

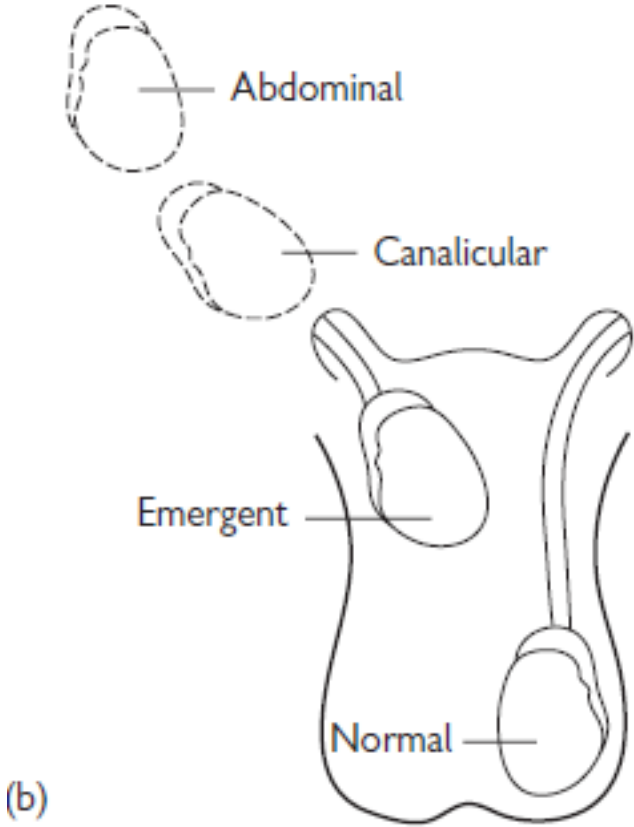
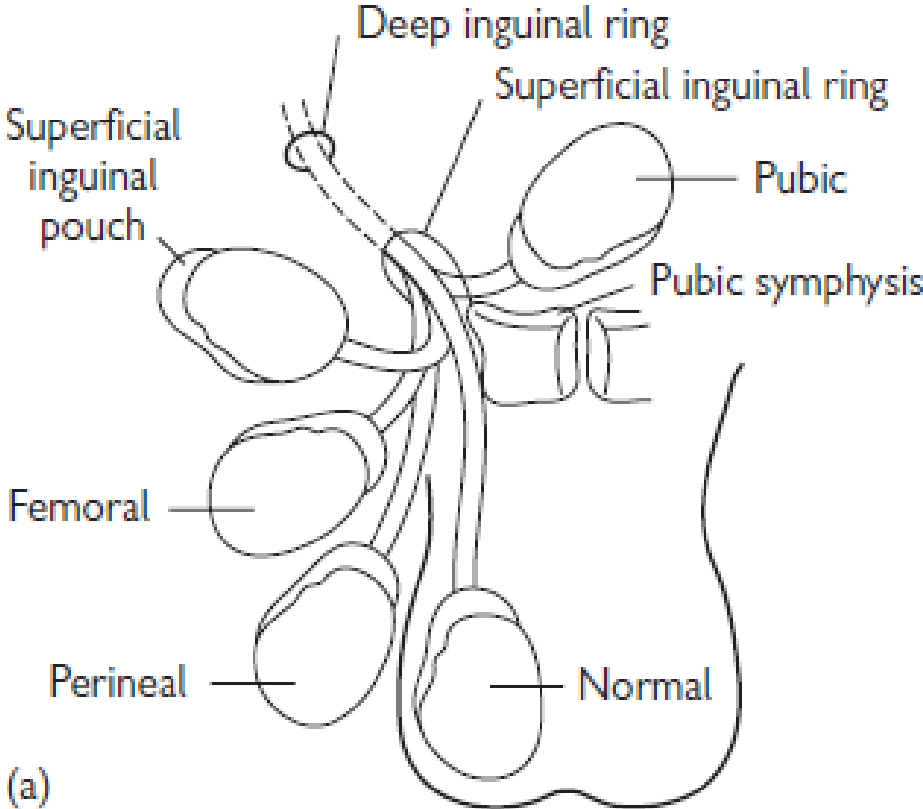
Pediatric Office Urology

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CRYPTORCHIDISM UNDESCENDED TESTIS

- One of the most common congenital anomalies, occurring in 1-4% of full-term and 1-45% of preterm male neonates
- About 80% of undescended testes are palpable, and 60% to 70% are unilateral

Classification



- **Risk factors :**

- Preterm
- Low birth weight
- Small for gestational age
- Twins
- Family history of UDT

- **Etiology :**

- Abnormal testis or gubernaculum
- Endocrine abnormalities (low level of androgens, HCG, LH, calcitonin gene-related peptide, or MIS)
- Decreased intra-abdominal pressure

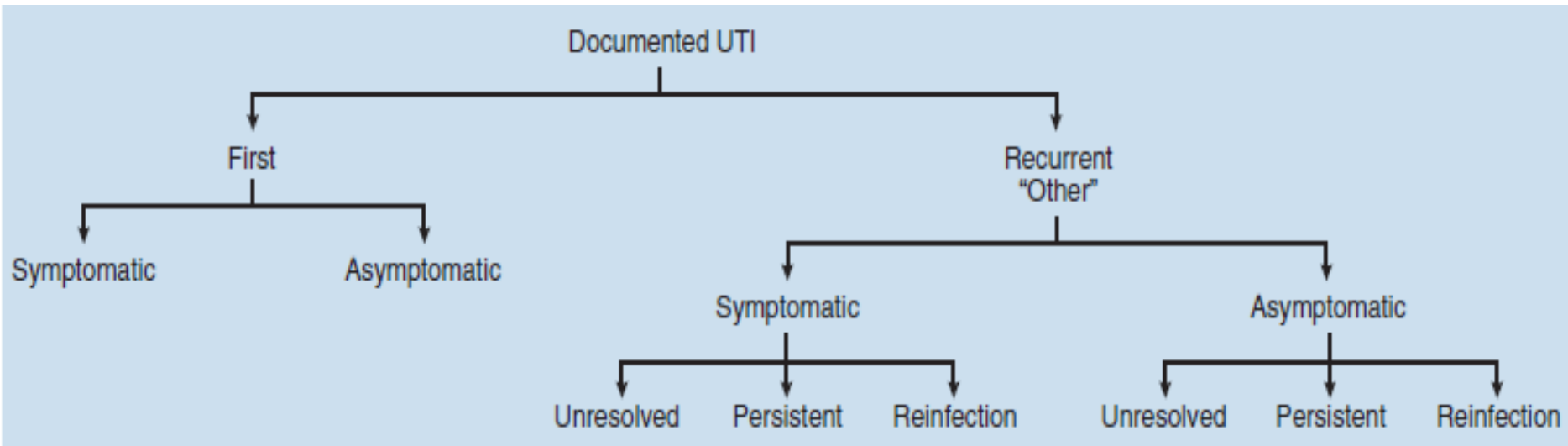
- **Pathology**
- Degenerated Sertoli cells, loss of Leydig cells, atrophy, and abnormal spermatogenesis

- **Evaluation**
- Examine the scrotum and inguinal region to elucidate if a testis is palpable and to identify its location
- If neither testis is palpable, consider chromosome analysis and endocrine analysis

- Orchidopexy is recommended for testes that remain undescended after 6 months of age ,hormone therapy is not recommended
- The Fowler–Stephens approach involves initial clipping or division of spermatic vessels to provide extra length ,six months later, the testis is then mobilized on its vas with its new collateral vessels and brought down into the scrotum
- Laparoscopy is the procedure of choice in the diagnosis and treatment of intraabdominal cryptorchidism

- The relative risk of malignancy (seminomas) in cryptorchid testes is 2-8 and may be 2-3 after prepubertal orchidopexy
- Sperm counts are reduced in at least 25% of formerly unilateral and the majority of formerly bilateral cryptorchid men
- Paternity rates in the unilateral group are similar to those of control men
- Increased risk of testicular torsion or trauma
- Increased risk of indirect inguinal hernias

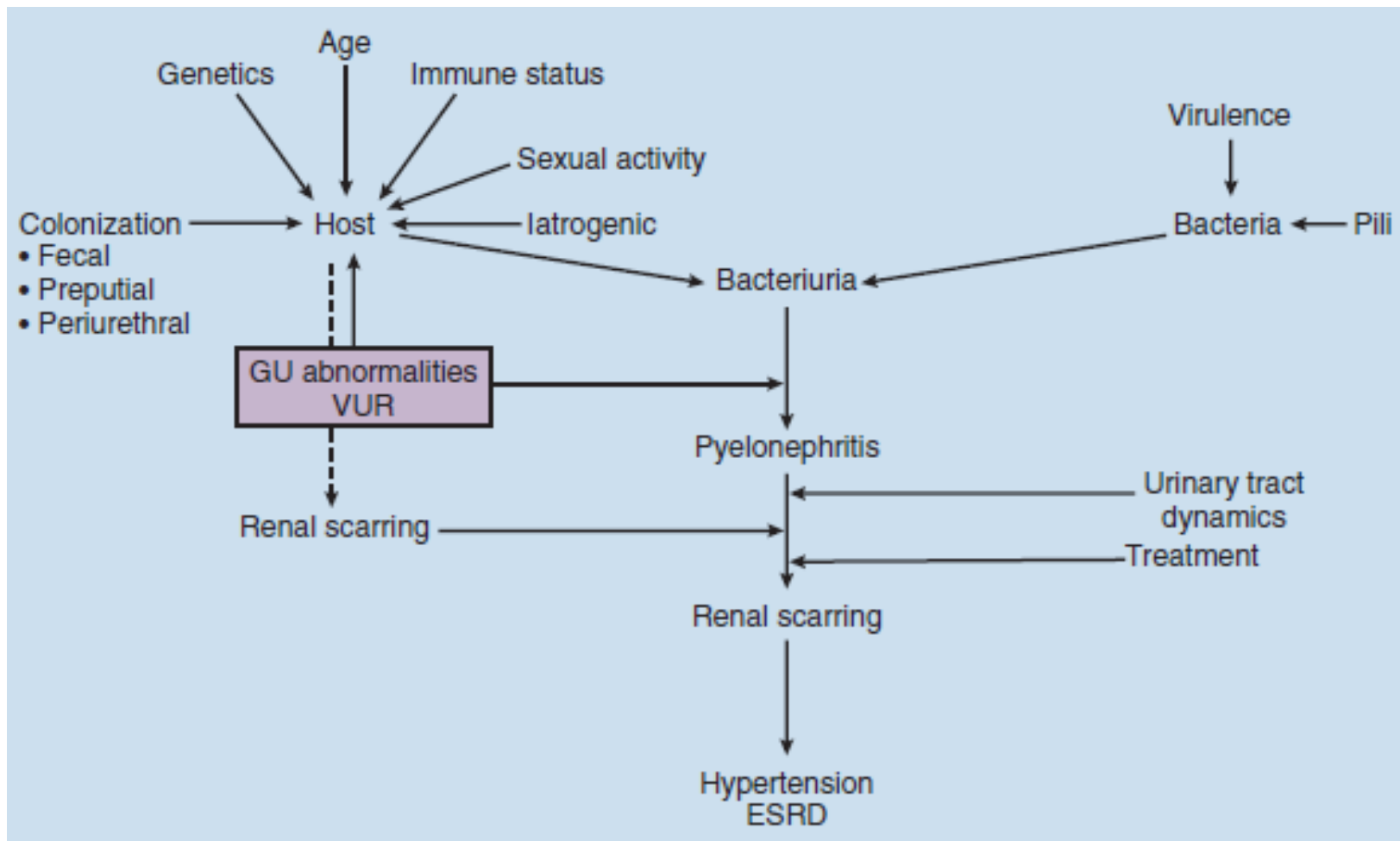
Urinary tract infection (UTI)



- **Classification**
- Simple UTI
- Severe UTI
- Atypical UTI: features of serious illness/septicaemia
- Recurrent UTI: in children ,either one episode of cystitis with one episode of pyelonephritis, ≥ 2 episodes of pyelonephritis, or ≥ 3 episodes of cystitis

- **Incidence:**
- Up to age 1 (male:female ratio is 3:1), thereafter (school age males 1%; females 3%)

- **Pathology:**
- *E.coli*, Enterococcus ,*Pseudomonas*, *Klebsiella*, *Proteus*, and *S. epidermidis*



- Factors that affect the development of bacteriuria and subsequent pyelonephritis, renal scarring, hypertension and (ESRD)

In children, discovering surgically correctable sources of bacterial persistence is important

Infection stones

Infected nonfunctioning or poorly functioning kidneys or renal segments

Infected ureteral stumps after nephrectomy

Vesicointestinal or urethrorectal fistula

Vesicovaginal fistula

Infected necrotic papillae in papillary necrosis

Unilateral medullary sponge kidney

Infected urachal cyst

Infected urethral diverticulum or periurethral gland

Urinary tract infection (UTI)

- Clinical symptoms correlate poorly with bacterial localization within the urinary tract
- Neonates and infants
- Children

Urinary tract infection (UTI)

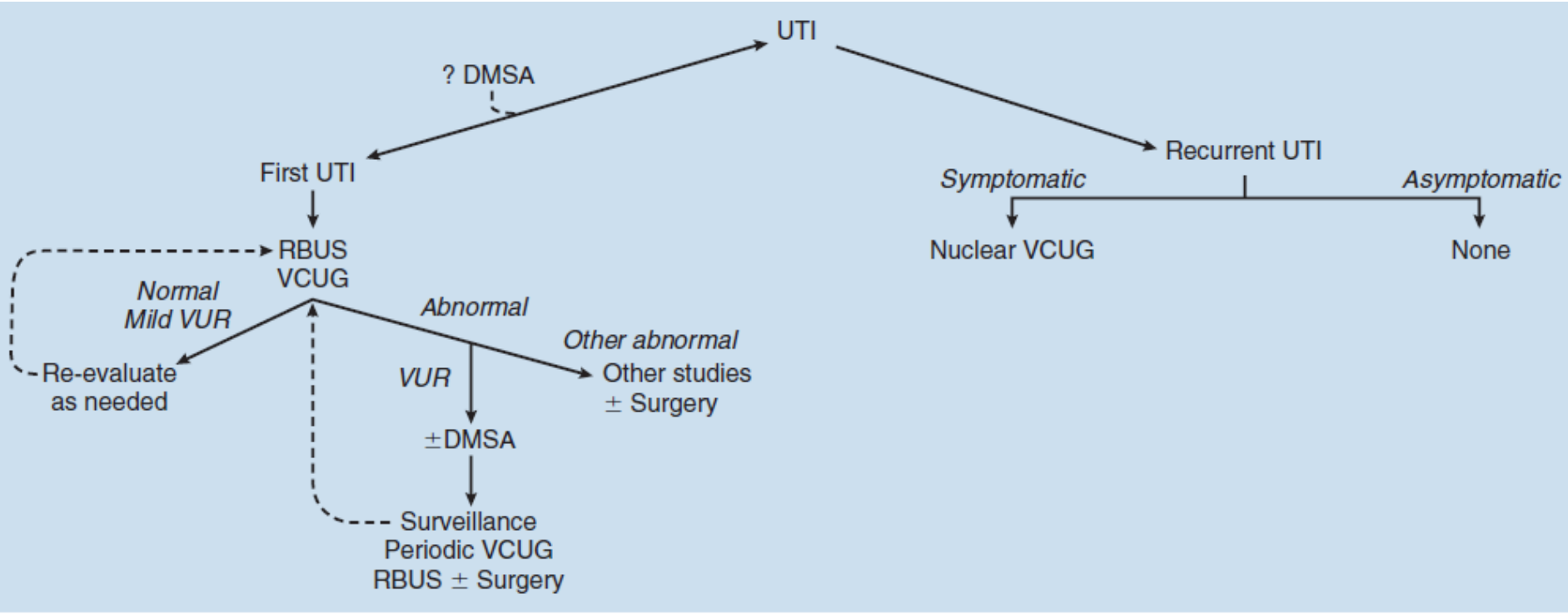
Symptoms of Urinary Tract Infection in 100 Infants with Acute Urinary Tract Infections

SYMPTOM	PERCENTAGE
Fever	67
$\geq 38^{\circ}$ C	100
$\geq 39^{\circ}$ C	57
Irritable	55
Poor feeding	38
Vomiting	36
Diarrhea	36
Abdominal distention	8
Jaundice	7

Modified from Ginsburg CM, McCracken GHJ. Urinary tract infections in young infants. *Pediatrics* 1982;69:409-12.

- **Investigation**
- **Urine analysis and culture**
- MSU
- Catheterized urine specimen

- **Imaging**
- USS
- DMSA
- MCUG



- **Key Points: UTI Diagnosis**
- UTI is a possible marker for teenage sexual activity
- Any organisms present in a suprapubic urine aspirate are pathognomonic for bacteriuria
- Plastic bag specimens are unreliable and unacceptable

Urinary tract infection (UTI)

- **Management**

- Infants <3 months: IV antibiotic
- Infants and children >3 months with pyelonephritis :7–10 days of oral ABx or IV 3rd generation cephalosporin for 2–4 days followed by oral ABx for 10 days
- Infants and children >3 months with cystitis oral antibiotics for 3 days and reassess

Indications for Urinary Tract Antimicrobial Prophylaxis

Vesicoureteral reflux

Unstable urinary tract abnormality (e.g., partial urinary tract obstruction)

Normal urinary tract but frequent reinfections

After acute UTI awaiting radiologic evaluation

Urethral instrumentation

Immunosuppressed or immunocompromised status

Infants with first UTI before 8-12 weeks of age

Clean intermittent catheterization and vesicoureteral reflux (?)

Vesicoureteric reflux (VUR)

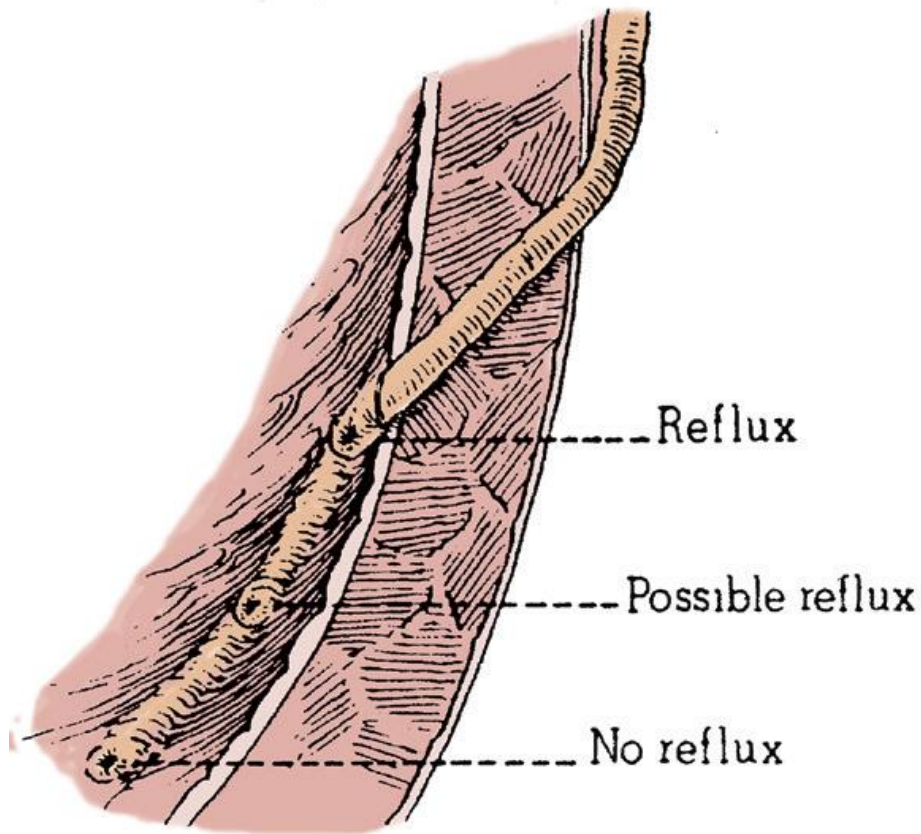
- It results from abnormal retrograde flow of urine from the bladder into the upper urinary tract

AGE (yr)	INCIDENCE (%)
<1	70
4	25
12	15
Adults	5.2

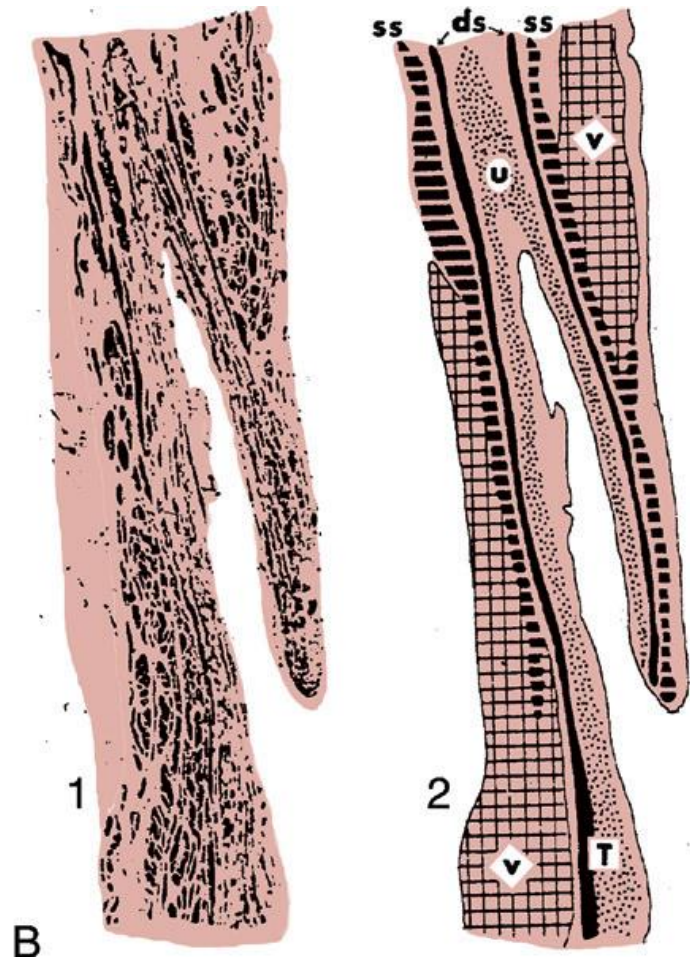
Vesicoureteric reflux (VUR)

- **Epidemiology:**
- Caucasian > Afro-Caribbean
- Offspring of an affected parent has up to 70% incidence of VUR
- Screening of offsprings and siblings is controversial

Vesicoureteric reflux (VUR)



A



B

Vesicoureteric reflux (VUR)

Mean Ureteral Tunnel Length and Diameter in Normal Children

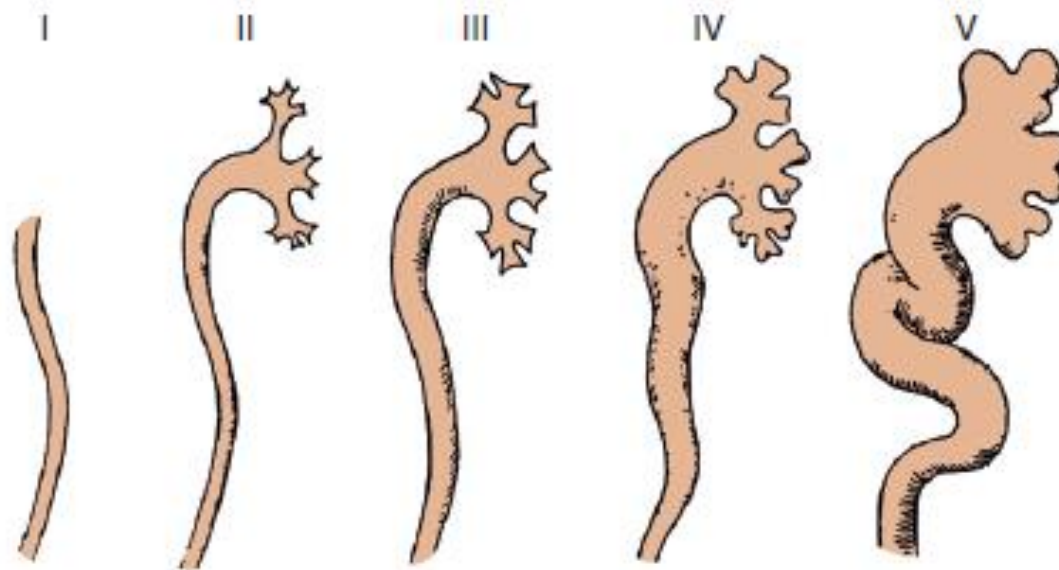
AGE (yr)	INTRAVESICAL URETERAL LENGTH (mm)	SUBMUCOSAL URETERAL LENGTH (mm)	URETERAL DIAMETER AT THE URETEROVESICAL JUNCTION (mm)
1-3	7	3	1.4
3-6	7	3	1.7
6-9	9	4	2.0
9-12	12	6	1.9

Vesicoureteric reflux (VUR)

- **Pathogenesis:**
- Reflux occurs when the intramural length of ureter is too short (ratio <5:1)
- The appearance of the ureteric orifice changes with increasing severity of reflux, classically described as stadium, horseshoe, golf hole, or patulous

Vesicoureteric reflux (VUR)

- **Etiology**
- Reflux is considered primary if the main reason for it is a fundamental deficiency in the function of the UVJ antireflux mechanism
- Secondary reflux ,implies reflux caused by overwhelming the normal function of the UVJ by many factors (PUV ,urethral stenosis ,neuropathic bladder, DSD ,acute cystitis)



GRADES OF REFLUX

International Classification of Vesicoureteral Reflux

GRADE	DESCRIPTION
1	Into a nondilated ureter
2	Into the pelvis and calyces without dilatation
3	Mild to moderate dilatation of the ureter, renal pelvis, and calyces with minimal blunting of the fornices
4	Moderate ureteral tortuosity and dilatation of the pelvis and calyces
5	Gross dilatation of the ureter, pelvis, and calyces; loss of papillary impressions; and ureteral tortuosity

Vesicoureteric reflux (VUR)

- **Presentation**
- Symptoms of UTI
- Failure to thrive
- Vomiting, diarrhoea
- Symptoms and signs of bladder and/or bowel dysfunction
- Urinary frequency & urgency
- Prolonged voiding intervals
- Daytime wetting
- Holding manoeuvres to prevent wetting, and constipation

Vesicoureteric reflux (VUR)

- **Investigation**
- Baseline measurements
- Urine analysis & culture
- Renal tract USS initially and then annually, as indicated
- DMSA renogram to detect and monitor associated renal cortical scarring
- MCUG to diagnose and grade of reflux
- Video urodynamics if suspicious of voiding dysfunction

Management

- The majority of primary VUR grades I–II will resolve spontaneously (80%)
- Overall 50% resolution in grades III–V
- Watchful waiting while maintaining urinary sterility through the judicious use of single daily low-dose antimicrobial prophylaxis
- If febrile UTI recurs reinvestigate

Vesicoureteric reflux (VUR)

Table 16.5 Example of the percentage incidence and spontaneous resolution of VUR according to grade⁷

Grade of VUR	Incidence (%)	Spontaneous resolution (%)
I	7	83
II	54	60
III	31	46
IV	6	9
V	2	0

Vesicoureteric reflux (VUR)

Surgery Indications

- High-grade VUR
- Breakthrough febrile UTI despite antibiotic prophylaxis
- Noncompliance with medical therapy

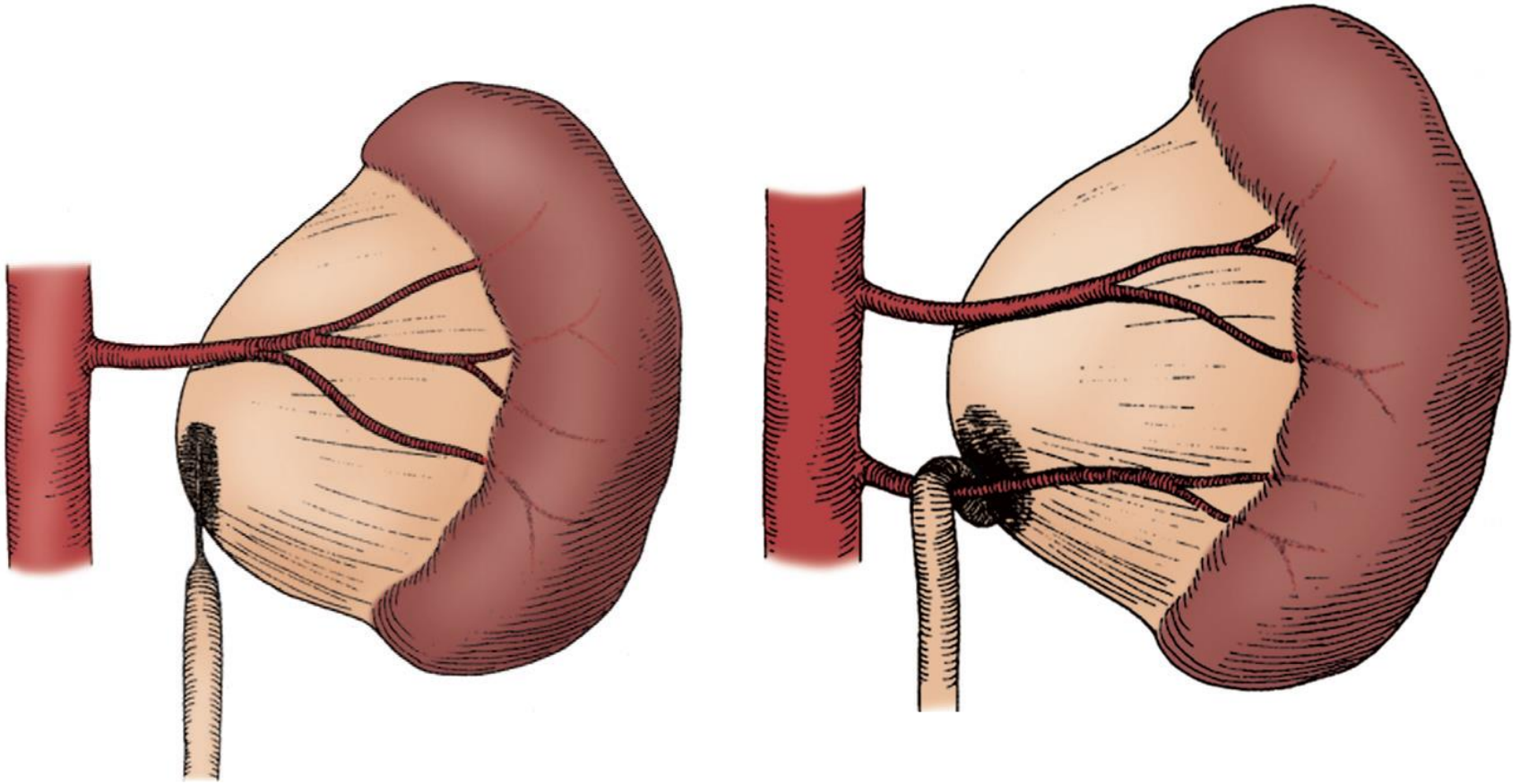
Techniques

- Endoscopic injection
- Ureteric re-implantation performed by open surgery or laparoscopically

Pelviureteric junction obstruction

- UPJ obstruction is the most common cause of significant dilation of the collecting system in the fetal kidney
- Childhood incidence is estimated at 1 in 1000
- Boys to girls ratio 2:1 in newborns
- Left to right ratio 2:1
- Bilateral in 10–40%
- Coexisting VUR is found in up to 25%

Pelviureteric junction obstruction



Pelviureteric junction obstruction

- PUJ obstruction is the most common cause of hydronephrosis (no uretral dilatation) on antenatal Uss
- Infants abdominal mass, UTI, and haematuria
- Older children flank or abdominal pain, UTI, nausea and vomiting and haematuria following minor trauma

Pelviureteric junction obstruction

- Investigation
- Antenatal USS
- MAG3 renogram is performed at 6–12 weeks for diagnosis and to assess split renal function
- Significant obstruction is unlikely if the AP renal pelvis diameter is $<15\text{mm}$

Pelviureteric junction obstruction

Treatment

- Conservative:
- Infants are placed on prophylactic trimethoprim
- Children may be observed with USS and MAG3 renogram

Pelviureteric junction obstruction

Treatment

- Surgery: pyeloplasty is indicated if :
 1. Symptomatic
 2. Significant hydronephrosis ($>30\text{mm}$ AP renal pelvis diameter)
 3. Impaired split renal function ($<40\%$)
- Postop follow-up is with USS or MAG3 renogram

Pelviureteric junction obstruction

- In poor <10–15% renal function :
 1. Temporary percutaneous drainage
 2. Ureteric stent to assess the potential for recovery
 3. Nephrectomy where the impairment is severe or irreversible.

Nocturnal enuresis

- Intermittent incontinence whilst sleeping
- **Monosymptomatic nocturnal enuresis (MNE)** is (nocturnal) enuresis in children without any other LUTS and without a history of bladder dysfunction
- It accounts for <50% of children with bedwetting
- **(NMNE)** includes children with associated voiding dysfunction

Nocturnal enuresis

- **Primary NE**
- refers to children that have never been dry for more than a 6-month period

- **Secondary NE**
- refers to the re-emergence of bedwetting after a period of being dry for at least 6 months

Nocturnal enuresis

Table 16.8 Prevalence of nocturnal enuresis

Age (y)	Females (%)	Males (%)
5	10–15	15–20
7	7–15	15–20
9	5–10	10–15
16	1–2	1–2

Nocturnal enuresis

- **Pathophysiology**
- Altered ADH secretion
- Altered sleep/arousal mechanism
- Reduced nocturnal functional bladder capacity
- Familial predisposition, psychological factors, UTI, and constipation are also considered to contribute to nocturnal enuresis

Nocturnal enuresis

- **History**
- Frequency of episodes ,new or recurrent problem
- Daytime urinary symptoms
- Bowel habit
- Contributory medical conditions like family history, and psychosocial history

- **Examination**
- **Investigations:** voiding diary ,urinalysis

- **Management**

Active treatment is usually deferred until age 6y

- Behavioural:

1. Reassurance and counselling
2. Bladder training
3. Conditioning therapy

- Pharmacological

1. Desmopressin: 30% full response ,40% partial response
2. Anticholinergics
3. Imipramine, a tricyclic antidepressant with anticholinergic and antispasmodic properties

Nocturnal enuresis

- A full response to treatment is 14 consecutive dry nights or 90% improvement in the number of wet pads
- Nocturnal polyuria (normal bladder function) have a good response to desmopressin
- Functionally reduced bladder capacity benefit most from a combination of enuresis alarm, bladder training, and anticholinergic drugs

HEMATURIA

- Isolated microhematuria (≥ 5 rbc per hpf) is usually a benign self-limited condition
- Recurrent hematuria or microhematuria of 6 months' duration warrants investigation
- Gross hematuria in children with normal urinary tract imaging rarely indicates cystoscopic examination unless it is persistent and nonglomerular in origin (60%)

HEMATURIA

- Hypercalciuria is the most common identified cause of both macroscopic and microscopic hematuria in children
- Hematuria in the presence of significant proteinuria often indicates glomerular disease
- A family history of renal disease or renal stones may help to guide the diagnostic evaluation

Meatal Stenosis



Meatal Stenosis

- Almost only after circumcision during infancy
- Typical urinary stream deviation in an upward direction resulting from a meatal baffle
- Narrow, high-velocity stream
- Penile pain at the initiation of micturition
- Imaging usually does not reveal any obstructive changes
- Meatotomy or meatoplasty

Thank
You