

# Basics of Urology

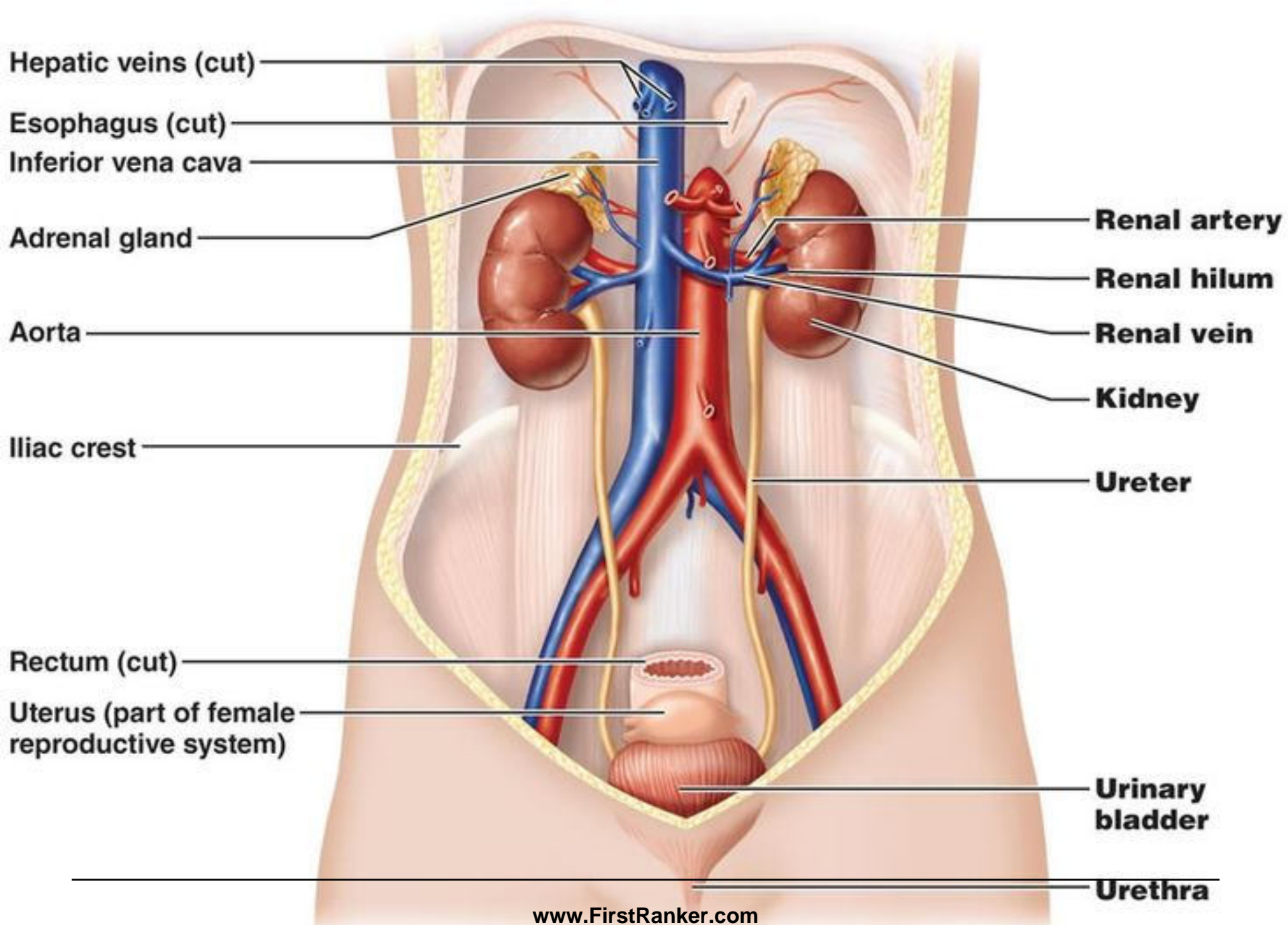
Department of Urology

## Urinary symptoms

- Hematuria
  - Pain
  - Lower urinary tract symptoms  
(Obstructive/irritative)
  - Urinary incontinence
  - Anuria
  - Urinary retention
- } Urological Emergencies

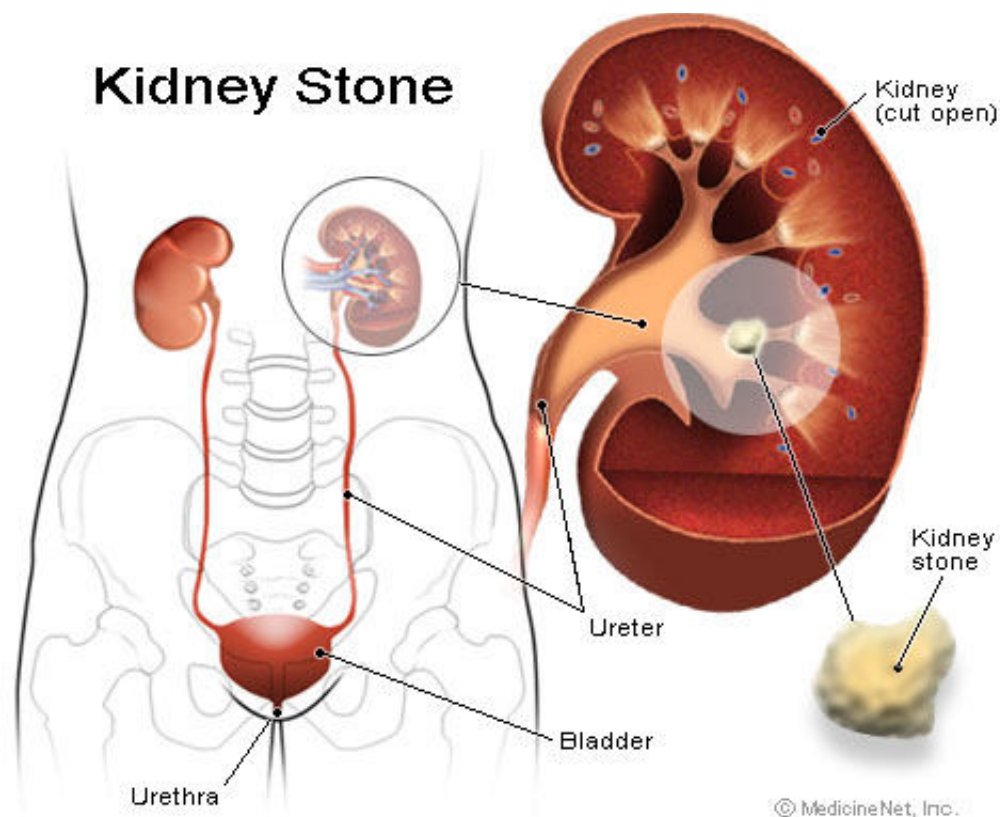
# Investigations

- Routine Investigations: RFT, Urine examination
- Specific investigations: Uroflometry, USG, X-Ray KUB, IVU, RGU, CT Urogram, MR Urogram



# *Hematuria*

- Always abnormal whether micro. or macroscopic.
- may be due to a lesion any where in the urinary tract.



## Associated symptoms

- pain -----usually stone.
- dysuria +urgency +frequency-----usually infection
- Blood clots -----usually malignancy

## Questions to be asked..

- Is hematuria gross or microscopic ?
- At what time of micturation does it occurs?
- Is associated with pain?
- Is the patient passing clots?
- Do the clots have any specific shape?

## Pain

Quite severe and usually associated with either obstruction or inflammation.

### **Upper tract :**

- fixed deep and bursting in character.
  - Colicky with sharp exacerbations against a constant background when due to ureteric obstruction.
  - Is liable to be referred to the groin ,scrotum or labium as the stone moves distally in the ureter.
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## Lower tract pain

- Bladder pain : commonly felt as suprapubic discomfort worsening as the bladder fills.
  - usually associated with dysuria, frequency, urgency when the cause is cystitis.
  - may be referred to the tip of the penis.
- Prostatic pain :penetrating ache in the perineum and rectum sometime a/w inguinal pain.
- Urethral pain :usually felt as burning sensation in the vulva or penis especially during voiding.

## Lower urinary tract symptoms

- Irritative symptoms
  - Frequency
  - Nocturia
  - Urgency
  - Dysuria
- Obstructive
  - Loss of flow
  - Hesitancy
  - Intermittency
  - Straining
- Post void dribbling

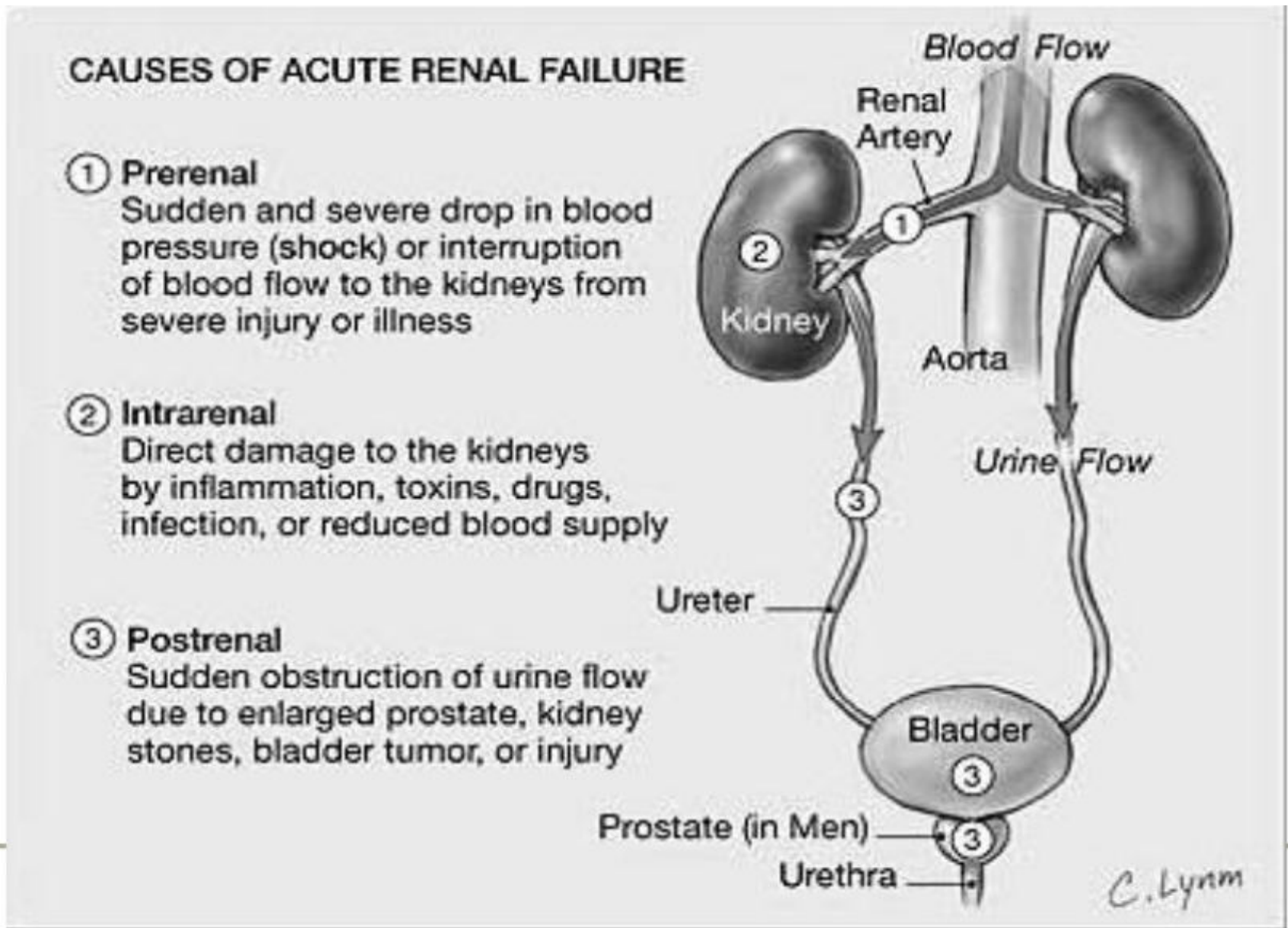
# Incontinence

- Continuous incontinence
- Stress incontinence
- Urgency incontinence
- Overflow incontinence
- Enuresis

# Anuria

- No urine output or ,50 ml urine output within 24 hrs.
- Differential diagnosis: urinary retention (full bladder)
- Causes :
  - Pre-renal
  - Renal
  - Post renal





# Urinary retention

## Definition

- Inability to empty the bladder

## Types of Retention

**Acute urinary retention Complete** and painful inability to empty the bladder and  $< 800$  ml of urine is drained

**Chronic urinary retention** inability to **completely** empty bladder and leave large amount of post-void volume.

**Acute-on-chronic urinary retention Complete** and painful inability to empty the bladder and  $> 800$  ml of urine is drained



## Causes of urinary retention

- Benign prostatic hyperplasia (BPH)
- Prostatic carcinoma
- Urethral stricture
- Pelvic mass (especially in women)
- Urinary tract infection
- Constipation
- Neurological
- Postoperative pain or immobility



## Routine Investigation

### Renal function test:

more than 70% of renal function must be lost before renal failure become evident.

-blood urea-----3.5-7 mmol/dl

-serum creatinine-----80-120 mmol/dl.

glomerular filtration rate{G.F.R}---80-120 ml/min.



# Urine Examination

## Collection:

- midstream in adults with cleaning of the external meatus.
- using collection bag in children.

# Urine Examination

## Physical examination

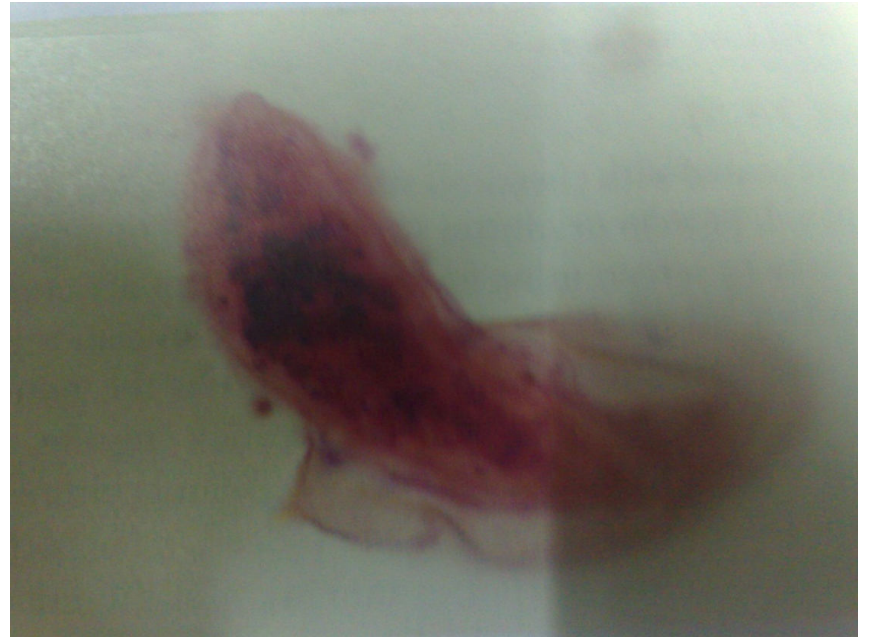
- Color
- Turbidity
- Specific gravity(1.001-1.035)
- pH(5.5-6.5)

## Chemical examination

- Blood
- Proteins
- Glucose
- Ketones
- Urobilinogen
- White blood cells

# Microscopic examination

- W.B.C.
- R.B.C
- R.B.C cast
- Hyaline cast.
- Crystal
- Bacteria
- Yeast



## Specific Investigations

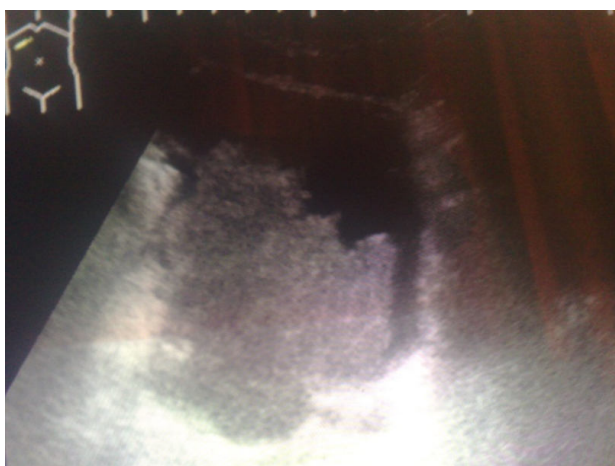
- Uroflometry
  - Measures the volume of urine released from the body
  - The speed with which it is released
  - How long the release takes

# Ultrasonography

A painless and non-invasive procedure to

- Visualize urological organs and structures
- To perform biopsies
- Diagnosing tumors, cancer, stones and congenital abnormalities
- Assessment of flankpain during pregnancy
- Post-operative evaluation of patients with renal transplant

## Sample of us pictures



# X-ray KUB



K.U.B {kidney, ureter and bladder}

showing ----radio opaque shadow. About 90% of renal stone are radiopaque.

-----fracture ribs.

-----vertebral column abnormality.

## Intravenous Urogram (IVU)

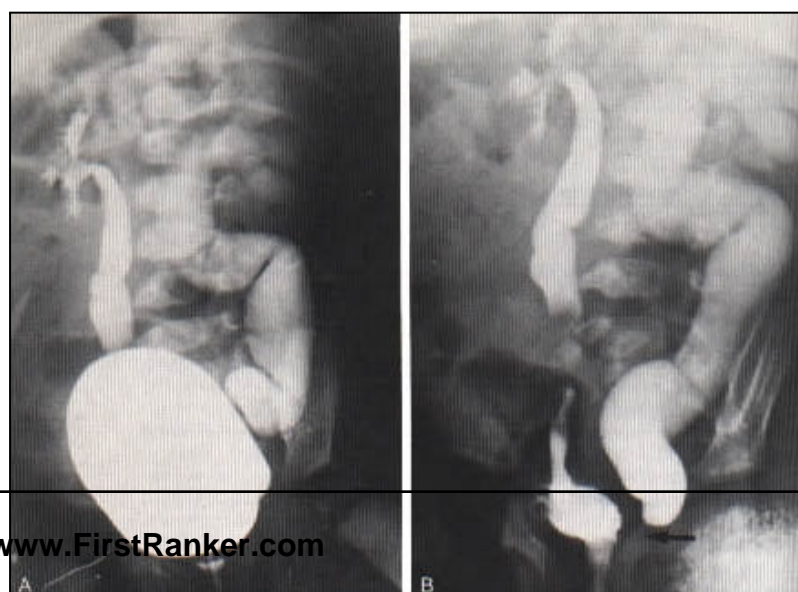
A test which X-rays the urinary system using intravenous dye which is excreted by kidney for assessment of

- Renal and ureteral anatomy
- Level of ureteral obstruction
- Renal function



# Sequence of film of I.V.U.

- Plain-----bony structure +calcification
- Nephrogram{1min.}-----to assess function whether normal, delay, or not visualized.
- Tomogram----to assess renal out line for the presence of mass or small calcification.
- Early film {5min} -----for hydronephrosis  
filling defect  
distended calyces.
- Late film {15-20min.} ---to assess ureter and bladder



# Retrograde Urethrogram(RGU)

- Study to evaluate anterior and posterior urethra using perurethral contrast.



## Other imaging investigation

- Spiral C.T scan: now consider the 1<sup>st</sup> line of imaging investigation in renal trauma or colic
- M.R.I {magnetic resonance imaging}

Thank you...

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