Is Haematuria Just for the Nephrologists?

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Dear Paediatric Urologist.

Tarquin came to see me today in clinic with frank Haematuria. Thank you for taking over his care and managing his haematuria.

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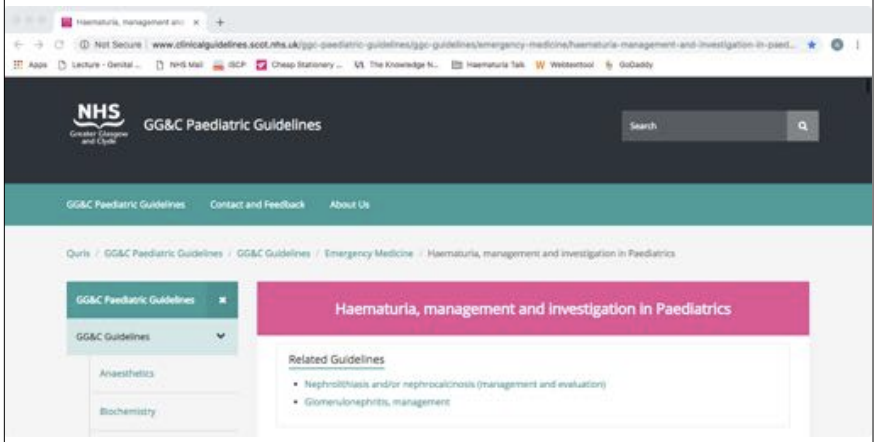
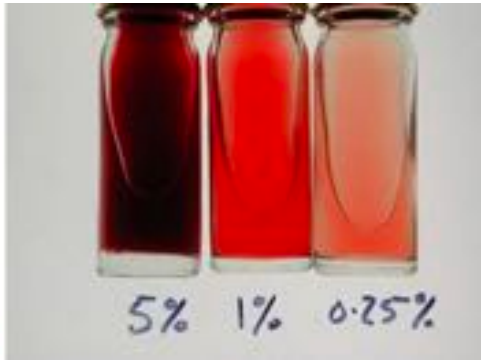
About the Talk



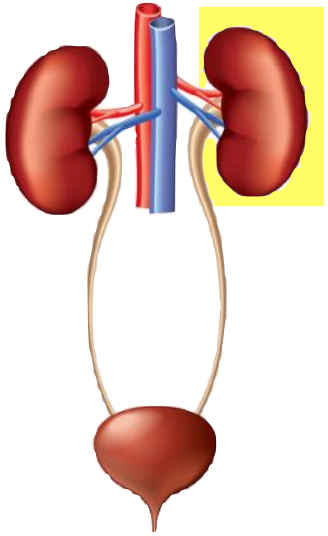
What is haematuria?



Colour of urine:

Colour	Causes
Dark yellow	Normal concentrated urine
Dark brown or black	Bile pigments Homogentisic acid, melanin, tyrosinosis, methemoglobinuria
Cola coloured	Glomerular hematuria
Red or pink urine	Extraglomerular hematuria, Hemoglobin, Myoglobin, Porphyrins, Chloroquine, Deferoxamine, Beets, blackberries, Rifampin, Red dyes in food, Urates

Difference between a Urologist and a Nephrologist?



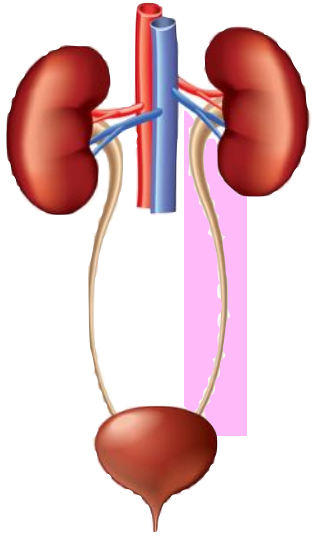
Site of Pathology changes nature of Haematuria

Trauma

Tumour
- **Wilms Tumour**
- **Renal Cell Carcinoma**

Stones

PUJ Obstructions



Site of Pathology changes nature of Haematuria

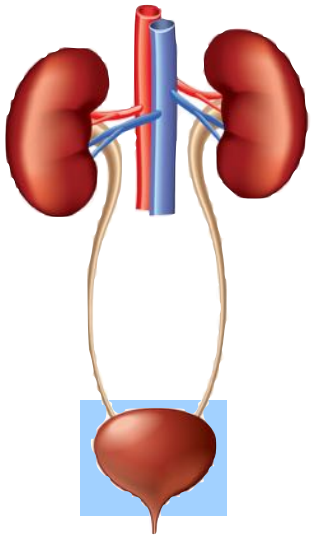
Stones

Trauma

Ureteric Polyps

Tumour

VUJ Obstruction



Site of Pathology changes nature of Haematuria

UTI

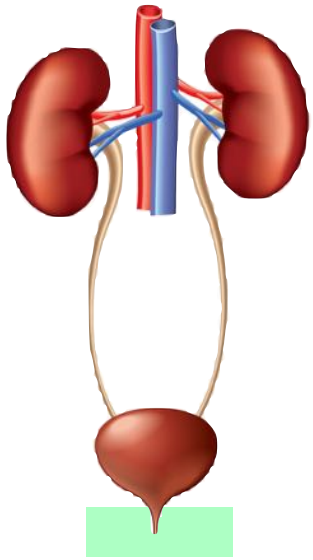
Cystitis Cystica

Haemorhhagic Cystitis

Tumour
- **Transitional Cell Carcinoma**
- **Rhabdomyosarcoma**

Stones

Trauma

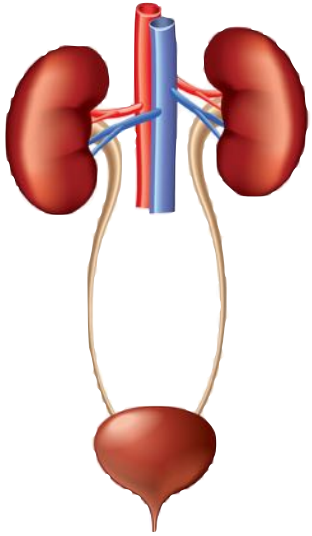


Site of Pathology changes nature of Haematuria

Urethrorrhagia

Urethral Stricture

Trauma



Site of Pathology changes presentation of Haematuria

Pain - Loin to groin
Colicy in nature

Abdominal Distension / Mass

Stranguary
Hesitancy
Poor Stream

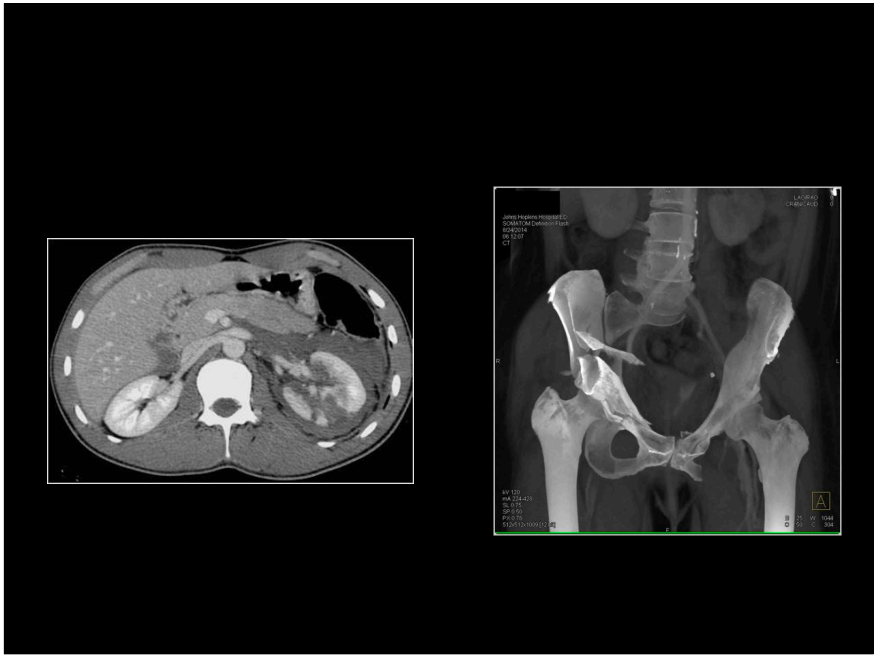
Terminal Haematuria

How do you differentiate Urological vs Nephrological Cause go Haematuria?

You Can't Always at presentation!

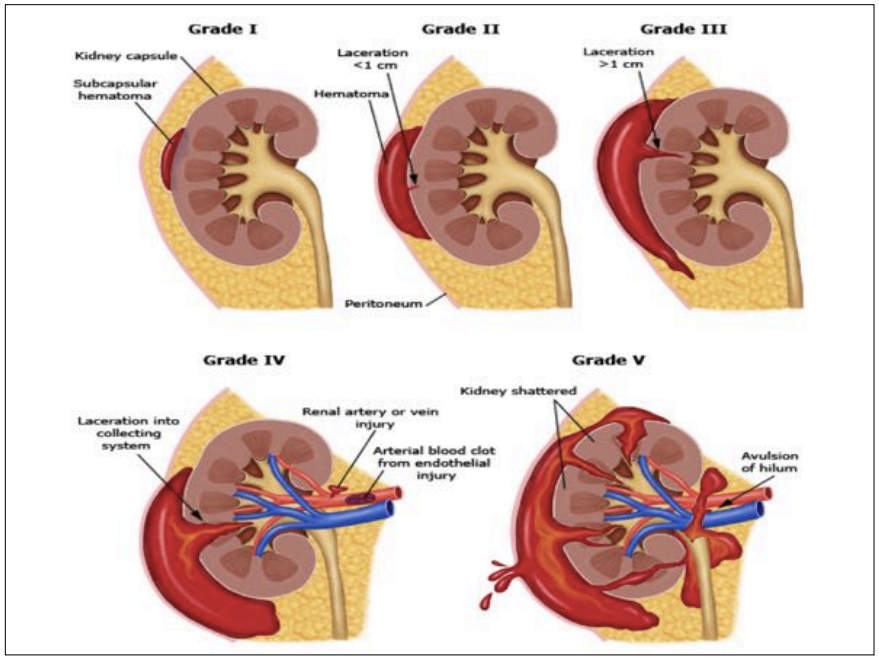
Work-up

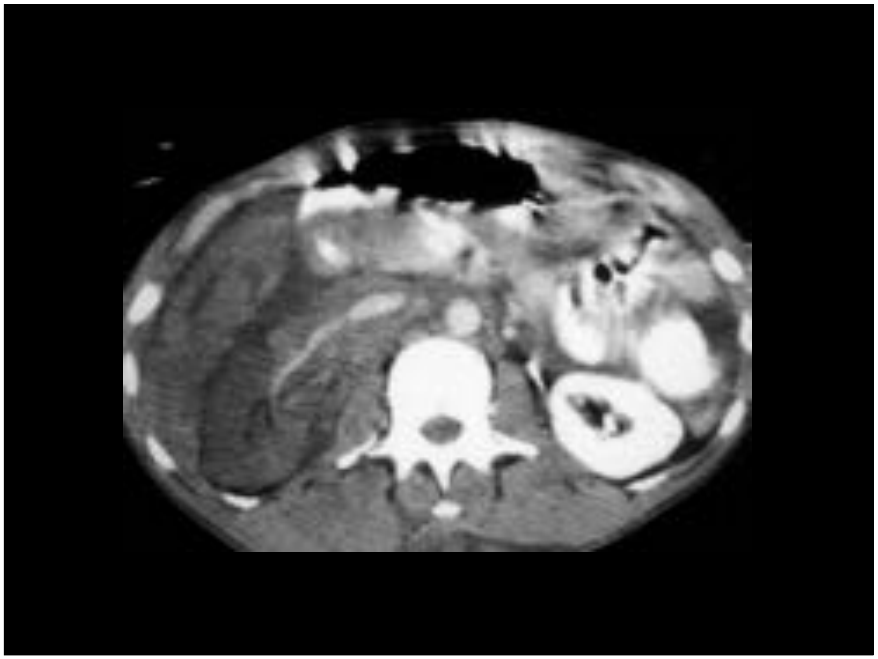
- Jointly agreed pathway which will allow pick-up of both nephrological and urological causes.
- **History & Examination**
- **Urine**
  Urinalysis; Urine Culture; Calcium/Creatinine Ratio; Microscopy
- **Bloods**
  FBP, U&E, Coag, LFTs
- **US Renal Tracts**
- **Uro-flow** (if terminal Haematuria / suspicion of urethra cause)



Patients

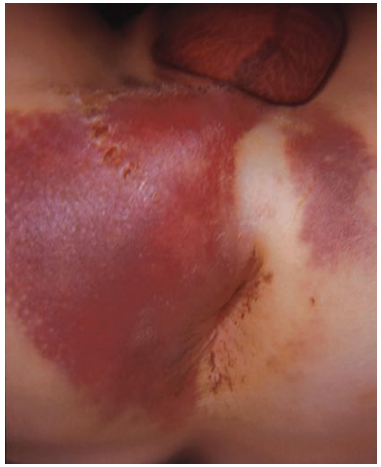
1. 12 year old Female. Fallen ~1m out of tree. Pain in left side. Bruising & tenderness in left loin. Microscopic Haematuria
2. 10 year old male. Cyclist in car vs cyclist. Head injury - GCS 8; Upper Abdominal Bruising & guarding; Right Femoral Fracture. Urine NAD
3. 15 year old Male. Solitary stab wound to left upper Quadrant. Microscopic Haematuria

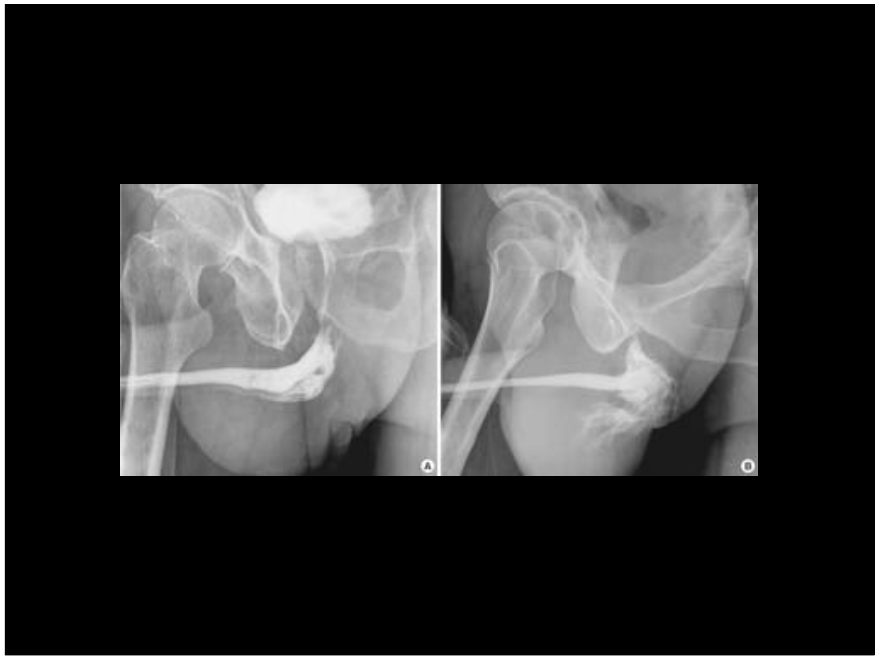




Trauma

Trauma





Trauma

- Seemingly trivial mechanisms can cause significant morbidity.

Tumours

- Haematuria may be a presenting feature
  10-15% of its with Wilms Tumour have haematuria at presentation
- Malignancy from anywhere in GU tract can cause Haematuria

Oncology

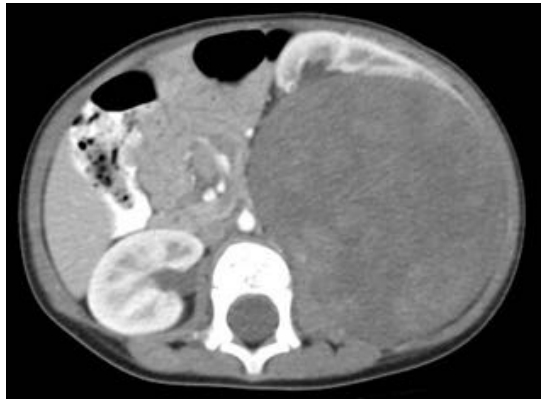
- Renal Tumours
  - Wilms Tumour
  - Renal Cell Carcinoma
- Rhabdomyosarcoma
  - Bladder
  - Prostatic
  - Vaginal
- Transitional Cell Carcinoma

Oncology

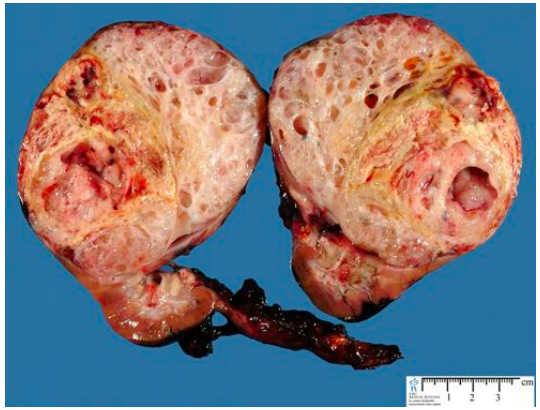
- Management for each tumour is different
- Led by Oncology MDT

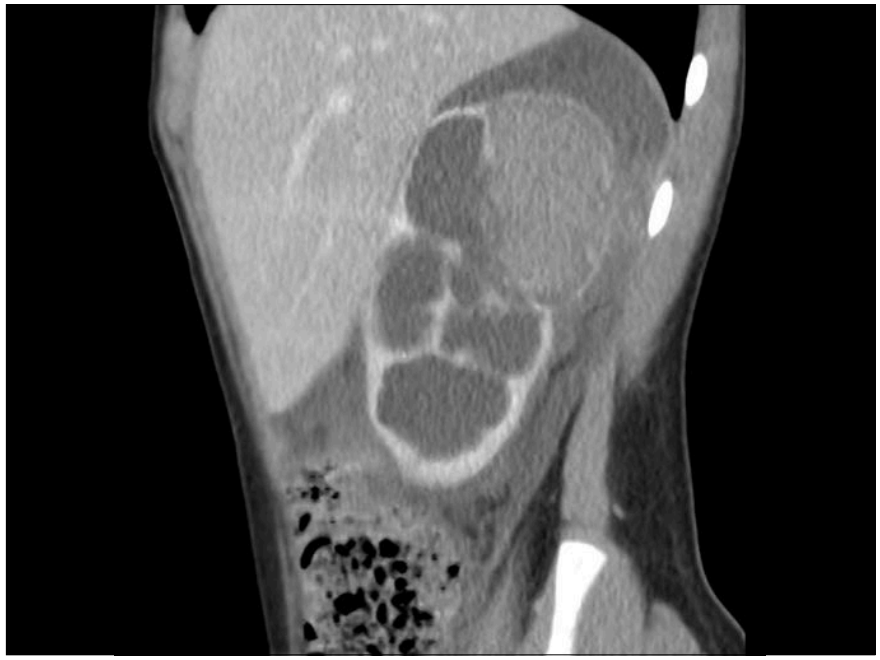
- Prognoisis Varies…….

Wilms Tumour

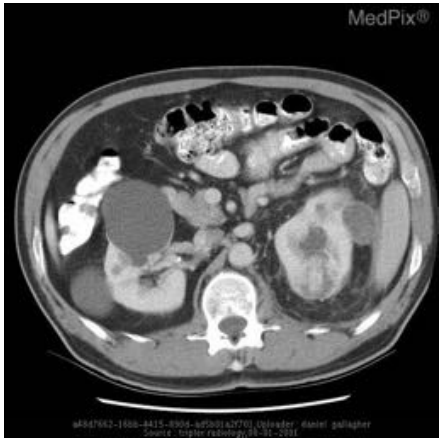


Wilms Tumour

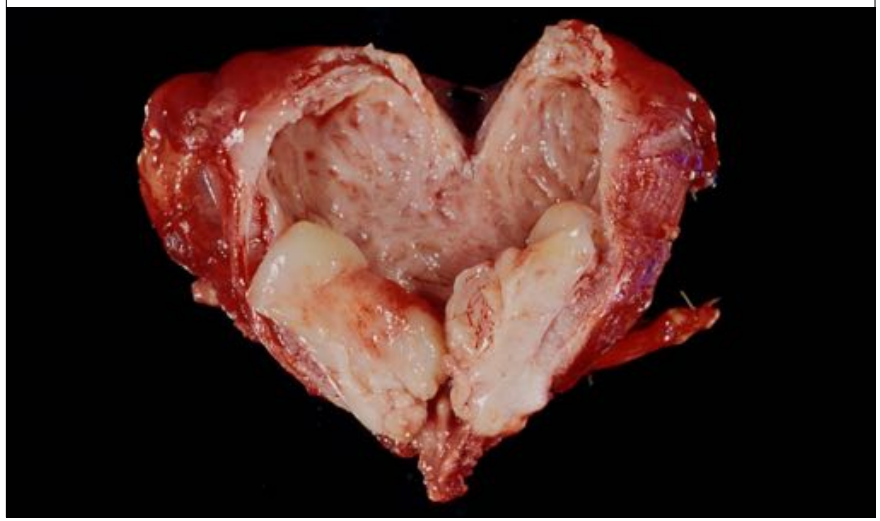




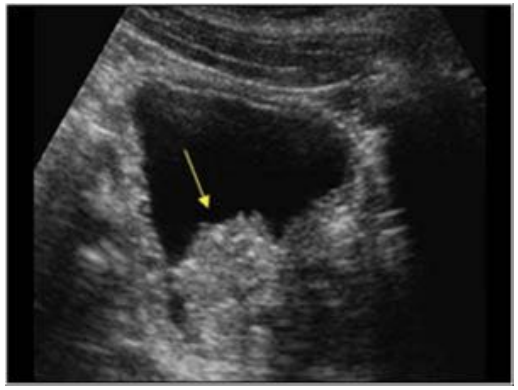
Renal Cell Carcinoma

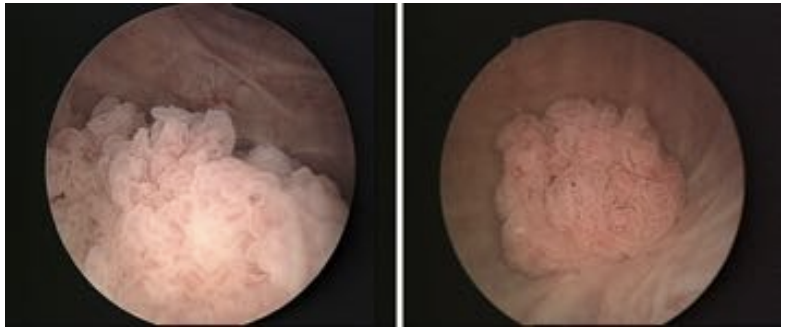


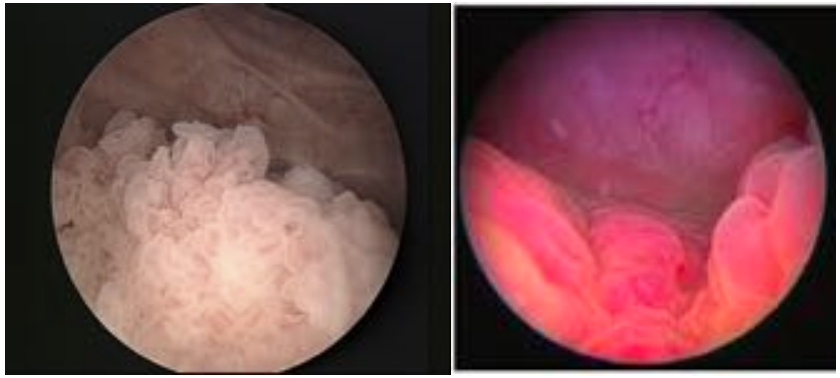
Rhabdomyosarcoma



Transitional Cell Carcinoma of Bladder



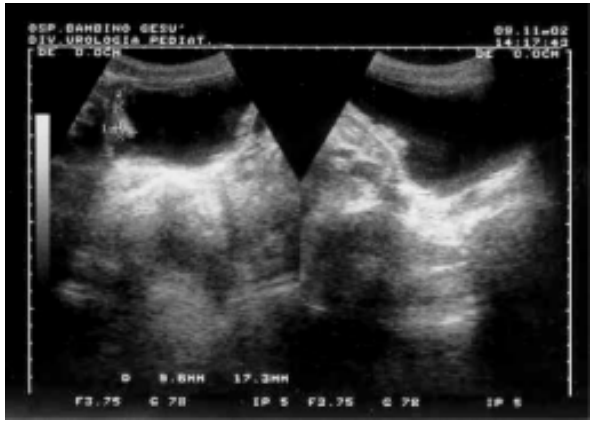




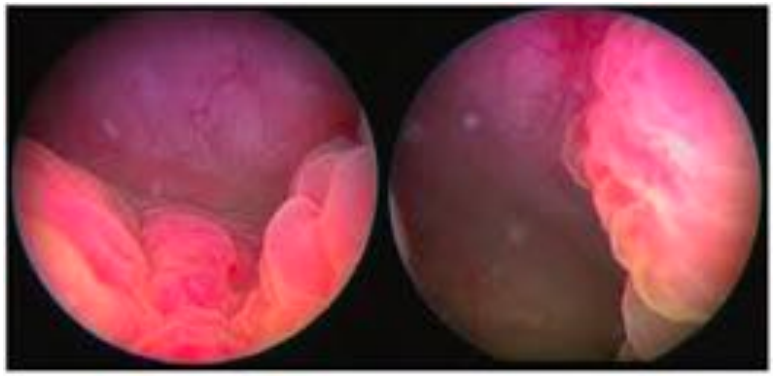
Cystitis Cystica

- Rare entity in children. (1.4% PMs Adults)
- Proliferative & metaplastic disorder of bladder mucosa
- Presentation:
  - UTIs
  - Irritative symptoms
  - Gross Haematuria

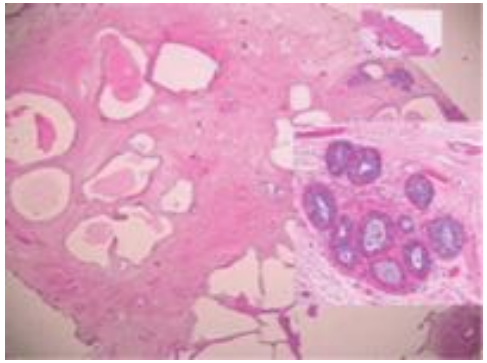
Cystitis Cystica



Cystitis Cystica



Cystitis Cystica



Histological slide showing glandular structures lined with mucus-secreting cubic and columnar cells (cystitis glandularis).

Cystitis Cystica

- Treatment?????
  - Antibiotic Prohylaxis
  - Regular Screening
  - Bladder instillation of steroids / cytotoxic drug
- Longterm outcome unknown
- No reports of malignancy

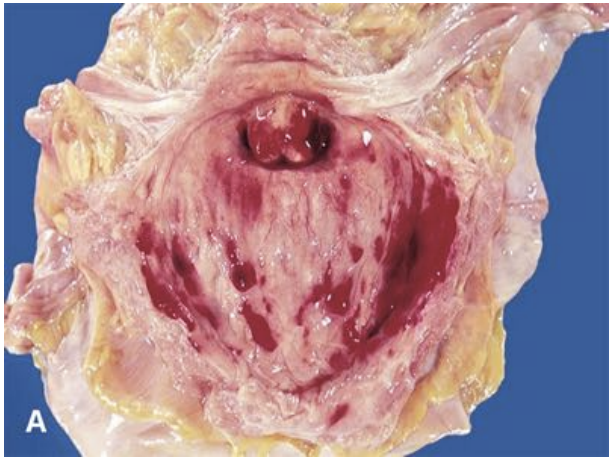
Management

- Should be identified on US
- Work up as per local Oncology Guidelines
- Management as part of MDT

Haemorrhagic Cystitis

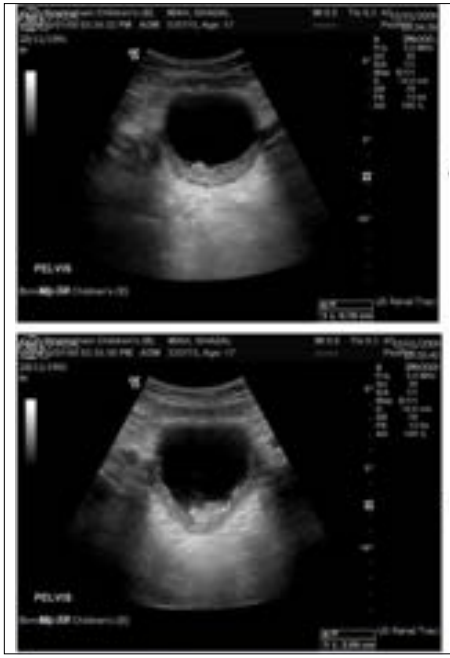
- Significant inflammation of bladder leading to bleeding
- Potentially life threatening
- Often seen post chemotherapy
- ?Viral aetiology (BK Virus)

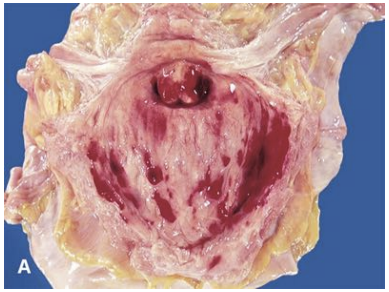
Haemorrhagic Cystitis



Haemorrhagic Cystitis

Ifosfamide
Cyclophosphamide
Busulphan
Thiotepa
Temozolomide
9-nitrocamptothecin
Pencillin and its derivatives like methicillin, carbenicillin, ticarcillin, piperacillin
Danazol
Tiaprofenic acid
Allopurinol
Methaqualone
Methenamine mandelate
Gentian violet
Acetic acid
Environmental toxins Aniline dyes
Toluidine
Chlorodimeform
Ether
Radiation
Infections Viral infections like adenovirus, BK polyoma virus, herpes virus, cytomegalovirus, JC virus
Bacterial organisms like *Escherichia coli, Staphylococcus saprophyticus, Proteus mirabilis, Klebsiella*
Parasitic disease like schistosomiasis and Echinococcosis
Fungal species like *Candida albicans, Cryptococcus neoformans, Aspergillus fumigatus, Torulopsis glabrata*
Other systemic conditions Amyloidosis
Immunoinflammatory diseases like Systemic lupus erythematosis, Rheumatoid arthritis and Crohn's disease
Boon's disease





Haemorrhagic Cystitis

Grading (Adapted Karolinska Grading System)

1. Mild - Minimal otr Microscopic Haematuria
2. Moderate - Gross bleeding; Medical intervention indicated
3. Severe - Transfusion Required
4. Life-threatening - Major urgent intervention required
5. Death related to Haemorrhagic Cystitis

Haemorrhagic Cystitis

- Identify Condition
- Adequate Hydration
- Analgesia
- Oral Sodium Pentosan Polysulfate. (100mg PO TID)
- Correct Bleeding Diathesis

plt>50; Hb >80

Avoid Bladder catheter

Duthie et al. JPS 2012;47: 375-9

Haemorrhagic Cystitis

Urological Intervention for clot retention

- In/out catheter
- Irrigating Catheter
- Cystoscopy & bladder washout

Life Threatening Haemorrhage

- Hydrodistension
- Internal iliac artery embolisation
- Cystectomy

Outcomes

- BCH Experience
- 17 cases of Haemorrhagic Cystitis in past 10 years
- 5 cases prior to introduction of SPP
  80% mortality; 20% Survival with prolonged ICU stay
- Since introduction of SPP
  0% mortality; 1 requiring Urological Intervention
  Urologists haven't been called about last 6 cases!
- Long term bladder function deterioration

Idiopathic Posterior Urethritis

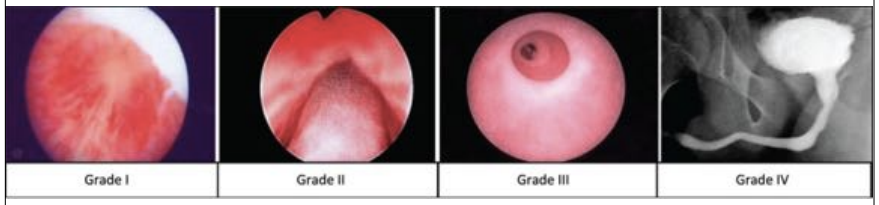
Idiopathic Urethrorrhagia

- First Described by Kaplan & Brock 1982
- Typically History
- Episodic Terminal Haematuria in adolescent
- Often Dysuria

J Urol. 1982 Nov;128(5):1001-3.

Idiopathic Posterior Urethritis

- Culture Negative……
- Normal US
- Cystoscopy - Inflammation of Posterior urethra
  May extend into bladder



Jayakumar, Pringle & Ninan JIAPS 2014;9:143-6

Idiopathic Posterior Urethritis

Natural History

- Self Limiting Median of 6-12 months
  But some reported 8 years
- 20-30% stricture rate in those who have had cystoscopy
- No strictures reported in patients without cystoscopy

Idiopathic Posterior Urethritis

Treatment

- Do Nothing
- Tranexamic Acid
- Intravesical Steroids (Triamcinolone 40mg < 14 years;
  80mg>14 years)
- Oral Steroids (2mg/kg prednisolone)

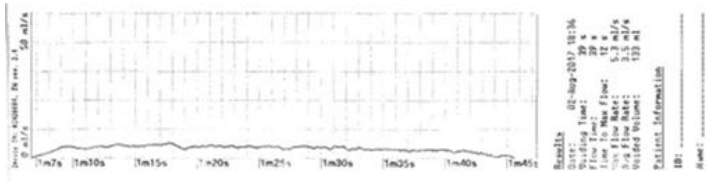
Urethral Stricture

- Narrowing of urethra
- Congenital
- Acquired
  - Iatrogenic
  - Trauma
  - Infective
  - BXO
  - Post Circumcision

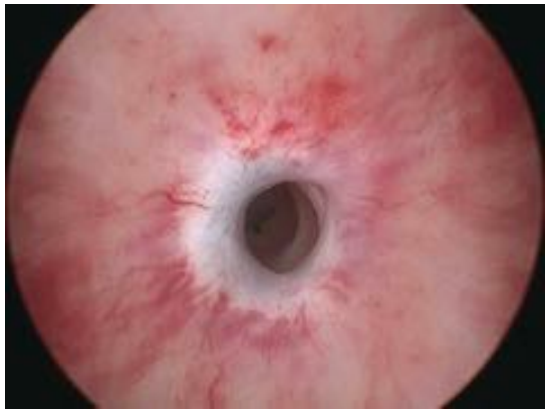
Urethral Strictures

- No incidence of Strictures presenting with Haematuria in literature
- Not a common primary presenting complaint acutely
- Haematuria may act as a flag for risk of stricture

Urethral Strictures



Urethral Strictures



Urethral Strictures

- Optical Urethrotomy
- Urethral Dilatation
- Urethroplasty
  - Primary
  - 2 Stage

Meatal Stenosis

- Post Circumcision
- Congenital
- Post Surgery

The Foreskin

- As Preputial Adhesions Separate can cause bleeding
- BXO

Conclusion

- Macroscopic Haematuria is Microscopic Haematuria but more of it
- Haematuria is a Bloody Symptom…..Not a diagnosis
- Joint Nephrology / Urology Approach to Investigation