Update on Pediatric Urology

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(I have no industry ties or disclosures)

Prenatal Imaging of the Urinary tract

- Ultrasound
- MRI
- Timing
- Follow-up
- Counseling
- Intervention
- Post-natal evaluation
- Goals

Prenatal Evaluation: Goals

- Identify anomalies that may require pre or post-natal treatment
- Monitor fetal development
- Evaluate amniotic fluid
- Provide prenatal counseling to parents
- Determine if post-natal follow-up is needed
- But…No standardized protocol, wide variability in findings and LACK OF COMMUNICATION BETWEEN SUBSPECIALTIES
**Prenatal Evaluation of the GU Tract**
- Fetal kidneys visualized by 12 weeks of gestation
- Fetal bladder seen by 10 weeks
- Amniotic fluid index important clue to renal function
- Improving technology = Increasing detection and higher prevalence
- Specific criteria to evaluate the GU tract
- The big questions: “accuracy in diagnosis” and “postnatal significance of the findings”

**Prenatal Hydronephrosis**
- Dilatation of the upper urinary tract (renal collecting system and/or ureter)
- Great variability over time
- Is present in up to 10% of all fetuses undergoing prenatal U/S
- May be associated with:
  - No pathology
  - Vesico-Ureteral Reflux
  - An obstructive process

**Definition of Prenatal Hydronephrosis**
- Based on measurement of the Antero-Posterior diameter of the renal collecting system
- False positive rate 9 to 50%
- 2d. trimester: mild 4-7mm, moderate 8-10mm, severe >than 10mm
- 3d. Trimester: mild 7-10mm, moderate 10-15mm, severe >15mm
- Must also look at bilaterality, ureteral dilatation, appearance of the renal parenchyma, aspect of the bladder and urethra.
Obstructive Reflux

Physiologic Clinically Not Significant

TreatmenT

Protect renal function Permit growth & development Avoid Stasis, UTI etc...

No Treatment Avoid Unnecessary Tests, Abx & Surgery

PNH: When to be Concerned

• Oligohydramnios (AFI low)
• Moderate or severe bilateral hydronephrosis
• Associated anomalies (spine, heart, etc…)
• Abnormal kidneys (hyper echoic, cystic)
• Very dilated bladder
• Markedly enlarged renal collecting system encroaching on GI tract or lungs
• Intrauterine growth retardation
• Prenatal consultation with Pediatric Urologist is mandatory

Differential Diagnosis of Prenatal Hydronephrosis

• Transient / Physiologic 50-70%
• UPJ obstruction 10-30%
• VUR 10-40%
• Megaureter 5-15%
• MCDK 2-5%
• PUV 1-5%
• Ureterocele, ectopic ureter, duplex system, urethral atresia, Prune belly, PCKD, renal cysts
Prenatal Intervention

- Goals:
  - Preservation of renal function
  - Allow for lung development
  -Rarely needed and should be considered experimental and must be done at a specialized center
  -Open fetal surgery
  -Needle aspiration and amnio-infusion
  -Vesico-amniotic shunt
  -Termination
  -There is no evidence to suggest improved outcomes

Post-Natal Evaluation of PNH

- No published guidelines accepted by Ob-Gyn, radiologists, pediatricians and pediatric urologists
- Mild PNH: no follow-up unless family hx of VUR
- Moderate PNH: consider U/S at one month with +/- bladder imaging
- Severe unilat. PNH: U/S and VCUG at 1 month with MAG3 renal scan
- Severe bilat. PNH: immediate evaluation by U/S and VCUG
- Role of antibiotic prophylaxis and circumcision in males

Neonatal Circumcision in the USA

- Obstetrician performs the circumcision
- Pediatrician manages the wound
- Urologists take care of any complications
CIRCUMCISION

- Most common operation carried out in the world
- 25% of men worldwide are circumcised
- 1.2 million a year in USA
- 65% of US males circumcised
- Origins may date back 15,000 years
- Oldest planned operation
- Most controversial surgical procedure in history

Worldwide Recommendations (non-therapeutic, non-religious circumcision)

- Australia/New Zealand - no medical indication for routine male circumcision
- British Assoc of Ped Surgeons - practice should be discouraged by education
- Canadian Ped Soc - evidence insufficient to warrant routine practice
- ACOG, AAP - data not sufficient to recommend routine neonatal circ.
- PPS - unnecessary & without medical indications
- Europe: circumcision not recommended.
- Japan: emphasis on hygiene, circumcision not recommended

Anatomy

Smegma →> granular secretion and sloughed debris
Contraindications to Circumcision

- **Absolute:**
  - Penile abnormalities (hypospadias, epispadias, megalourethra, micropenis)
- **Relative:**
  - Bleeding diathesis (family history)
  - Prematurity
  - Severe medical problems
  - Large hydrocele or severe concealed penis
  - Lack of adequate skill or equipment

Indications for Circumcision

- **Medical**
  - Phimosis
  - Balanoposthitis
  - Paraphimosis
  - Localized condyloma acuminata
  - Localized carcinoma
- **Inability to provide hygiene**
- **Prevention**
  - UTIs
  - STDs
  - HIV
  - Penile Cancer
- **Religious & cultural**
- **Parental preference**

Post-circumcision Bleeding

- 0.1 – 35% cases
- Typically from the frenular artery
  - Pressure, pressure, pressure – 5-10 mins
  - Single hemostatic stitch – *fine absorbable* suture material, e.g., 6-0 chromic
    - Must avoid underlying urethra
- Diffuse bleeding
  - Gelfoam around incision for 5-10 mins
  - If does not stop consider coagulopathy
  - May have to bring to OR for further therapy
**Questionable Cosmesis: the “Botched Circumcision”**

- Not enough skin removed. Push down on prepubic fat pad to ensure that skin is not being pushed up over the glans.
- Asymmetric residual foreskin.
- Recurrent preputial adhesions.
- Penile skin bridges.
- Too much skin removed.
- Penile entrapment.

**Alternative to Circumcision**

- Topical application of steroid cream for treatment of phimosis (40 to 70% success rate, may be related to retraction)
- “Swedish procedure”: dorsal slit on outer aspect of penis at level of the phimotic ring
- Complete dorsal slit.
- Tincture of time (most phimoses resolve by puberty)

**Penile Adhesions**

- Physiologic adhesions present in all uncircumcised infants
- Resolve as a underlying skin exfoliates
- Can often be seen as a whitish lump (smegma)
- Natural process not infectious. Occ. redness when separate.
- Physiologic adhesions may persist after NB circ and will resolve without Rx
**Penile Skin Bridge**
- Form as a result of newborn circumcision
- Scar tissue forms between the circ incision line and the glans
- Will not resolve without surgical excision
- Normally do not recur after Rx

**Meatal Stenosis**
- Acquired problem of circumcision
- Pathogenesis: recurrent meatitis from prolonged exposure to moist environment
- Other causes: prior hypospadias repair, prolonged urethral cath., trauma and BXO
- Pinpoint meatus (nl < 1 yo --> 5 fr.; 1-6 --> 8fr.)
- Application of post-circumcision lubrication!
  - Reduces risk of meatal stenosis (7% v. 0%); Bazmamoun et al., Urol J, 2008

**Meatal Stenosis**
- Dx: dorsal deflection of urinary stream, fine caliber and forceful stream, dysuria, blood spotting, frequency, urgency.
- May be associated with significant voiding dysfunction in boys.
- Rx: Meatotomy; NO DILATATION !!!!
Care of the Non-Circumcised Penis

- Newborns and toddlers: Wash penis gently with soap and water
- Start gently retracting foreskin at 6 months to a year
- Have child start washing his penis at age 2 to 3
- Should be taught to retract foreskin early
- Never retract foreskin forcefully
- Foreskin should retract fully by age 4 to 5

Scrotum and Testicles

- Hydrocele
- Hernias
- Maldescended testes
- Absent testis
- Scrotal pain/ acute scrotum
- Varicoceles

Testicular Maldescent

- Common condition 1% of boys
- Bilateral in 5 to 10% of cases
- 20% are impalpable: 80% intra-abdominal, 20% vanishing testis syndrome
- Do NOT use Ultrasound to find testicle, no change in management and lack of reliability
- Laparoscopy for evaluation
- Rule out retractile testis> Definition
- Surgery for truly maldescended testis between 6 months a 1 year of age so referral at 4 to 6 months of age.
The Acute Scrotum

- Differential diagnosis: torsion of spermatic cord, torsion of appendix torsion (blue dot sign), epididymitis
- Presentation: acute onset of pain versus slow, degree of pain
- Physical examination
- Role of ultrasound
- Timing of surgical intervention (4 to 6 hour window of time to salvage testicle)
- Torsion of the spermatic cord is a true emergency!

Hernia/Hydrocele

- Hydrocele= fluid around the testicle, very common in newborns, will resolve within 1 year in most cases
- Association with hernia, groin swelling
- Incarcerated hernia, also an emergency!
- Hydroceles should not be treated until 1 year of age, so refer later unless very large and tense
- Adolescent hydrocele usually secondary to trauma. Should have scrotal U/S evaluation

UTIs and Pyelonephritis