Adult urinary tract disorders

Important

Notes (Doctors'/students')

431 SURGERY TEAM

Done By:

Abdulaziz Alshamlan

Revised By:

Sara Almutairi

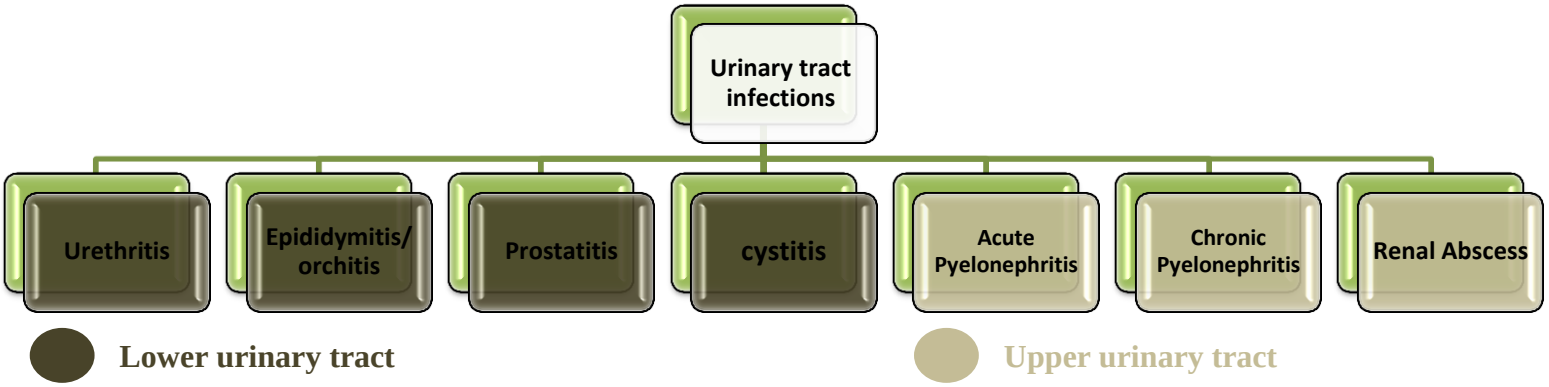
Leaders

Abeer Al-Suwailem

Mohammed Alshammari

Urologic Disorders : Content

- **Urinary tract infections**
- **Urolithiasis**
- **Benign Prostatic Hyperplasia and voiding dysfunction**



1. Urethritis: more common in young men with unprotected sexual intercourse (STDs)

- **Signs & symptoms:**
  - **urethral discharge**
  - **burning on urination**
  - **Asymptomatic**
- **Gonococcal vs. Nongonococcal**

DX:
- **incubation period(3-10 days vs. 1-5 wks)**
- **Urethral swab**
- **Serum: Chlamydia-specific ribosomal RNA**

- **It is usually an ascending infection.**

Table 17–1. CLASSIC URETHRITIS

	Gonorrhea	Chlamydia
Organism	*Neisseria gonorrheae*	*Chlamydia trachomatis*
Organism type	Gram-negative diplococci	Intracellular facultative anaerobe
Incubation period	3–10 days	1–5 wk
Urethral discharge	Usually profuse, purulent	Usually scant
Asymptomatic carriers	40%–60%	40%–60%
Diagnostic test	Ligand chain reaction	Polymerase/ligand chain reaction
Other tests	Gram stain Culture	Culture Immunoassay
Recommended treatment	Ceftriaxone 125 mg IM once *plus* Azithromycin 1 g PO *or* Doxycycline 100 mg PO bid × 7 days	Azithromycin 1g PO *or* Doxycycline 100 mg PO bid × 7 days
Alternative treatment	Cefixime 400 mg PO *or* Ciprofloxacin 500 mg PO *or* Ofloxacin 400 mg PO *plus* Azithromycin 1 g PO *or* Doxycycline 100 mg PO bid × 7 days	Erythromycin 500 mg PO qid 7 days *or* Erythromycin ethylsuccinate 800 mg PO qid × 7 days *or* Ofloxacin 300 mg PO bid × 7 days

2.Epididymitis: Epididymitis & Torsion is very imp. !

- **Acute : pain, swelling, of the epididymis <6wk**
- **chronic :long-standing pain in the epididymis and testicle, usu. no swelling.**

- **DX**
  - **Epididymitis vs. Torsion**
  - **U/S:**

In Epididymitis b/c of infection > hyperemia
Torsion > no blood flow

- **Testicular scan**
  - **Younger : N. gonorrhoeae or C. trachomatis**
  - **Older : E. coli**

How can we differentiate between the torsion and the epididymitis?
1) Torsion: sudden severe pain which means is sudden in onset without urinary symptoms and no cremastric reflex.

2) Epididymitis: gradual onset , all cardinal signs of inflammation and infection. E.g. (Redness, pain, with urinary symptoms) and cremastric reflex is present.

Table 17–3. TREATMENT OF ACUTE EPIDIDYMO-ORCHITIS

Epididymo-Orchitis Secondary to Bacteriuria

1. Do urine culture and sensitivity studies
2. Promptly administer broad-spectrum antimicrobial agent (e.g., tobramycin, trimethoprim-sulfamethoxazole, quinolone antibiotic)
3. Prescribe bed rest and perform scrotal evaluation
4. Strongly consider hospitalization
5. Evaluate for underlying urinary tract disease

Epididymo-Orchitis Secondary to Sexually Transmitted Urethritis

1. Do Gram stain of urethral smear
2. Administer ceftriaxone, 250 mg IM once; then tetracycline, 500 mg PO qid for at least 10 days, or doxycycline, 100 mg PO bid for at least 10 days
3. Prescribe bed rest and perform scrotal evaluation
4. Examine and treat sexual partners

Adapted from Berger RE: Urethritis and epididymitis. Semin Urol 1983;1:143.

3.Prostatitis:

- **Syndrome that presents with inflammation± infection of the prostate gland including:**
  - **Dysuria, frequency**
  - **dysfunctional voiding**
  - **Perineal pain**
  - **Painful ejaculation**

You don't have to memorize this schedule , only that there is acute, chronic , nonbacterial

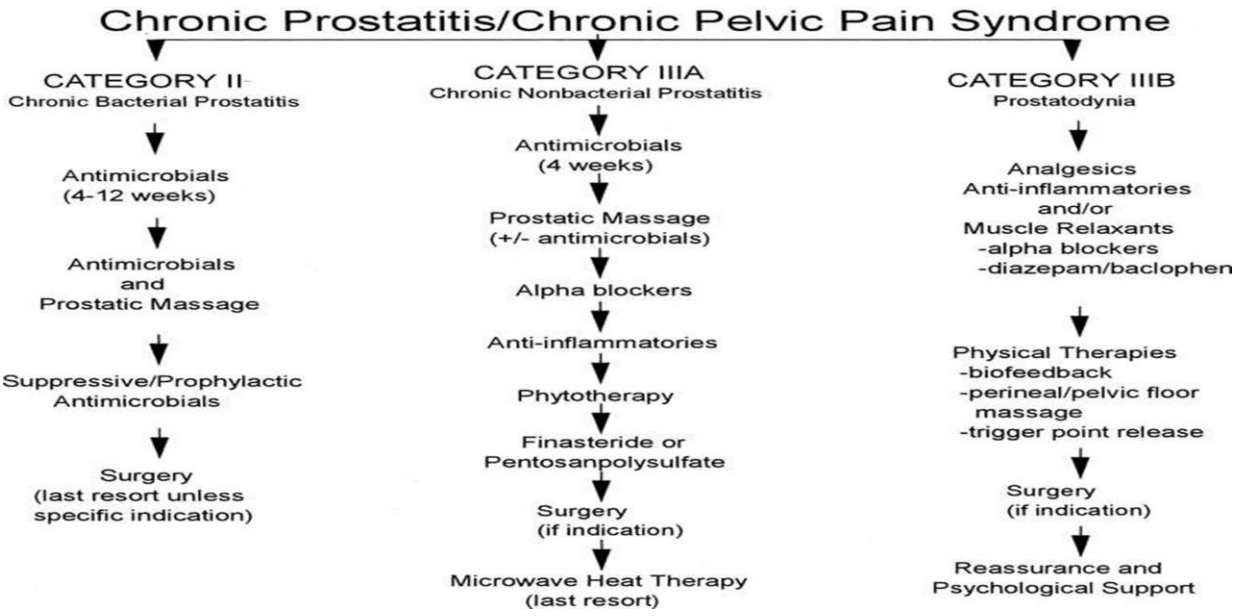
Table 15–1. CLASSIFICATION SYSTEM FOR THE PROSTATITIS SYNDROMES

Traditional	National Institutes of Health	Description
Acute bacterial prostatitis	Category I	Acute infection of the prostate gland
Chronic bacterial prostatitis	Category II	Chronic infection of the prostate gland
N/A	Category III chronic pelvic pain syndrome (CPPS)	Chronic genitourinary pain in the absence of uropathogenic bacteria localized to the prostate gland with standard methodology
Nonbacterial prostatitis	Category IIIA (inflammatory CPPS)	Significant number of white blood cells in expressed prostatic secretions, postprostatic massage urine sediment (VB3), or semen
Prostatodynia	Category IIIB (noninflammatory CPPS)	Insignificant number of white blood cells in expressed prostatic secretions, postprostatic massage urine sediment (VB3), or semen
N/A	Category IV asymptomatic inflammatory prostatitis (AIP)	White blood cells (and/or bacteria) in expressed prostatic secretions, postprostatic massage urine sediment (VB3), semen, or histologic specimens of prostate gland

N/A, not applicable.

Prostatitis

- **Acute Bacterial Prostatitis :**
- **– Rare**
- **– Acute pain**
- **– Storage and voiding urinary symptoms**
- **– Fever, chills, malaise, N/V**
- **– Perineal and suprapubic pain**
- **– Tender swollen hot prostate.**
- **– Rx : Abx and urinary drainage**



4.cystitis: common in women b\c of short urethra

- **Signs & symptoms:**

– dysuria, frequency, urgency, voiding of small urine volumes,

– Suprapubic /lower abdominal pain

– ± Hematuria

– DX:

- **dip-stick**
- **urinalysis**
- **Urine culture (gold standard):**

E.coli , enterococcus species

– TX: Antibiotics<3 days to avoid resistance & side effects.

Table 14–10. TREATMENT REGIMENS FOR ACUTE CYSTITIS

Circumstances	Route	Drug	Dosage (mg)	Frequency per Dose	Duration (days)
Women					
Healthy	Oral	Ciprofloxacin	500	Every 12 hr	3
		Enoxacin	400	Every 12 hr	
		Levofloxacin	500	Every day	
		Lomefloxacin	400	Every day	
		TMP-SMX	160–800	Every 12 hr	
		TMP	100	Every 12 hr	
		Microcrystalline nitrofurantoin	100	Four times a day	
		Norfloxacin	400	Every 12 hr	
Symptoms for >7 days, recent urinary tract infection, age >65 yr, diabetes, diaphragm use		TMP–SMX or Fluoroquinolone	160–800 As above	Every 12 hr As above	7
Pregnancy	Oral	Amoxicillin	250	Every 8 hr	7
		Cephalexin	500	Four times a day	
		Microcrystalline nitrofurantoin	100	Four times a day	
		TMP-SMX	160–800	Every 12 hr	
Men					
Healthy and <50 years old	Oral	TMP-SMX or Fluoroquinolone	160–800 As above	Every 12 hr As above	7

TMP, trimethoprim; TMP-SMX, trimethoprim-sulfamethoxazole.
Modified from Stamm WE, Hooton TM: Management of urinary tract infections in adults. N Engl J Med 1993; 329: 1328–1334. Copyright 1993 Massachusetts Medical Society. All rights reserved.

Usually we treat with drugs which 90% excreted in urine e.g. nitrofurantoin

5.Pyelonephritis:

- Inflammation of the kidney and renal pelvis
- Signs & symptoms:

– Chills : the Pt. comes with sensation of cold although the weather is hot !!!
– Fever
– Costovertebral angle tenderness (flank Pain)

} Triad of pyelonephritis

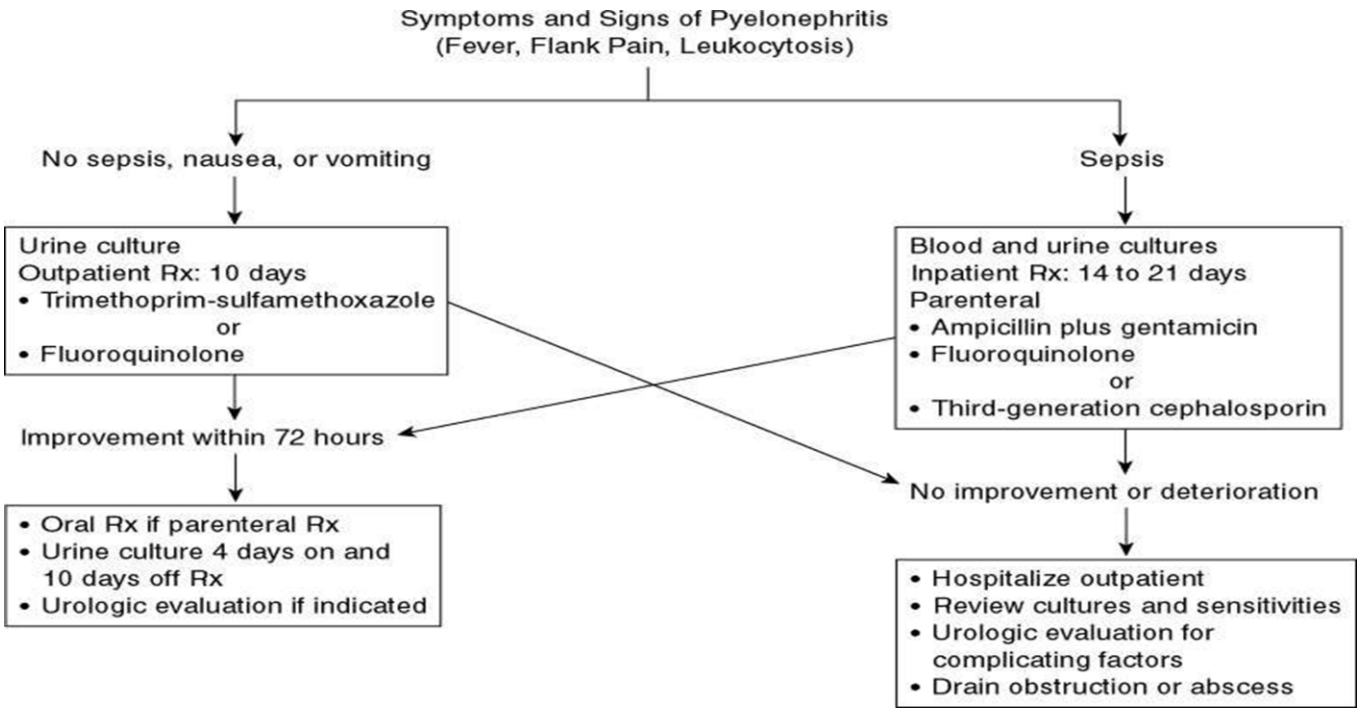
– GI:abdo pain, N/V, and diarrhea
– Gr-ve sepsis
– Dysuria, frequency

- Investigation:

– Urine C&S :+VE(80%)
- Enterobacteriaceae (E. coli), Enterococcus

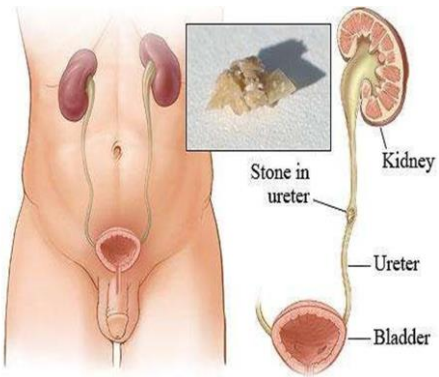
– Urinalysis:↑ WBCs, RBCs,Bacteria
– (±) ↑serum Creatinine
– CBC : Leukocytosis

Imaging:
– IVP
– U/S
– CT: frequently used nowadays.



Urolithiasis: The presence of calculi in the urinary system.

- Egyptian mummies 4800 BC
- Prevalence of 2% to 3%,
- Life time risk: Male : 20%, female 5-10%
- Recurrence rate 50% at 10 years



Risk factors:

– Intrinsic Factors

- **Genetics** (Cystinurea an autosomal recessive)
- **Age (2Os-4Os)**
- **Sex M>F**

- **Extrinsic Factors**

– Geography (mountainous, desert, tropics)
– Climate (July - October)
– Water Intake
– Diet (purines , oxalates, Na)
– Occupation (sedentary occupations)

- **How do stones form**

– supersaturated→ Crystal Growth
– Aggregation of crystals →stone

- **Most people have crystals in their urine, so why not everyone gets stones?**

– Anatomic abnormalities (stasis due to obstruction)
– Modifiers of crystal formation: Inhibitors/promoters

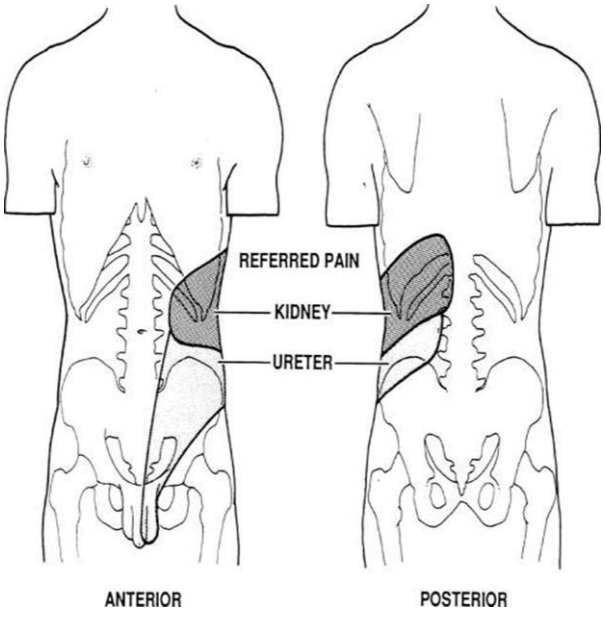
- **Citrate**
- **Mg**
- **urinary proteins(nephrocalcin)**
- **oxalate**

- **Common stone types**

– Calcium stones 75%

- **(ca Ox)**

– Uric acid stones
– Cystine stones
– Struvite stones



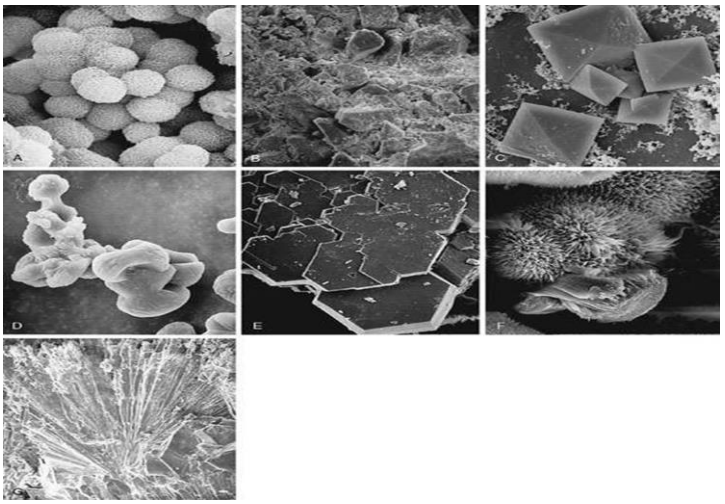
- **Signs & symptoms:**

– Renal or ureteric colic (mimic ovarian-pathology)
– Freq, dysuria
– Hematuria
– GI symptoms: N/V, ileus, or Diarrhea
– Restless

- **↑HR, ↑ BP**
- **fever (If UTI)**
- **Tender CVA** (costovertebral angle)

– DDx :

- **Gastroenteritis**
- **acute appendicitis**
- **colitis**
- **salpingitis**



Investigation

Urinalysis :

-RBC

-WBC

-Bacteria

-Crystals

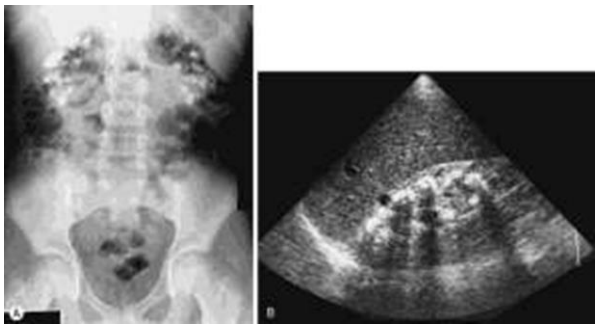
- **Imaging**

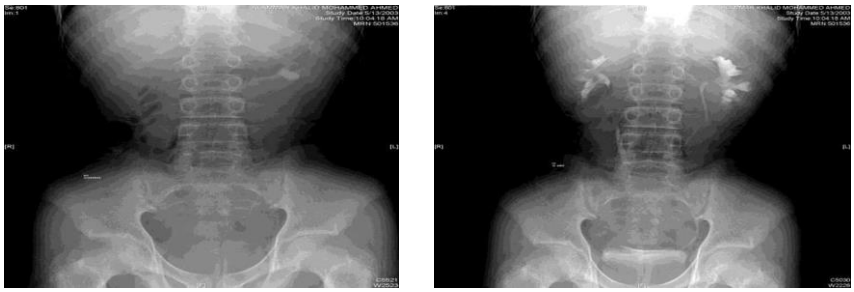
– Plain Abdominal Films (KUB)

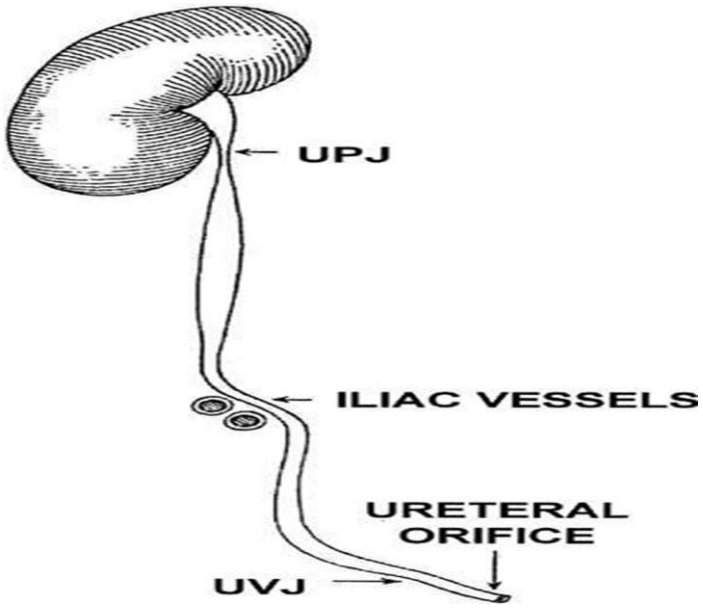
– Intravenous Urography (IVP)

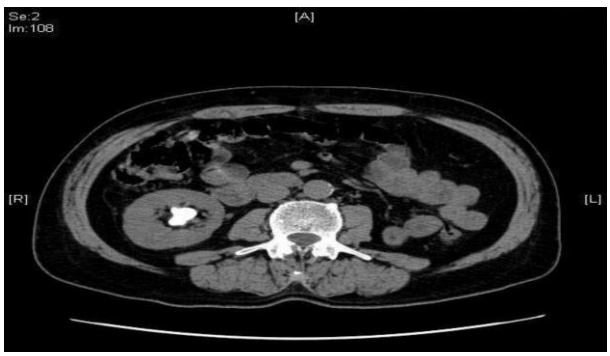
– Ultrasonography (U/S)

–Computed Tomography (CT) is the gold standard.









Computed Tomography (CT) is the gold standard.

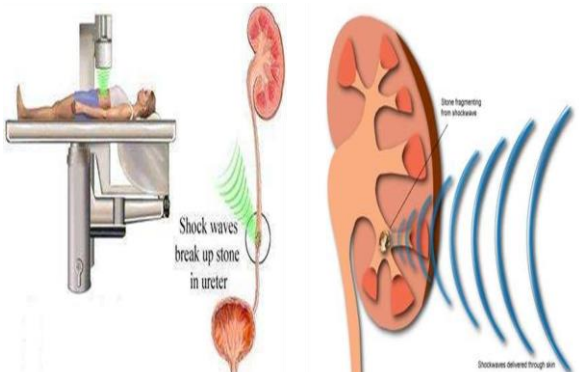
The commonest sites of stones:

1. **UPJ: ureteropelvic junction.**
2. **Iliac vessels.**
3. **UVJ: ureterovesical junction**

Management

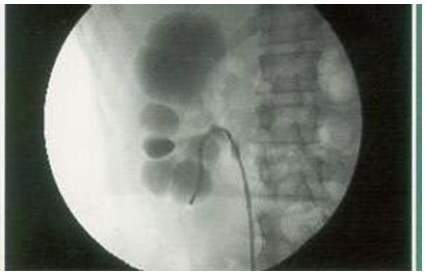
- Conservative
  - Hydration
  - Analgesia
  - Antiemetic
  - Stones (<5mm) >90% spontaneous Passage
- Indication for admission
  - Renal impairment
  - Refractory pain
  - Pyelonephritis
  - intractable N/V
  - Solitary kidney (increase creatinine)
  - High fever
  - Coming to ER more than once

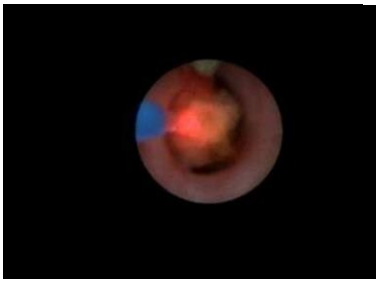
- Extracorporeal Shock Wave lithotripsy (SWL)
- Ureteroscopy
- Percutaneous Nephrolithotripsy (PNL)
- Open surgery (Sx)

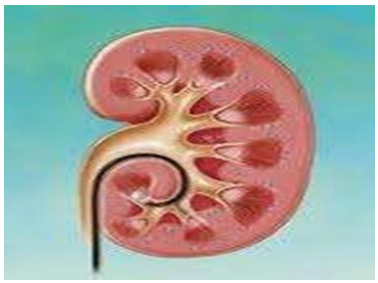


Extracorporeal Shock Wave lithotripsy (SWL)

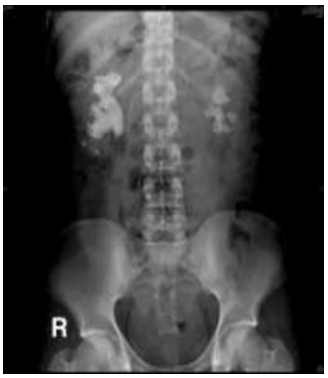
In case of big & hard stones, we don't use this method.

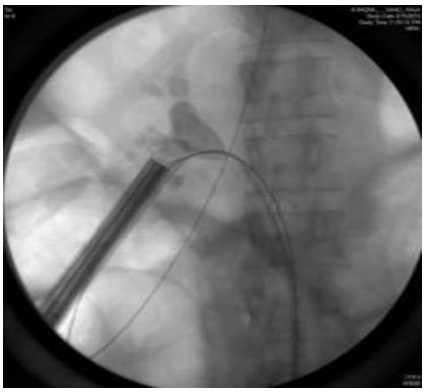


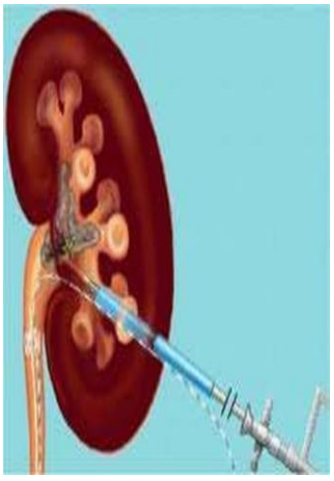


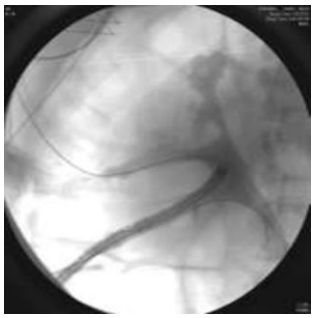


Flexible Ureteroscopy

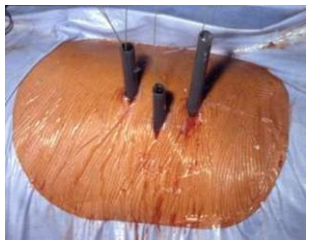








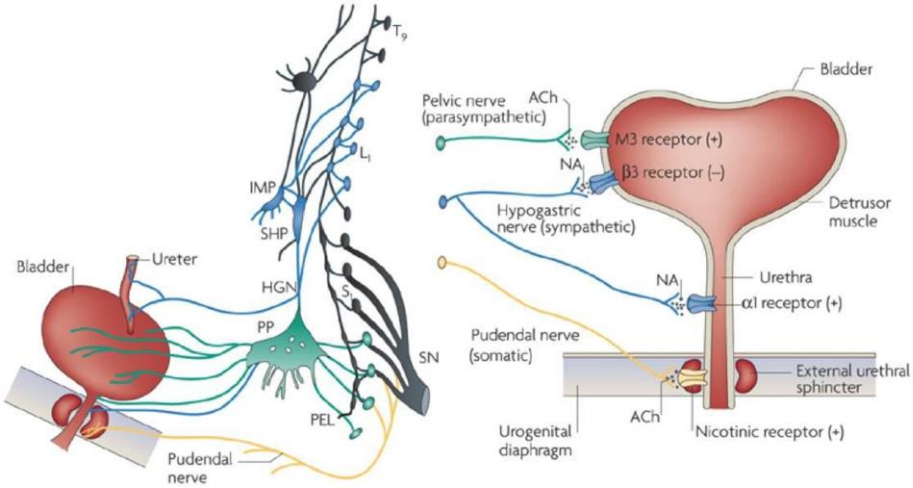
Percutaneous Nephrolithotripsy (PNL)



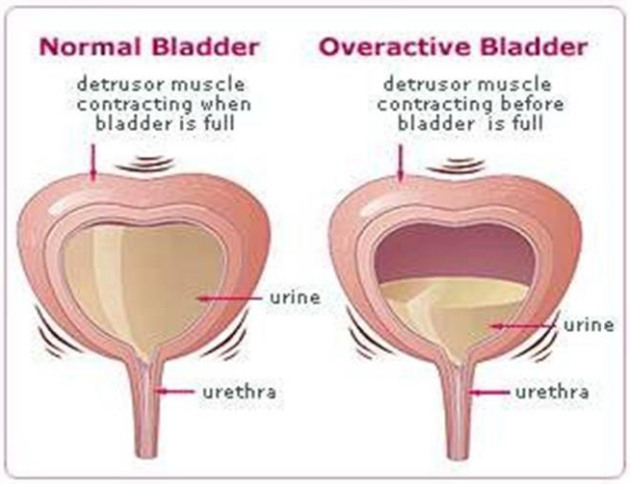
Voiding Dysfunction

- **Failure to store**
- **– Bladder problems**
- **overactivity**
- **Hypersensitivity**
- **– Outlet problem**
- **Stress incontinence**
- **Sphincter deficiency**
- **– combination**

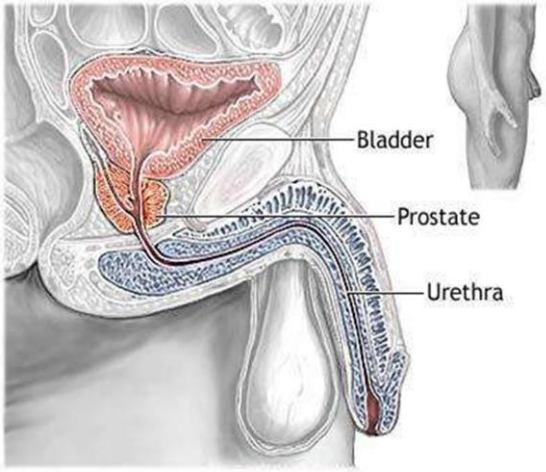
- **Failure to Empty**
- **– Bladder problems**
- **Neurologic**
- **Myogenic**
- **idiopathic**
- **– Outlet problem**
- **BPH**
- **Urethral stricture**
- **Sphincter dyssynergia**
- **– combination**



Over Active Bladder



Benign Prostatic Hyperplasia

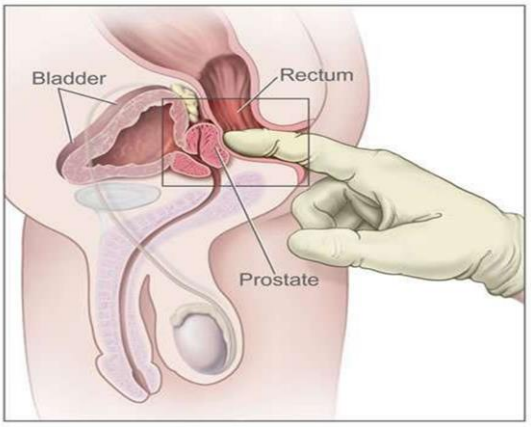


- **Clinically: (You have to know Storage symptoms &Voiding symptoms)**

– LUTS (Lower Urinary Tract Symptoms)
– poor bladder emptying
– urinary retention
– urinary tract infection
– Hematuria,
– Renal insufficiency

- **Physical Examination**

1-DRE(Digital rectal examination) 2- Focused neurologic exam



- **Usually normal prostate is rubbry.**
- **Prostate Ca (usually it is hard)**
- **rectal Ca**
- **anal tone**
- **neurologic problems**

– Abdomen: distended Bladder

Investigations

- **Urinalysis , culture**

– UTI
– Hematuria

- **Serum Creatinine**
- **Serum Prostate-Specific Antigen (PSA)**
- **Flow rate**
- **Ultrasound (Kidney, Bladder And Prostate) (To detect the residual volume)**

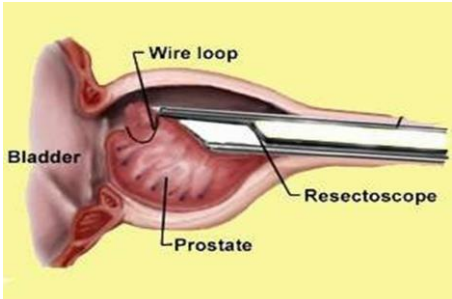
Treatment options
– medical therapy

- **α-Adrenergic Blockers (open prostate)**

– Tamsulocin
– Alfuzocin
– Terazocin

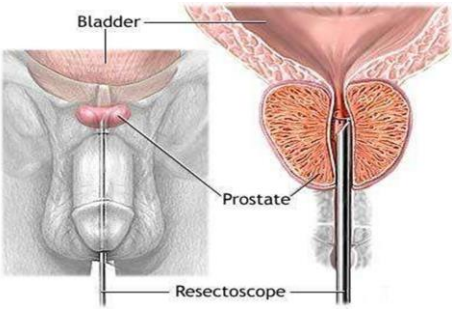
- **Androgen Suppression (To decrease the prostate volume)**

– Finasteride

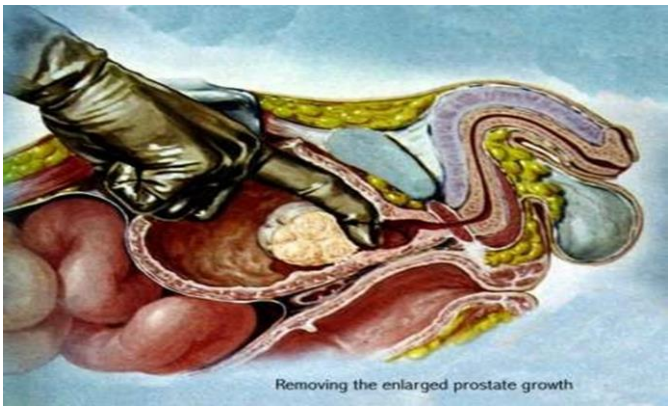


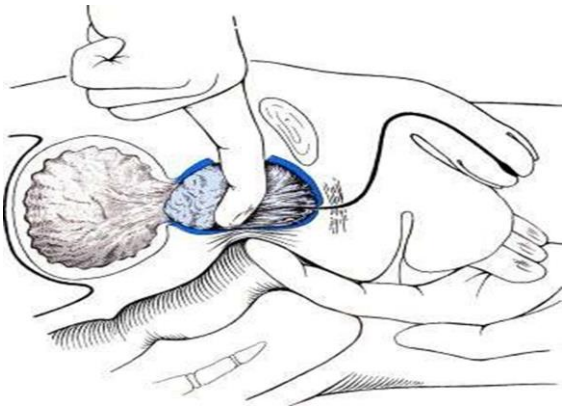
- **Surgical Rx**

– Endoscopic (e.g. TURP, laser ablation, prostatic stents)



Open Prostatectomy





MCQ:

1. A 13-year old boy presented to the ER with painful right scrotal swelling. It was gradual in onset over the last 5 days. He gave history of dysuria and suprapubic pain for the last 2 weeks. The most common cause of his symptoms is :

a. Epididymitis
b. Hydrocele
c. Testicular Torsion
d. Testicular Trauma

a

2. A 22-year old single male presented with dysuria and urethral discharge, 5 days after unprotected intercourse. On examination, there is erythema over his urethral meatus with yellowish discharge. The most likely causative organism for his presentation is :

a. Chlamydia trachomatis
b. E.coli
c. Herpes simplex virus
d. Neisseria gonorrhea

d

3. A 65-year old diabetic women presented with right flank pain and fever for 2 days. She has been complaining of dysuria and suprapubic pain for more than one week. She is nauseated and had 3 episodes of vomiting. The most likely diagnosis is :

a. Acute cholecystitis
b. Acute pyelonephritis
c. Pancreatitis
d. Renal colic

b

4. Irritative urinary tract symptoms include all of the following except :

a. Dysuria
b. Hesitancy
c. Frequency
d. Urgency

b

5. Main causative organism for UTI is :

a. E.coli
b. Chlamydia
c. Proteus
d. gonorrhea

a

6. The most common type of urinary tract stones :

a. Calcium stones
b. Uric acid stones
c. Cystine stones
d. Struvite stones

a