An Unusual Case of Haematuria

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Welsh Clinical Network for Paediatric Nephrology Study Day

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History

- Seventeen-month old boy
- Generalised, intermittent abdominal pain
- Progressively getting worse over last three weeks
- Most severe when micturating or defecating
- Mum noticed intermittent, dark-looking urine

- GP had treated for suspected UTI the previous week but no improvement.

- Otherwise well.

Examination

- Observations within normal range.
- Visibly distressed at times.
- Haemodynamically stable.

- Abdomen difficult to examine as distressed, but soft, no masses.
- Tender suprapubically.

- Urine was visibly red.

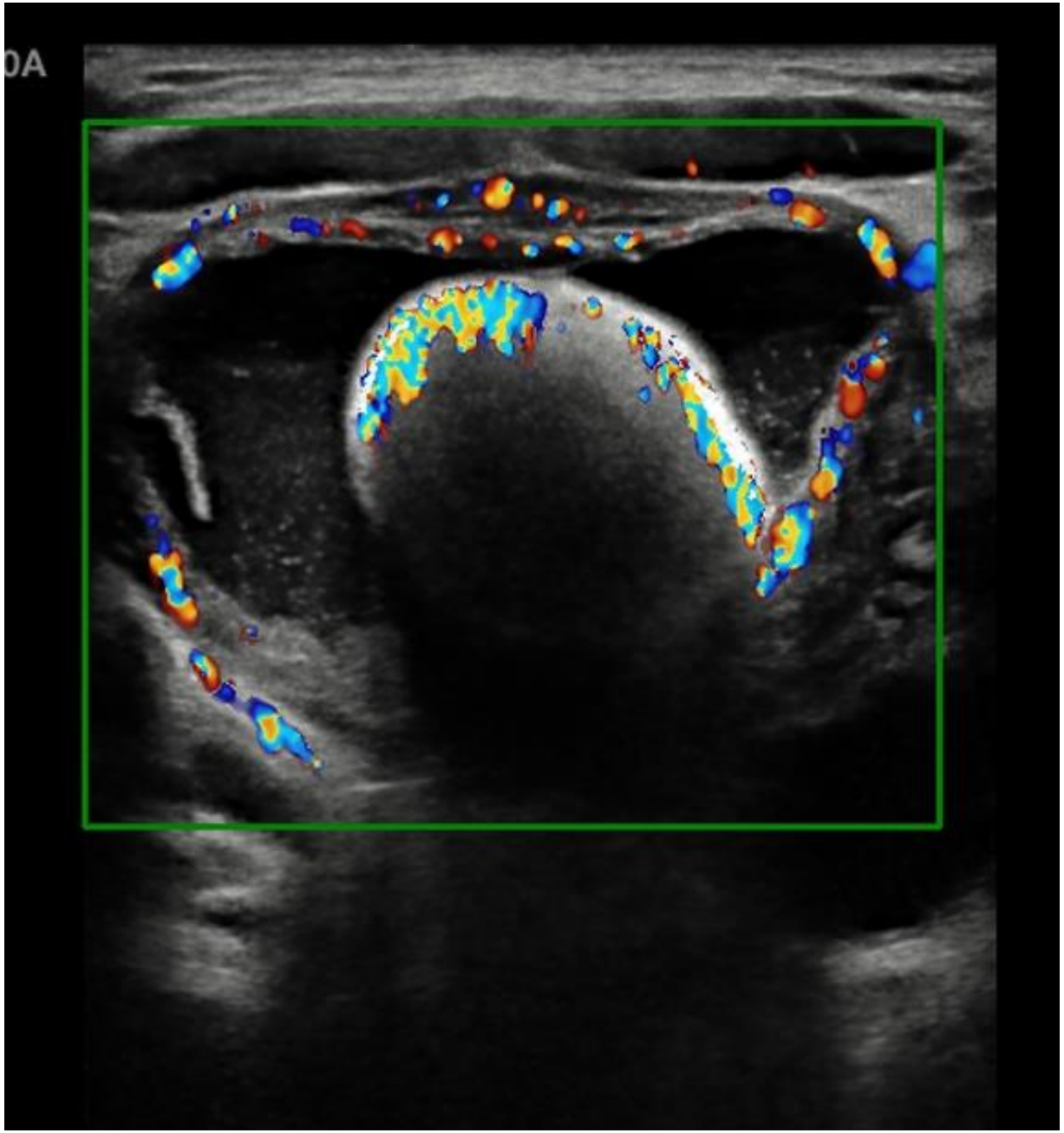
Investigations

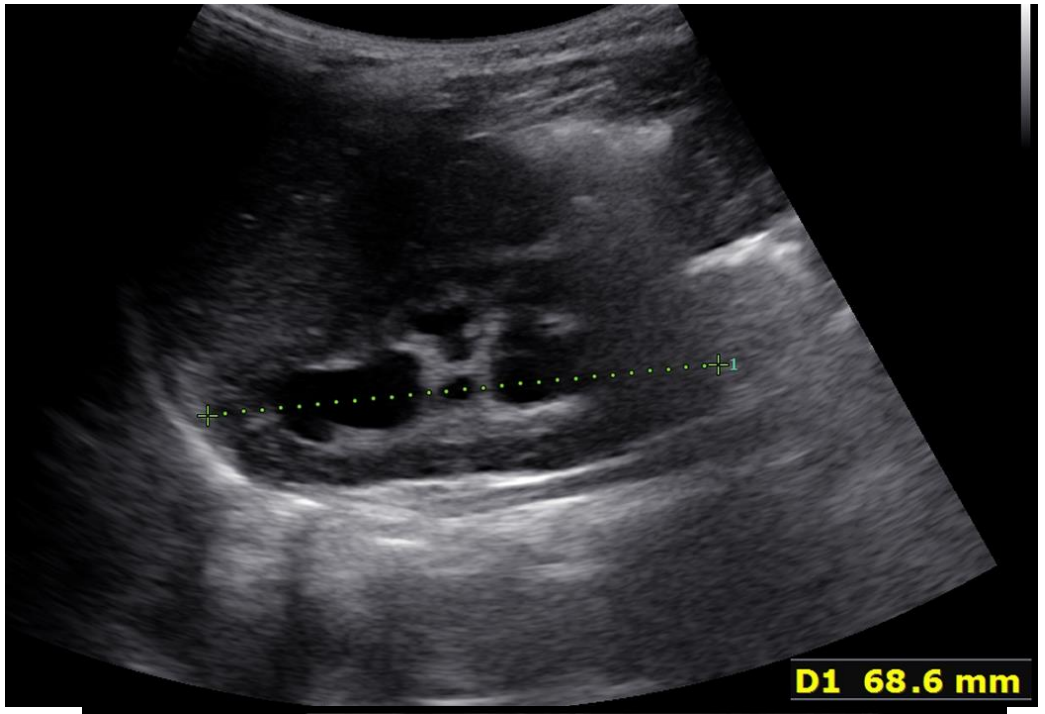
- Bloods:
  - FBC: Normal
  - U&Es: Normal
  - Bicarbonate: 15
  - CRP: 10
  - LFTs: Normal
  - Urate: 279
- Urine:
  - Dipstick: Blood, leuc, prot, nitrites
  - pH: 8.0
  - Ca:creat 0.29
  - Prot:creat 1199 (<50)
  - MC&S:
    - RBC >100
    - WBC >100
    - Squamous epithelial cells
    - Proteus (resistant to nitrofurantoin)

Investigations

- USS KUB:
  - ‘Both kidneys normal shape, size and echopattern’
  - ‘There is evidence of hydronephrosis within left proximal collecting system (7mm AP)’
  - ‘No cortical scarring’
  - ‘Bladder wall is thickened and trabeculated, increased vascularity over the mucosa.’
  - ‘Large seemingly mobile echogenic mass within the bladder.. 25mm wide with posterior acoustic shadowing.’

- AXR

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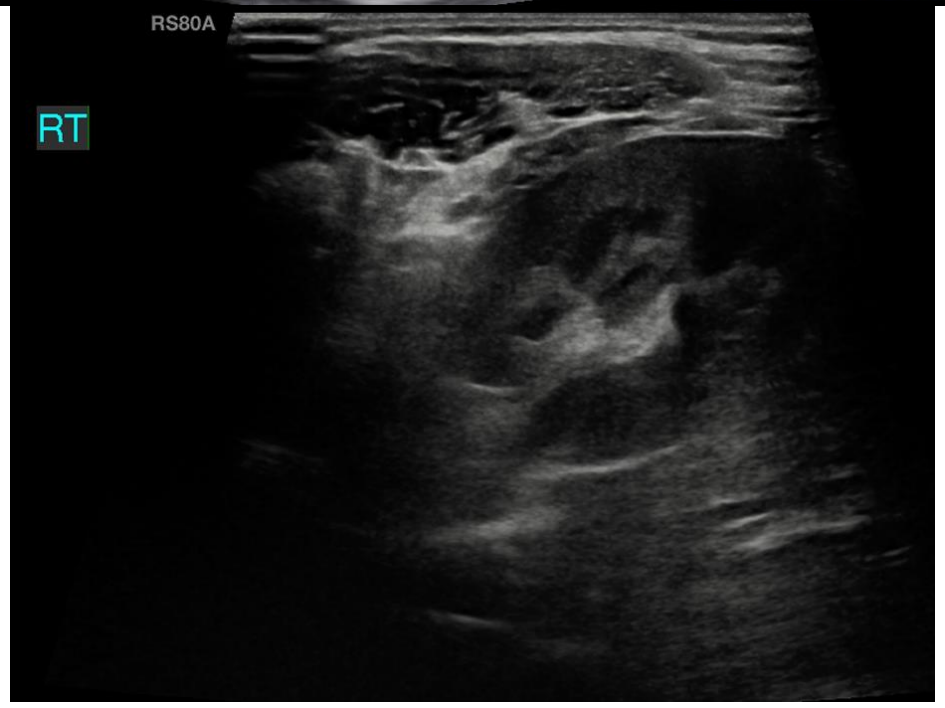
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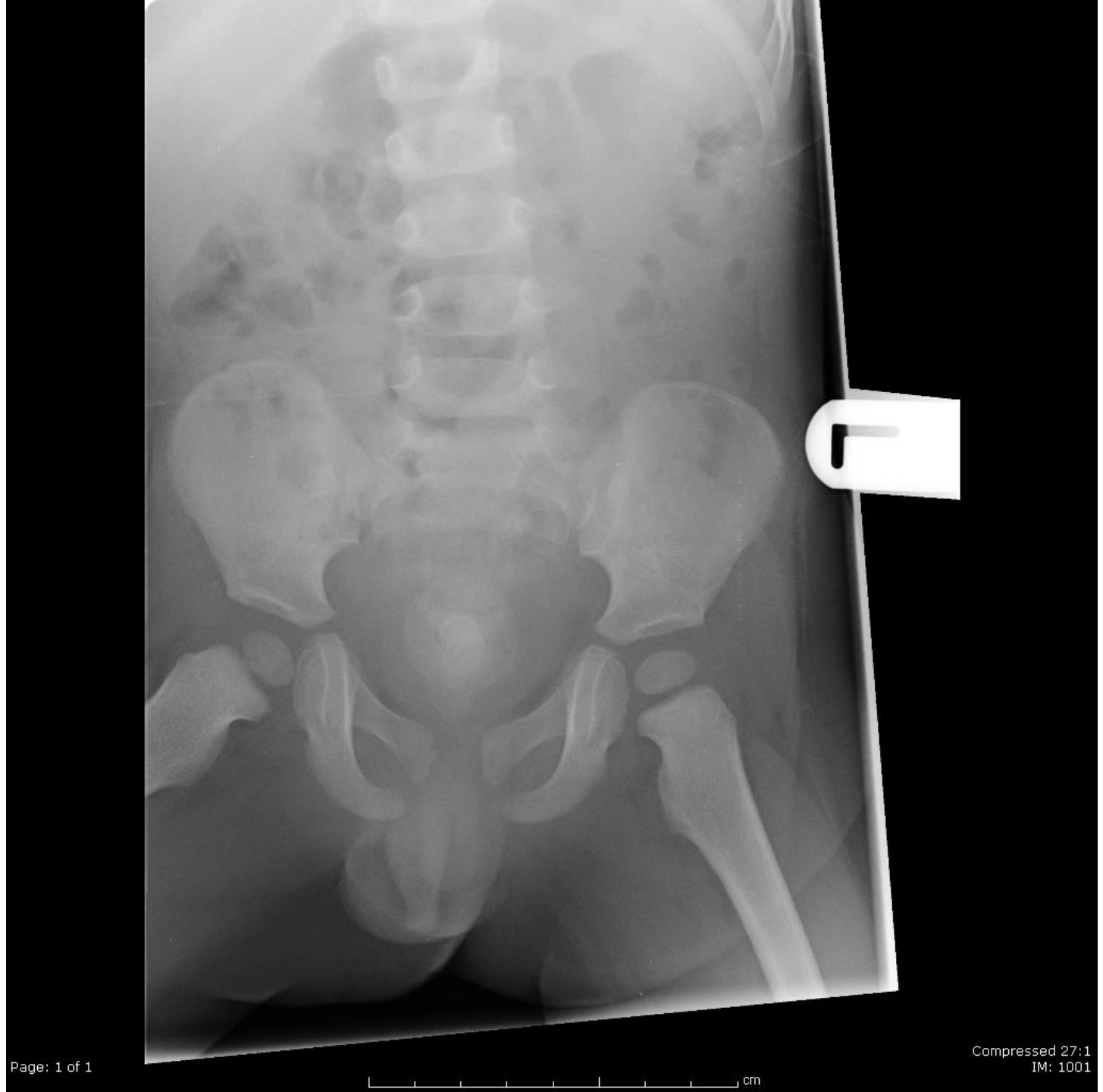
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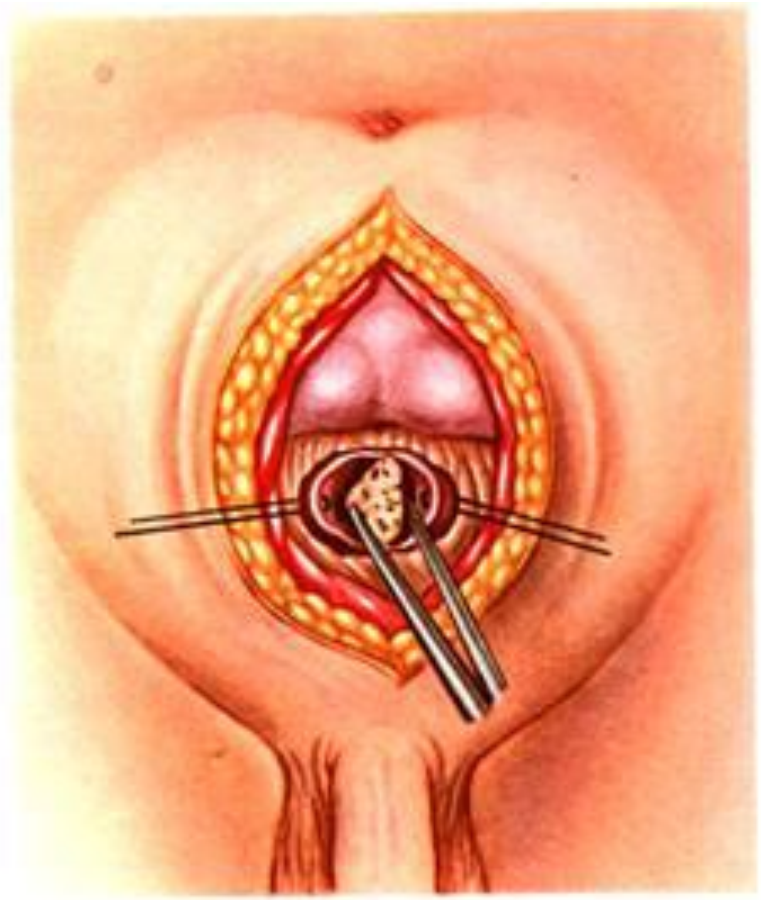
Management

- Urgently referred to paediatric surgical team at UHW.
- Regular analgesia until transfer.
- Open cystolithotomy performed.
- Posterior urethral valves found, and resected.



Urinary Calculus

- Once thought to be rare, incidence appears to be increasing.
- Classically a disease of boys (3:2)
- Commoner in white ethnicity
- Typically present before thirteenth birthday
- Most stones found in the kidneys or urethras
  - Bladder stones are rare in Western countries, more common in developing world.

Aetiology

- Supersaturation of stone-forming compounds in urine (eg calcium, oxalate)
- Presence of chemical (eg altered pH, poorly soluble meds) or physical stimuli in urine that promote stone formation
- Inadequate amount of compounds in urine that inhibit stone formation (eg, magnesium, citrate)

Urinary Calculus

Four major types of stone occur in children:

- Calcium
  - Calcium oxalate (commonest)
  - Calcium phosphate
- Uric acid
  - Caused by persistently acidic urine
  - Diet high in purines
- Struvite
  - Recurrent urine infections
- Cystine
  - Cystinuria

Urinary Calculus

- Younger children more likely to have an underlying disease
  - Posterior uretheral valves
  - Idiopathic hypercalciuria
- Older children:
  - Suggestion of an association with obesity
  - Associated with hormonal changes
- Children with a background of CF, renal transplant and gastrostomy tube feeding are at higher risk

Management

The overall goals of care are as follows:

- To prevent additional renal damage, which may lead to loss of renal parenchyma
- To manage pain associated current stone(s)
- To expedite passage or removal of any stones present
- To prevent new stones from forming.
  - Dietary changes, drugs depending on stone type

Drug Treatment

Depends on the underlying cause:

Type/Cause of Stone	Medications
Hypercalciuria: • Renal Tubule Leak • Excess GI absorbtion	Thiazide diuretic Sodium phosphate
Hypocitraturia	Potassium citrate
Struvite	Appropriate antibiotics
Uric acid	Urine alkalinization • Bcarbonate • Potassium citrate

Many thanks for listening

Any questions?

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References

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