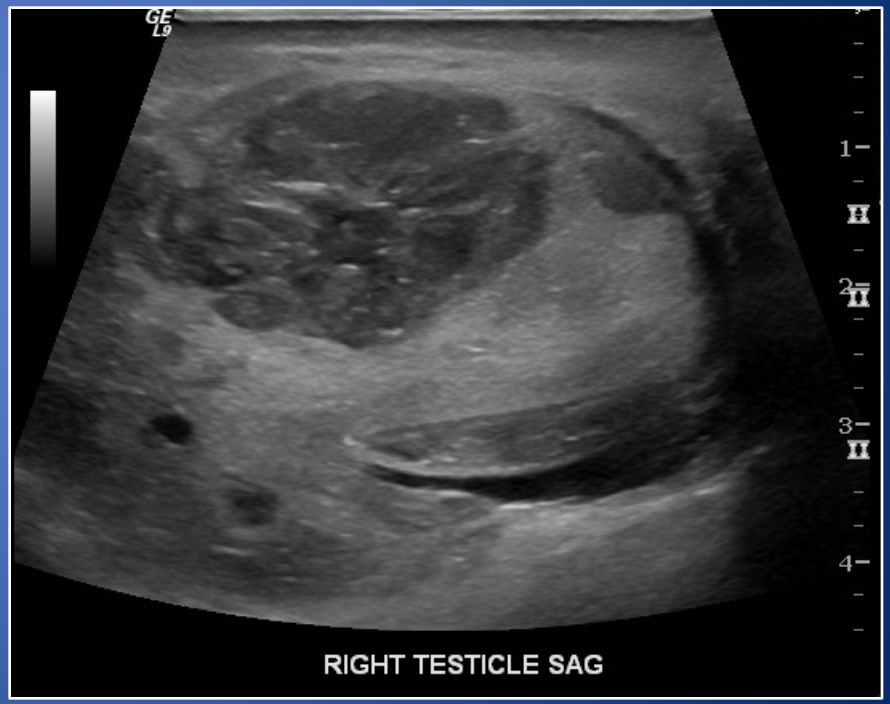
Epididymitis

- Usually culture negative
- Chemical/urine reflux into epididymis
- Dysfunctional voider
- Constipation
- Scrotal U/S; increased flow
- Antibiotics; in sexually active patient

17 yo Boy Dirt Bike Accident
Right Scrotal Swelling





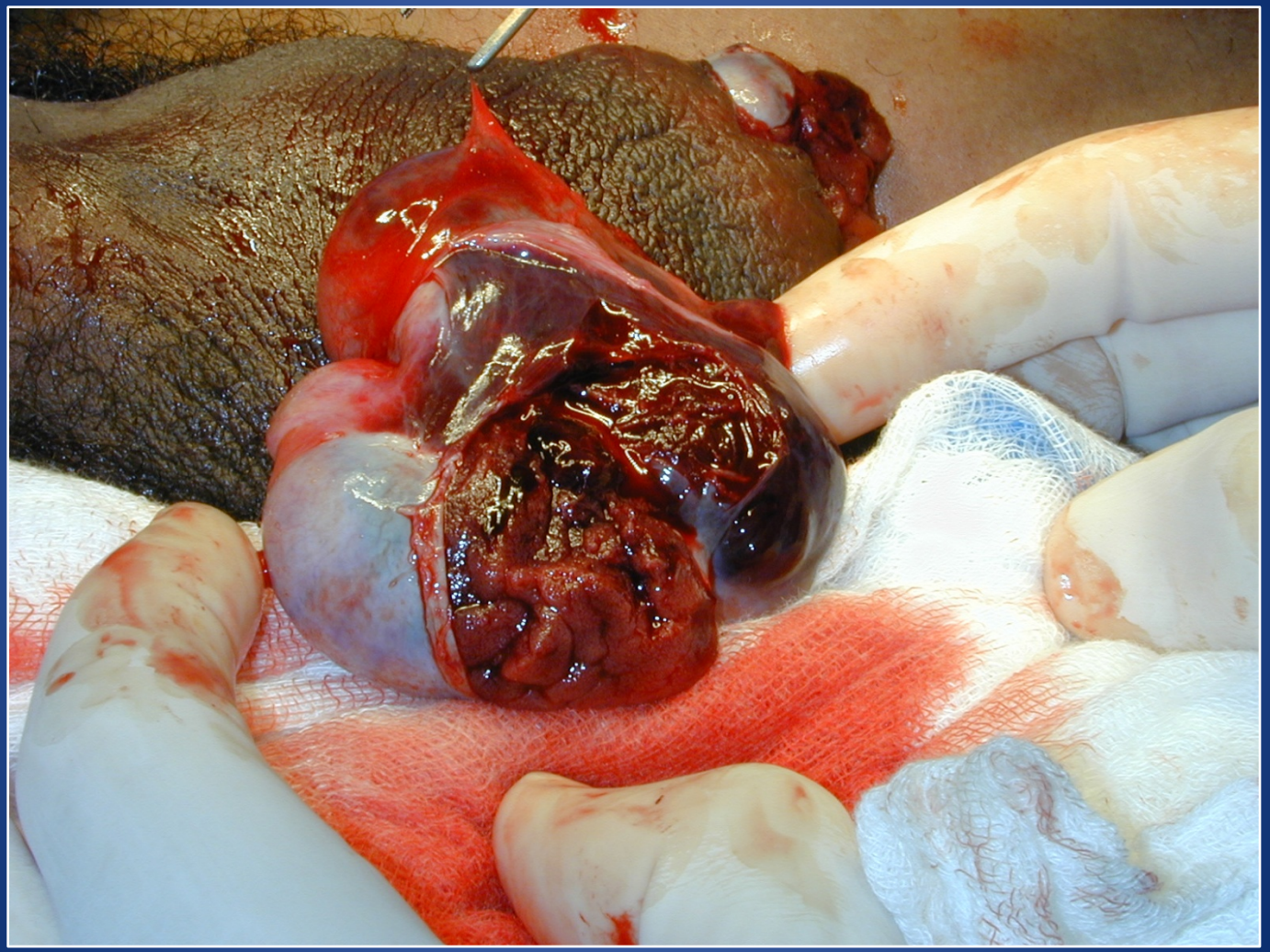


TESTICULAR TRAUMA

- Indication for exploration?

TESTICULAR TRAUMA

- Contusion
- Hematocele
- Hydrocele
- Rupture of the tunica albuginea



TESTICULAR REPAIR

- Debride devitalized tissue
- Antibiotics
  - Irrigation
  - Intravenous
- Reapproximate tunica albuginea

UTI Background

- Common problem (8% of pre-teen girls)
- Boys > girls 1st year of life
- Circumcision decreases risk by 10%

- UTI's harm kidneys
  - 5% pyelonephritis will develop scarring
  - 10-20% with scars develop hypertension

Etiology of UTI

- Ascending route
  - Predisposing factors
    - Bacterial load; constipation, wet perineum, sexual activity
    - Stasis
    - Cellular receptor
    - Host defenses

UTI Guidelines

- 2-24 months
- Bagged specimen is positive, cath should be obtained
- Positive U-A and >50,000 CFU
- IM or oral antibiotics (usually a cephalosporin)
- Renal/bladder U/S
- VCUG not performed routinely after first UTI
  - Pediatrics 128 (3), 2011

VCUG Controversy

- Incidence of VUR related to age
  - 70% < 1 year
  - 25% at 4
  - 15% at 12

VCUG Controversy

- My Approach

- Any male
- Any febrile UTI
- Girls less than 5
- 6-10; > 1 UTI
- > 11; mult UTI's

Treatment of UTI

- Infants; amp/gent or ceftriaxone
- Children; TMP/SMX, cephalosporin
  - Not nitrofurantoin (poor tissue penetration)
  - High resistance with amoxiicillin (50%); Bactrim 20%
  - Prompt treatment prevents scarring

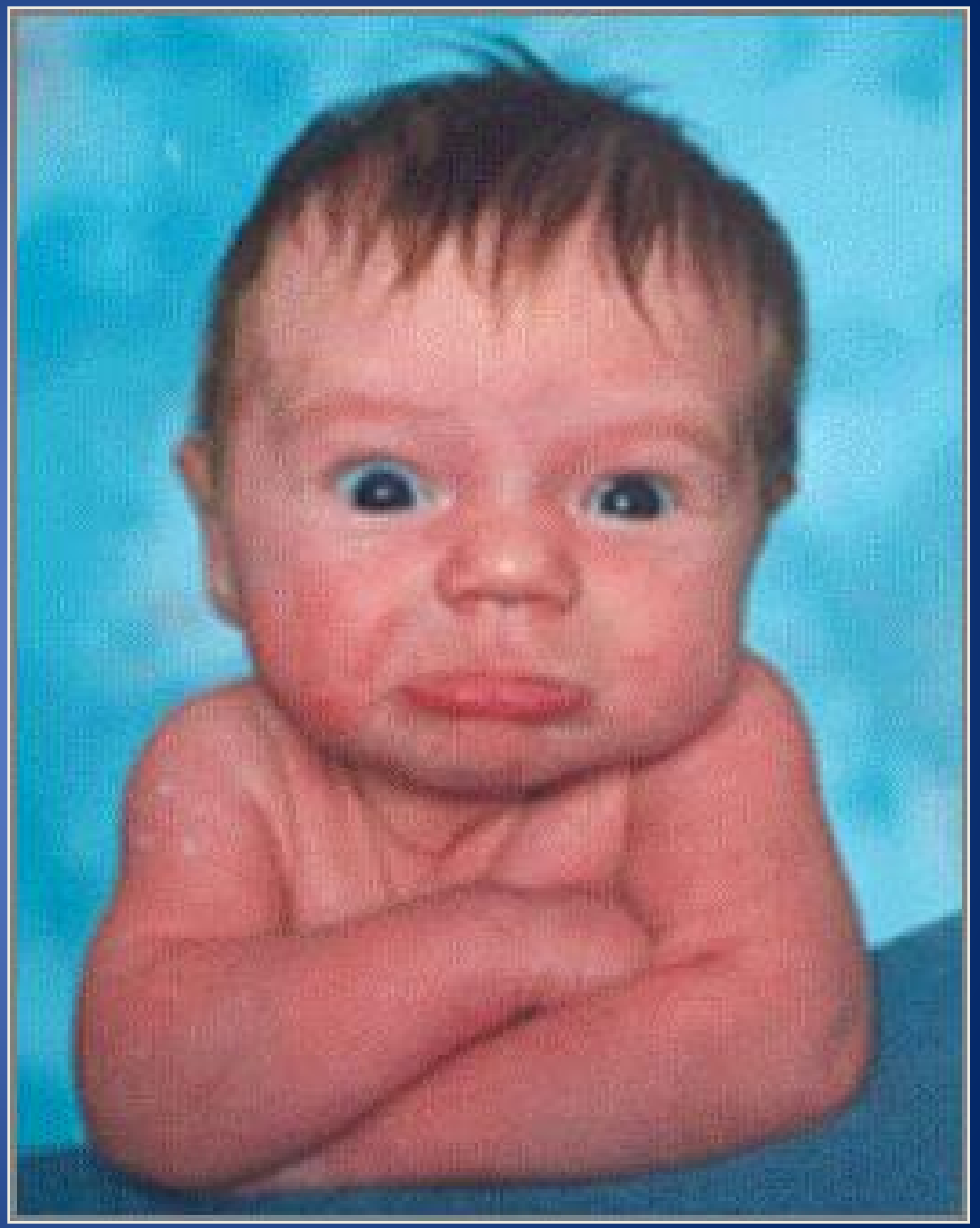
Vesico-ureteral Reflux

- VUR presents prenatally with hydro or later with UTI
- 2 distinct populations with different natural histories

NEWBORNS WITH VUR
What Is The Risk?

“Do I really want to know if I have hydro?”

Information that we wished we never had?



Treatment of VUR

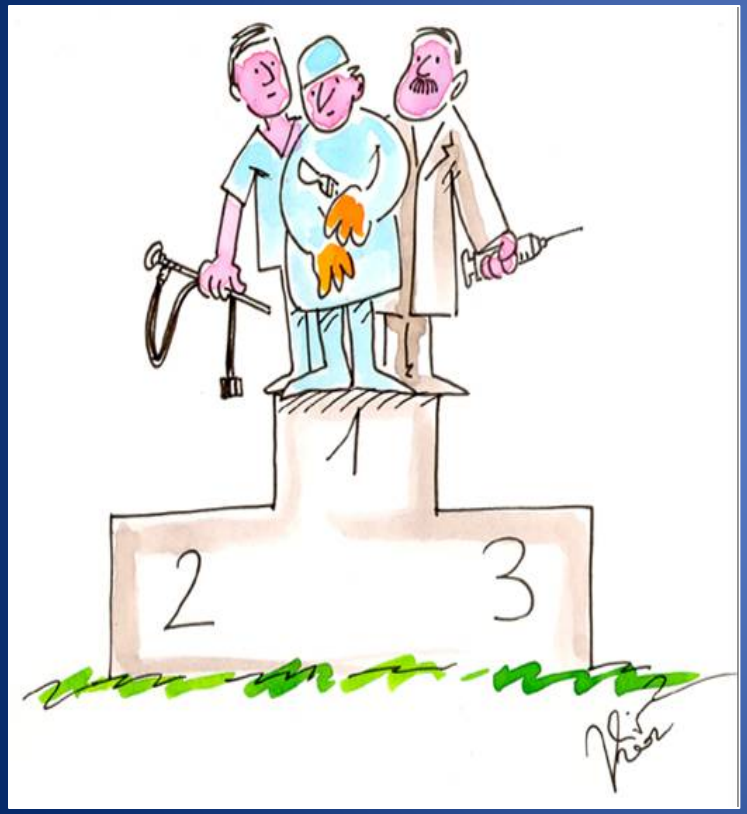
If BT-UTI occurs, change therapy

Assure no BBD

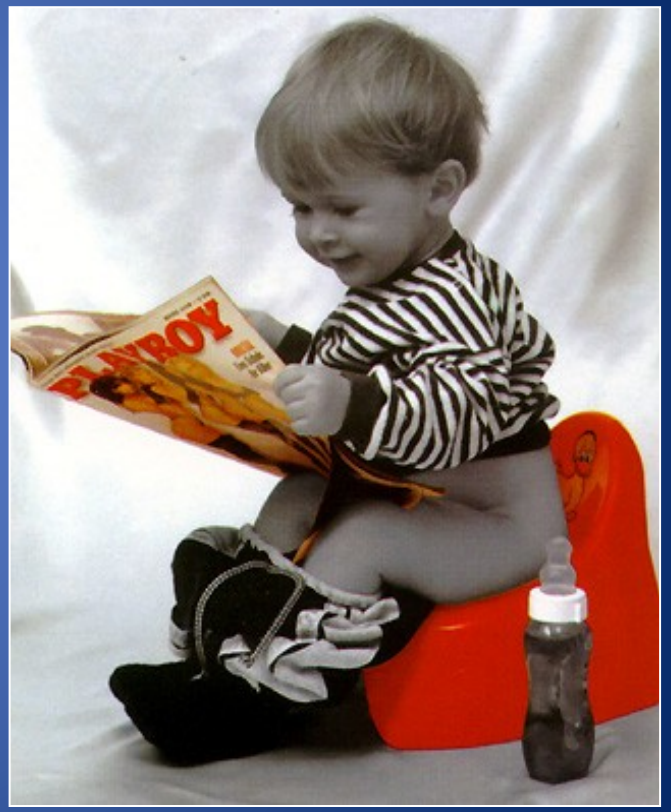
Switch prophylaxis

Consider endoscopic or surgical correction

Dextranomer-Hyaluronic Acid
FDA approval: October 2001



Another treatment alternative



Minimally invasive approach

Vesicoureteral Reflux

Initial Treatment

Patient ≤ 5 years old with VUR:

- CAP-low dose suppression
  - Macrodantin- excreted primarily in urine, easily portable, less side effects
  - TMP/SMX-equally effective, does cause change in GI flora, increased allergy
  - Primsol-less allergy, difficult to find
  - Amoxil- neonates but high resistance with E. Coli

VUR
Bowel and Bladder program

- Upwards of 54% of patients with VUR will aslso manifest BBD
- Has a BT-UTI rate of 40%
- BBD is present in 79% of patients that undergo surgical correction

Voiding Dysfunction and VUR Risk

Enuresis/ frequency

- Daytime incontinence
  - PVR
  - Assess constipation

Management

timed voiding

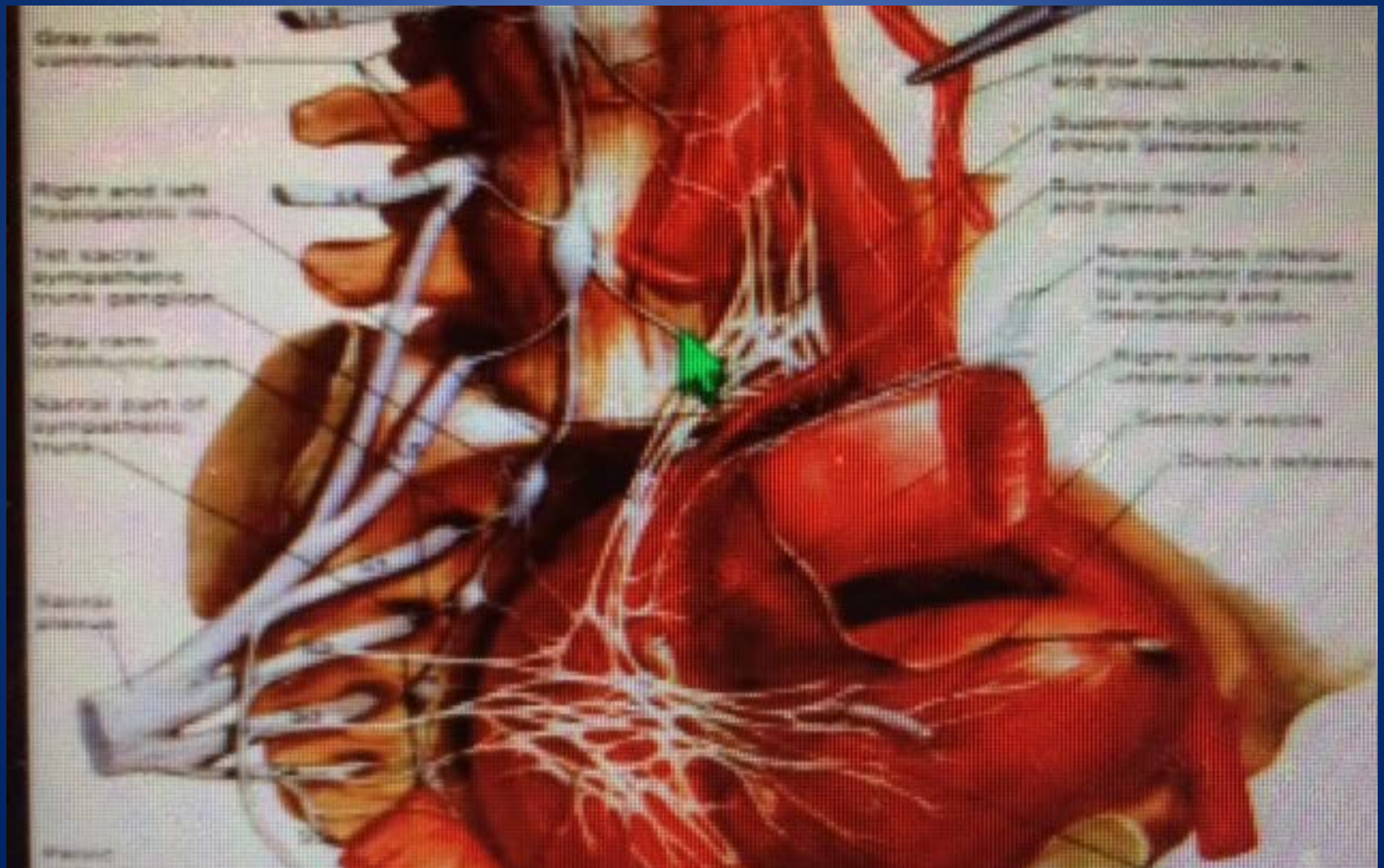
oxybutinin

alpha blockers

biofeedback

Miralax

Constipation



Constipation Treatment

- Initial clean out
- Reconditioning
  - Sit 5 min. 4X/day after meals, feet down
- Fiber/water
  - At least 1L/day
  - Age plus 5 grams/day
- **Polyethylene Glycol 17 gram/day**
- Laxatives (MOM, mineral oil, sorbitol)
  - 1-3 ml/kg/day
  - Senokot (1-3 tabs in a.m.) if necessary
- Suppository
  - 10 mg bisacodyl before meal

Nocturnal Enuresis

- Not dry > 6 months
- 15% of 5 year olds

- Family history
- Education; do not punish
- Self-esteem;
  - DDAVP, tofranil, alarm
  - ENT consult for sleep apnea

Circumcision

- Lower incidence of UTI
- 90% of foreskins retract by 4 months
- Betamethasone cream .05% BID for one month
- Recurrent infections, ballooning; circ

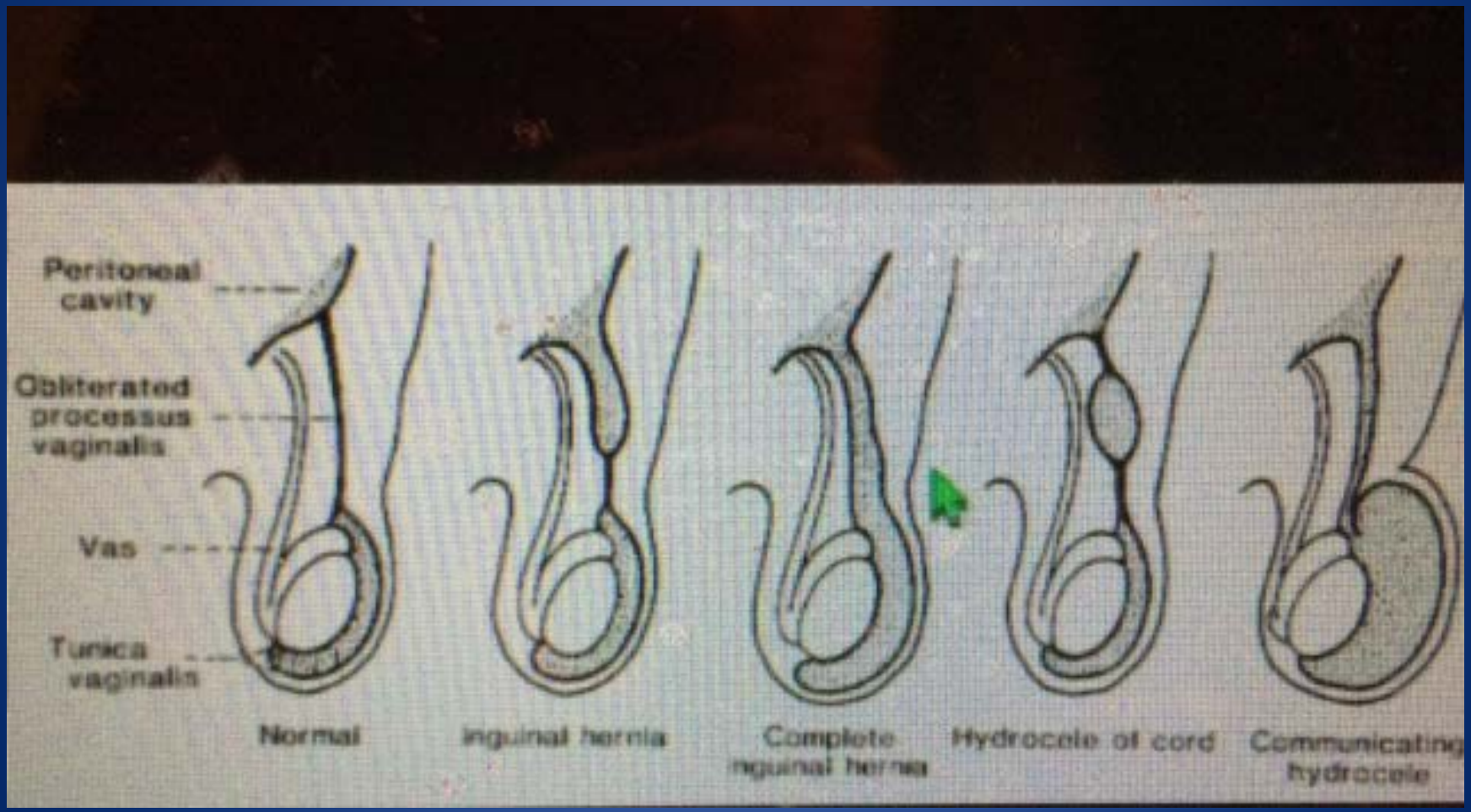

What would you like for your birthday, dear?
I WANT MY FORESKIN BACK, YOU BUTCHER.

- Hypospadias
  - Repair between 6 and 18 months
  - Complications are meatal stenosis and fistula

Labial adhesions

- Likely due to abnl estrogen receptors
  - Premarin cream, then neosporin

Hernia/hydroceles



Varicocele

- Abnormal dilatation of scrotal veins
  - Usually seen on left side
  - Indications for repair
    - >20 %discrepancy in size of testes
    - Abnl SA >17
    - pain


Thank you……..