


# Emergencies in urological oncology

- 
- **Spontaneous Perinephric Hemorrhage**
  - **Intractable Bladder Hemorrhage**
  - **Ureteral Obstruction**
  - **Bladder Outlet Obstruction**
  - **Complications of Bacille Calmette-Guerin therapy**
  - **Hypercalcemia of Malignancy**
  - **Malignant Spinal Cord Compression**

# Spontaneous Perinephric Haemorrhage

## Etiologies:-

- Neoplasm (57<sup>0</sup>%–66<sup>0</sup>%).
- Vascular disease (17<sup>0</sup>%–26<sup>0</sup>%).
- Idiopathic hemorrhage (6.7<sup>0</sup>%).
- Infection (2.4<sup>0</sup>%).

# Spontaneous Perinephric Haemorrhage

## Diagnosis:-

***Incidence:*** Males = Females, Right = Left kidneys.

## ***Presentation:***

Flank or abdominal pain: 83-100%

Haematuria: 0-19%

Hypovolaemic shock: 11%

## ***Laboratory studies:***

CBC, electrolytes, (BUN), creatinine, and a coagulation profile.

## ***Imaging:***

CT with intravenous (i.v.) contrast,

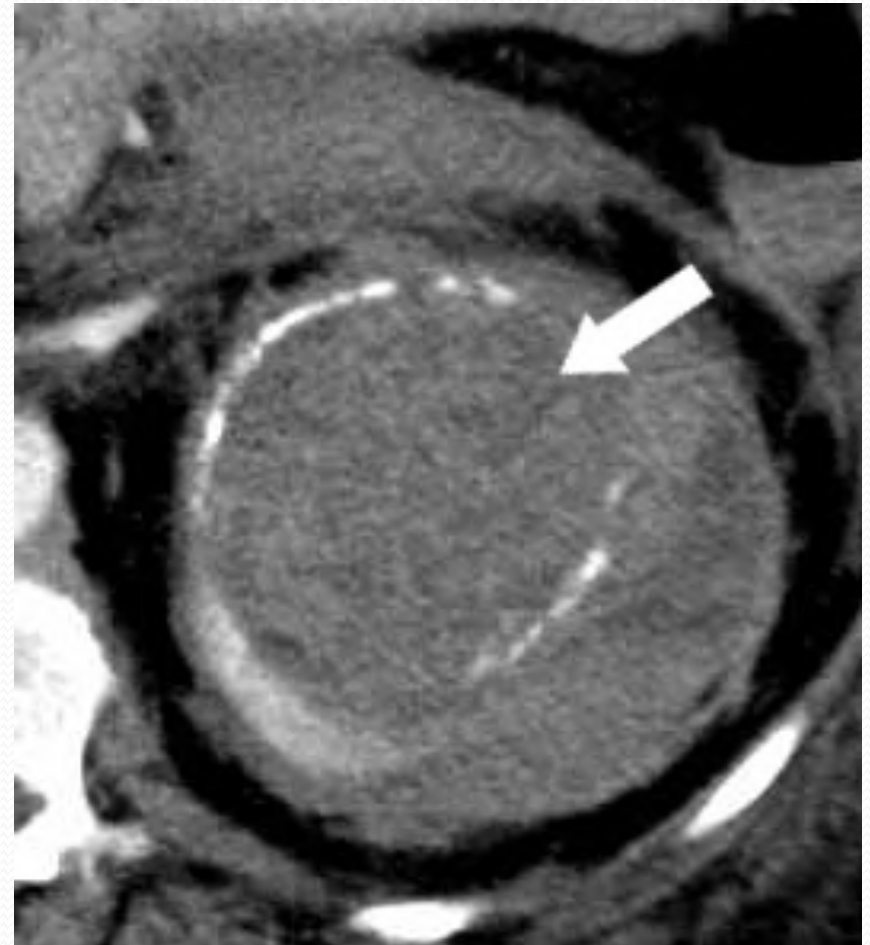
MRI,

Diagnostic arteriography.

It shows a lipid containing (L) mass located posterior of the right kidney with haemorrhage in the right retroperitoneal space (star); also contrast extravasations can be seen within the mass as high attenuation areas...



Large perirenal hematoma. A renal cystic mass (white arrows) and irregular peripheral calcifications (black arrow) was seen, suspicious of a complicated cyst with hemorrhage. Histologically a clear-cell renal-cell carcinoma was found



# Spontaneous Perinephric Haemorrhage

## Treatment:-


Conservative measures are first-line and nephrectomy is reserved as an option of last resort.

### *Haemodynamically stable patients:-*

- Bed rest,
- Periodic monitoring of vital signs and serum hemoglobin.

### *Haemodynamically unstable patients:-*

- Diagnostic arteriography and selective embolization.
- Open nephrectomy.
- Partial nephrectomy.

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# Intractable Bladder Hemorrhage

## Introduction:-

- Gross hematuria is not uncommon among patients with genitourinary malignancies.

It can be the presenting sign of cancer involving the urinary tract or it may arise as a direct complication of cancer treatment.
- In most cases, the hematuria is of mild to moderate severity and resolves with conservative measures.

Some cases, however, involve intractable hemorrhage that can be life-threatening without effective treatment.

# Intractable Bladder Hemorrhage

## Etiologies:

- Advanced urothelial carcinoma,
- Severe infection,
- Chemotherapy-induced hemorrhagic cystitis,
- Radiation cystitis.

# Intractable Bladder Hemorrhage

## (1) Transitional Cell Carcinoma:-

- Gross or microscopic hematuria is the typical manner of presentation.
- Patients with bleeding from advanced bladder cancer who fail conservative measures, may receive benefit from the addition of external beam radiotherapy.
- Treatment is primarily surgical
  - Transurethral resection for superficial TCC,
  - Radical cystectomy for invasive TCC.

# Intractable Bladder Hemorrhage

## (2) Hemorrhagic Cystitis:-

- Gross hematuria secondary to diffuse inflammation of the bladder.
  - Viral infection,
  - Radiation-induced inflammation
  - Chemotherapy- induced inflammation.
- While relatively uncommon in patients with genitourinary malignancies, viral-mediated hemorrhagic cystitis occurs in as many as 50% of patients undergoing bone marrow transplantation.

# Intractable Bladder Hemorrhage

## (3) Radiation Cystitis:-

- It is a late complication, occurs at least 90 days after the initiation of radiation treatment but may be delayed up to 10 years or more.
- Common with prostate and cervical cancer patients receiving pelvic radiotherapy.
- Presented by:
  - Severe irritative voiding symptoms
  - Gross hematuria.
- The most difficult form of bladder hemorrhage to treat, Due to the ischemic nature of the injury and poor wound healing.

# Intractable Bladder Hemorrhage

## Evaluation:

- ***History:***
  - The ability to void should be questioned
  - Prior malignancy, radiotherapy, or cyclophosphamide,
  - Medications.
- ***Physical examination:***
  - Hemodynamic stability.
  - Overall health status of the patient
  - Presence of urinary retention.

# Intractable Bladder Hemorrhage

## Evaluation:

- *Investigations:*

- CBC and differential,
- BUN, creatinine,
- Coagulation profile.
- Serum electrolytes,
- Urine culture,

# Intractable Bladder Hemorrhage

## management:

- Initial therapy is directed toward maintaining hemodynamic support through i.v. fluids as well as through blood and blood product replacement as necessary.



# Intractable Bladder Hemorrhage

- **Clot evacuation (catheter or cystoscopic) plus** Intermittent saline irrigation or Continuous saline irrigation
- **Cystoscopy ± fulguration**
- **Oral agents**
  - E-aminocaproic acid
  - Sodium pentosan polysulphate
- **Intravesical agents**
  - Alum 1%
  - Prostaglandin-E<sub>1</sub>, -E<sub>2</sub>, and -F<sub>2</sub>
  - Formalin (begin e 4%, up to 10%)
- **Hyperbaric oxygen therapy**
- **Embolization of internal iliac artery**
- **Surgery** (urinary diversion, with or without open bladder packing or cystectomy)

## Grade

## Treatment

### Mild

- No acute decrease in hematocrit(Hct)


### Moderate

- Drop in Hct
- Requires < 6 HU of packed red blood cells to maintain hemodynamic stability
- Urinary clot retention

### Severe

- Refractory to saline irrigation, E-aminocaproic acid, alum, prostaglandin.
- Requires >6 HU of packed red blood cells to maintain hemodynamic stability

- Saline irrigation
- E-aminocaproic acid or Sodium pentosan polysulphate
- Intravesical alum
  
- Above plus:
  - Clot evacuation
  - Cystoscopy ± fulguration
  - Intravesical prostaglandin or
  - Formalin
  
- Above plus:
  - Intravesical formalin
  - Embolization
  - Surgery

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# Ureteral Obstruction

## Etiologies:-

Intramural tumor growth, extramural compression, or from retroperitoneal fibrosis secondary to cancer treatment.

- Pelvic genitourinary malignancies: 70%
- Retroperitoneal lymphadenopathy.

# Ureteral Obstruction

## Presentation:-

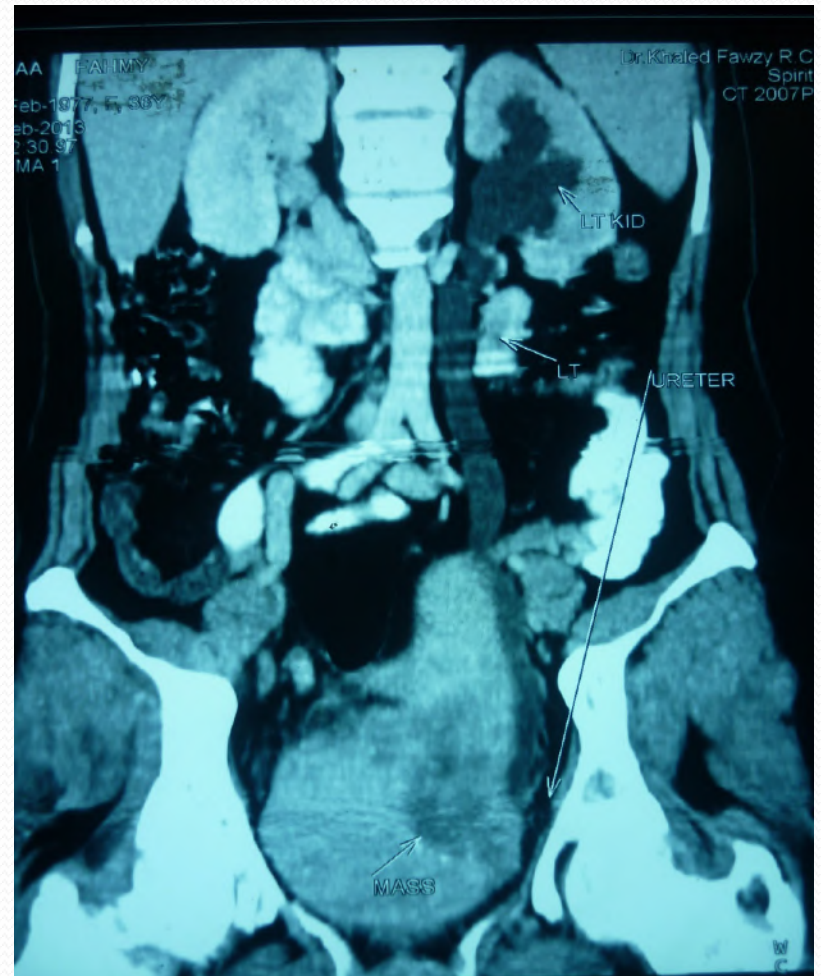
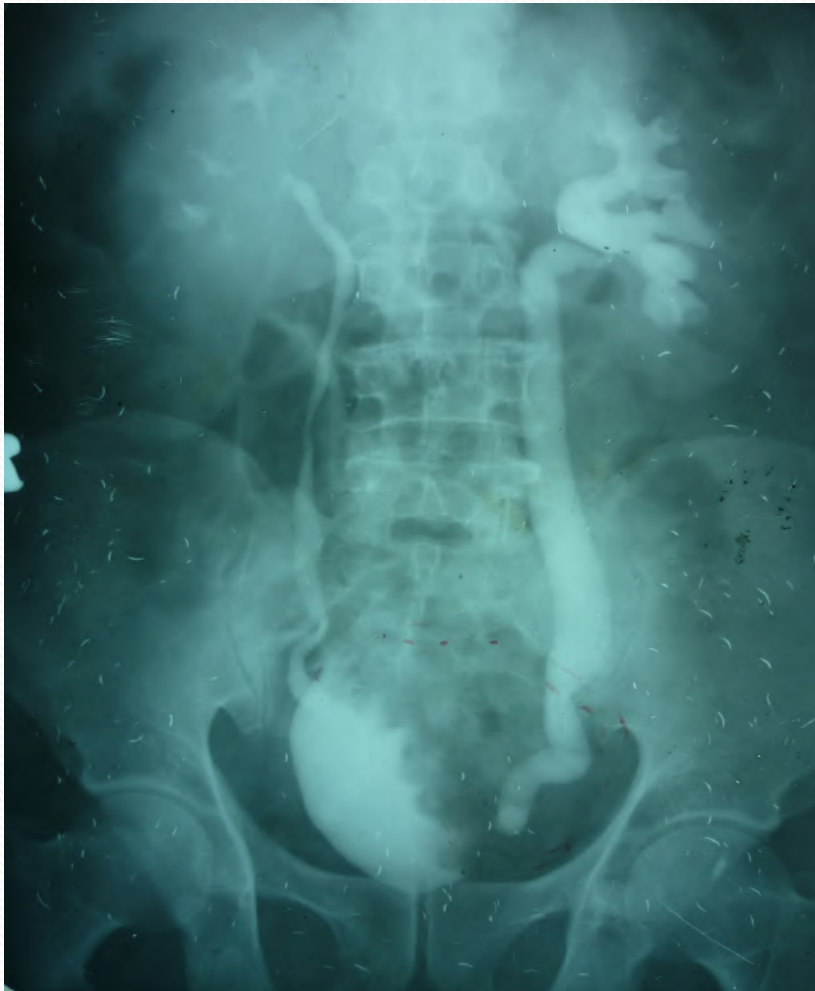
- Acute unilateral obstruction
- Chronic unilateral obstruction
- Bilateral obstruction, acute or chronic.

# Ureteral Obstruction

## Evaluation:-

- **history and physical examination.**
- **Laboratory evaluation:** CBC, serum electrolytes, BUN, creatinine, urine culture and coagulation parameters.
- **Imaging :**
  - *Abdominal ultrasound,*
  - *Computed tomography,*
  - *Magnetic resonance imaging.*

# Ureteral Obstruction



# Ureteral Obstruction

## Treatment:-

- **Depends upon:**
  - Etiology and site of obstruction,
  - Oncologic prognosis,
  - Quality of life,
- **Noninvasive treatment modalities:**
  - Retrograde internal ureteral stent (IUS) insertion.
  - Radiology- guided percutaneous nephrostomy (PCN) insertion.



# PCN or IUS



# Ureteral Obstruction


## Treatment:-

- *When PCN insertion will be first choice?*

Radiographic imaging suspicious for involvement of the bladder and ureteral orifice is an indication for initial PCN, as trials of IUS insertion will carry high failure rate. moreover, One-third of patients will ultimately fail IUS within 6 months and require long-term PCN due to repeat obstruction

- *When IUS insertion will be first choice?*

Situations in which anatomic anomalies present a technical challenge to PCN insertion (e.g., horseshoe kidney) or cases involving a solitary kidney in which renal loss secondary to PCN-related renal hemorrhage would be disastrous.

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# Bladder Outlet Obstruction

## Etiologies:-

- ***(1) Mechanical bladder outlet obstruction (BOO) :-***
  - Localized growth of prostate cancer
  - Bladder neck contracture (BNC) after radical prostatectomy
  - Urinary retention following prostatic brachytherapy
- ***(2) Neurophysiologic bladder dysfunction :-***
  - Medication side effects,
  - Postoperative pain and immobility,
  - Radical pelvic surgery,
  - Chronic disease such as diabetes mellitus.

# Bladder Outlet Obstruction

## Evaluation:-

- *History*
- *Physical examination*
  - Lower midline abdominal mass, dullness with percussion.
  - Pelvic and rectal examination.
  - Neurological examination.
  - Renal insufficiency.
- *Laboratory evaluation*
  - CBC, serum electrolytes, BUN, and serum creatinine.
  - Urine analysis and urine culture.
- *Imaging*
  - Abdominal ultrasound.

# Bladder Outlet Obstruction


## Treatment:-

- ***Bladder decompression:-***
  - Urethral Foley catheter
  - Cystoscopy and possible urethral dilation for catheter insertion.
  - Suprapubic cystostomy tube
- ***Neurophysiologic bladder dysfunction :***
  - Often resolves after a period of bladder decompression.
  - Clean Intermittent Catheterization(CIC).

# Bladder Outlet Obstruction

## Treatment:-

- *Locally advanced prostate cancer:*
  - Androgen deprivation therapy,
  - Palliative or channel TURP,
  - Urethral stent,
  - Chronic catheterization.
- *Urinary Retention After Prostatectomy:*
  - Transurethral incision of the contracture.

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# Complications of Bacille Calmette-Guérin Therapy

## BCG:-

- A live attenuated strain of the bovine tuberculous mycobacterium,
- It has antineoplastic effect through the stimulation of a nonspecific inflammatory reaction at the bladder level.

# Complications of Bacille Calmette-Guérin Therapy

## Side effects of BCG therapy:-

- *Local:-*

- Cystitis.

- *Systemic:-*

- 1- BCG-Related Fever:

- 2- BCG Sepsis:

- 3- BCG-osis:

# Complications of Bacille Calmette-Guérin Therapy

## 1- BCG-Related Fever:

- It is a benign immune response to mycobacterial exposure in most cases.
- **Evaluation:-**
  - CBC, serum electrolytes, creatinine, liver function studies, and mycobacterial blood cultures.
  - Standard blood and urine cultures.
  - plain radiograph of the chest.

# Complications of Bacille Calmette-Guérin Therapy

## Treatment:-

- Outpatient symptomatic treatment with oral antipyretics
- single-agent antitubercular treatment.

Isoniazid (INH) (300 mg once a day by mouth for 3 months) is the antitubercular agent of choice for BCG-related fever.

# Complications of Bacille Calmette-Guérin Therapy

## 2- BCG Sepsis:

- The most serious complication of BCG therapy
- *Predisposing factors:-*
  - traumatic catheterization
  - Severe cystitis and recent transurethral surgery
- *Presentation:-*
  - Fever
  - Blood and urine cultures are typically negative.
  - Hemodynamic instability
  - Signs of multisystem organ failure

# Complications of Bacille Calmette-Guérin Therapy

## *Management:-*

- Empiric triple-drug therapy
- A 6-month course of INH, rifampin, and ethambutol
- Fluoroquinolone or ampicillin plus gentamicin
- Corticosteroids ??

# Complications of Bacille Calmette-Guérin Therapy

## 3- BCG-osis:

- BCG-osis is a variant of systemic infection wherein the lungs, liver, or both are primarily affected.
- *Presentation:-*
  - Similar to that of BCG sepsis.
  - Hemodynamically stable.
  - Pulmonary or hepatic disease.

# Complications of Bacille Calmette-Guérin Therapy


## *Diagnosis:-*

- Abnormal chest radiograph
- Elevated liver enzymes
- Bronchoalveolar aspiration
- Biopsy of the lungs or liver.

## *Management:-*

- A 6-month course of INH and rifampin.
- Ethambutol is added if the patient is acutely ill, as are corticosteroids.



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# Hypercalcemia of Malignancy

- Hypercalcemia is the most common paraneoplastic syndrome of malignancy.
- Among genitourinary malignancies, it is most frequently identified in association with RCC (3%–25%)

# Hypercalcemia of Malignancy

## Pathophysiology:

- *Two pathogenic mechanisms:*

(1) Focal osteolytic bone destruction secondary to bone metastases,

(2) Uncoupling of bone turnover secondary to tumor-secreted humoral factors. (Humoral Hypercalcemia of Malignancy (HHM)).

The humoral factor most commonly associated with HHM, including that of RCC, is parathyroid hormone related protein (PTHrP).

# Hypercalcemia of Malignancy

## Presentation:

- Non specific Symptoms :
  - Fatigue,                      - Anorexia,
  - Nausea,                        - Constipation.
- Polyuria and progressive dehydration
  - Induction of an osmotic diuresis,
  - Inhibition of antidiuretic hormone activity.
- Acute or chronic renal insufficiency
- Neurologic symptoms :
  - Weakness,                      - Lethargy,
  - Disorientation

May progress into seizures, coma, and even **death** if treatment is delayed.

# Hypercalcemia of Malignancy

## Evaluation:

- Evaluation should include
  - Symptoms severity,
  - Serum calcium level,
  - Tumor stage,
  - Renal function,
  - Overall health status of the patient,
  - Oncologic prognosis.
- Laboratory investigations:
  - CBC,
  - Ionized and total serum calcium,
  - Albumin,
  - Serum creatinine,
  - Serum electrolytes,
  - BUN,
  - Serum magnesium.
- Assays for PTHrP if available; however, the utility of this test is questionable.

# Hypercalcemia of Malignancy


## Treatment:

- **Asymptomatic patients:**

- Mild to moderately elevated serum calcium (  $<3.25$  mmol/l,  $<14$  mg/dl)
- No immediate treatment as an inpatient.
- Medical therapy on an outpatient basis
- Periodic monitoring of serum calcium and renal function.

# Hypercalcemia of Malignancy

- **Symptomatic patients**
  - Severe hypercalcemia with a serum calcium level above 3.25 mmol/l (>14 mg/dl)
  - Require **hospital admission** and immediate intervention.
  - **I.V. hydration** with isotonic saline.
  - **Furosemide**, a loop diuretic.
  - **Additional medical therapy:**
    - Bisphosphonate.
    - Calcitonin.
    - Gallium nitrate.
  - **Dialysis:**
  - **Nephrectomy:**

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# Malignant Spinal Cord Compression

- Spinal cord compression is a debilitating complication of metastatic cancer identified in 5%–14% of cancer patients.
- Among urologic malignancies, it is most commonly seen with prostate cancer.

**CANCER PROSTATE**

**Metastases to the vertebral column**

**Significant pain**

**Pathological fracture**

**Spinal cord compression**

**Direct compression**  
Edema, venous congestion, and demyelination,  
**impair neurologic function.**

**Prolonged compression**  
Infarction of the spinal cord.  
**Progressive and irreversible loss of neurologic function**

# Malignant Spinal Cord Compression

## Presentation:

- ***Midline back pain*** (90%):
  - Most common.    - Localized to the level of cord compression
  - Exacerbated by recumbency and improved by upright posture
- ***Motor weakness:***
  - The second most common feature
  - Begins in the legs and affects proximal muscle groups
  - Progression to paraplegia is typically a late event.

# Malignant Spinal Cord Compression

- *Sensory changes:*

- Occur soon after the onset of muscle weakness
- Hyperesthesia or paresthesias and sensory loss in the toes with proximal ascent

- *autonomic dysfunction:*

- Urinary retention, fecal incontinence, and impotence
- Usually late signs.

*An exception is cauda equina syndrome in which lumbar metastases cause compression of the conus medullaris. Autonomic dysfunction can occur early in this setting and sensory loss often assumes a saddle-like distribution.*



Thank you