Upper Tract Calculi
To Treat or not to Treat?

It depends where the stone is.

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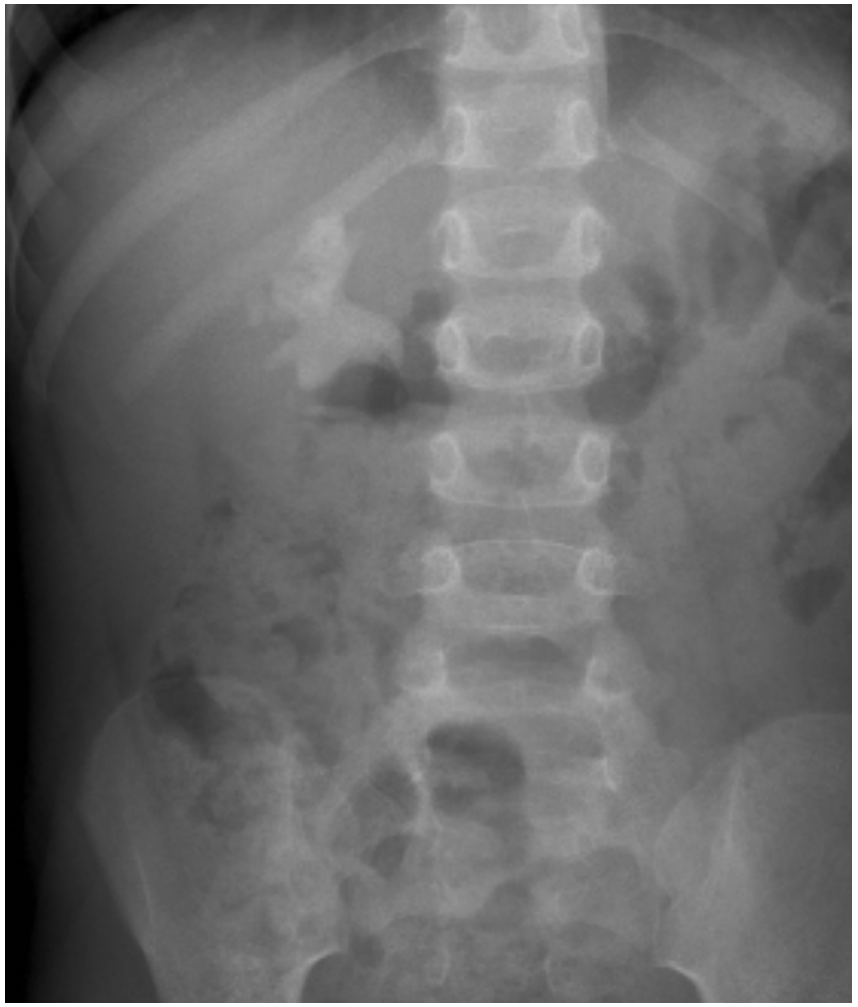
Paediatric Uro Radiology Meeting
March 2016

- If something is broken, we can fix it
- If it shouldn’t be there we can remove it

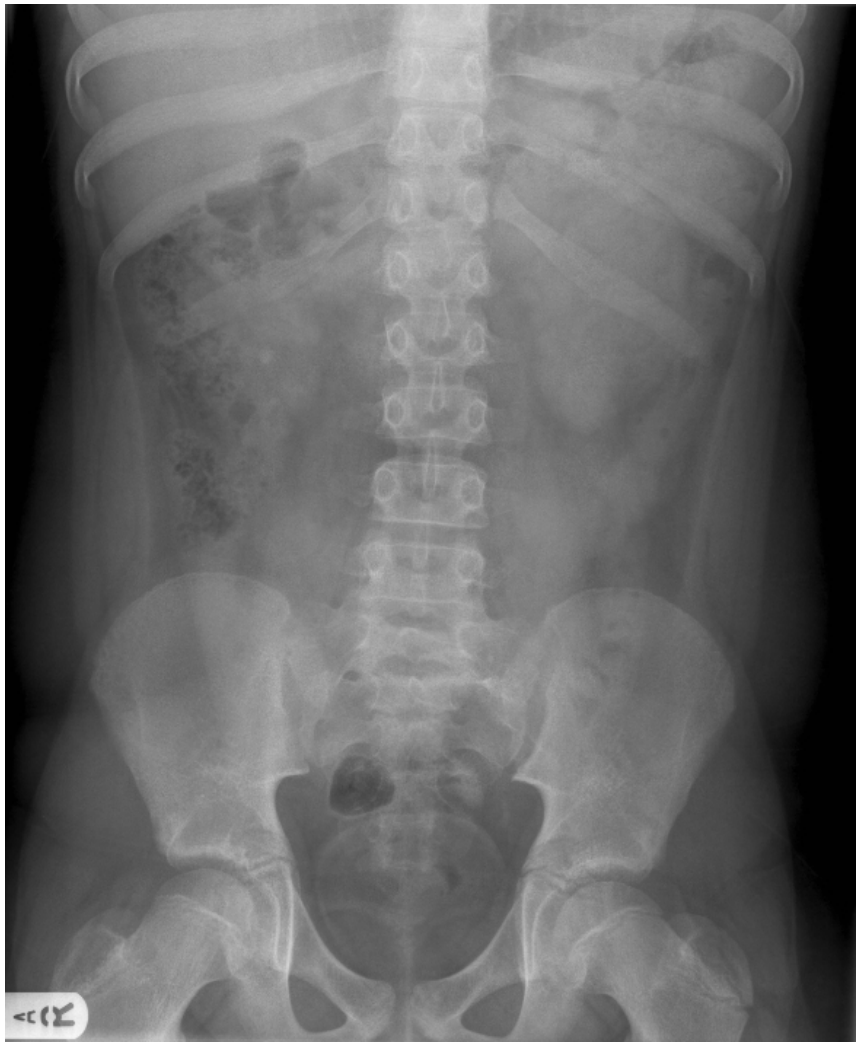
The hardest decision in surgery is deciding when NOT to operate

Primum non nocere

Sometimes the decision is easy

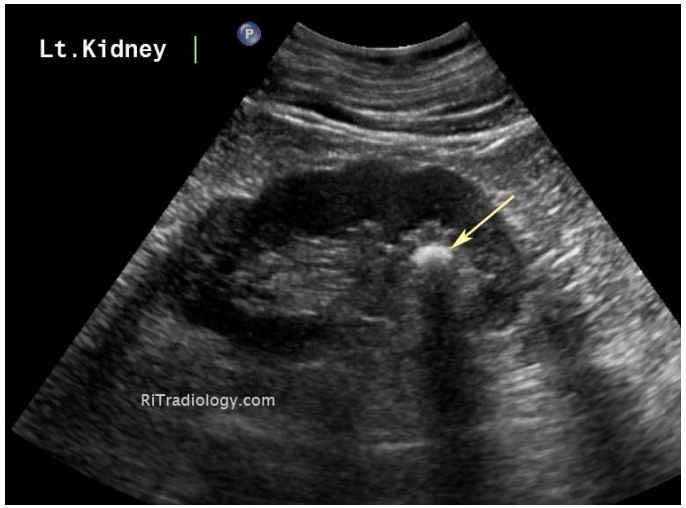


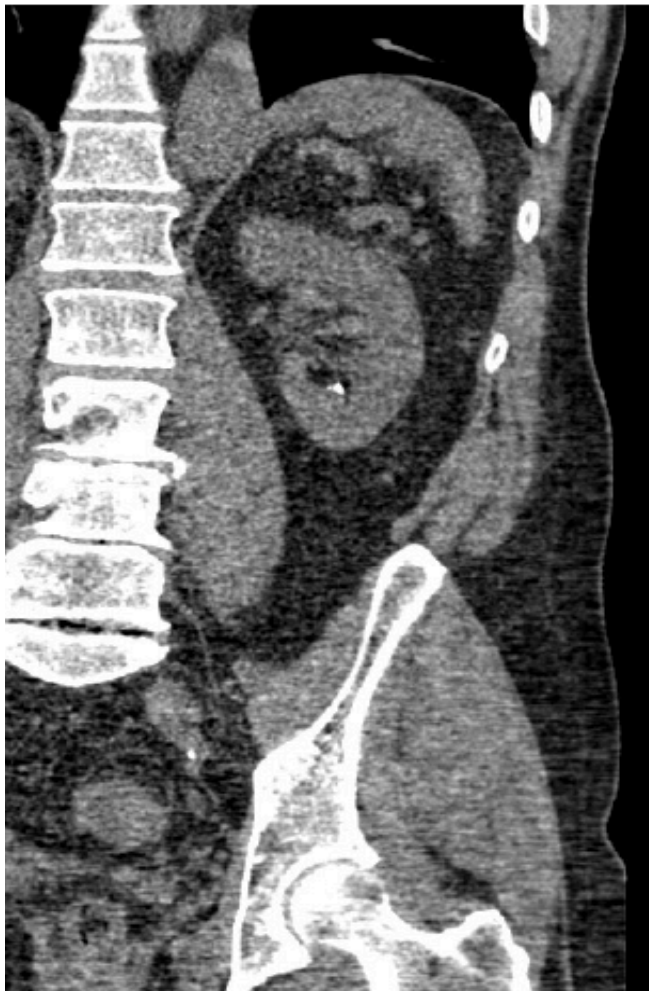
Very often it is not



VOMIT

Victims of Medical Information Technology





Renal Calculi

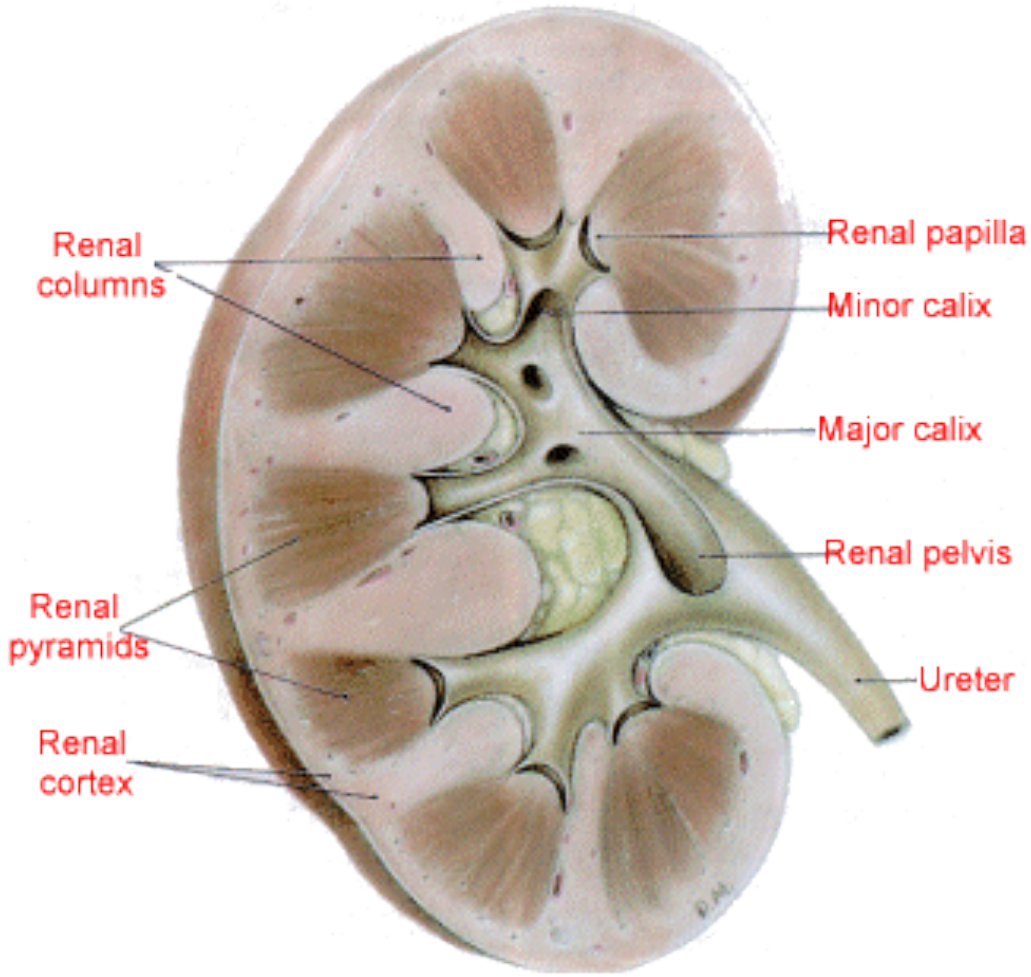
Reason to treat

- Symptomatic
  - Pain
  - Haematuria
  - UTI
- Obstruction
  - Hydronephrosis
  - Renal Impairment
- Likelihood of metabolic cause
  - Likelihood of stone progression
    - UC/CD
    - Cystinuria
    - PHO
    - Met Syn/Type II DM
- Single functioning kidney

Possible Reason not to treat

- Asymptomatic
- Incidental finding
- Likelihood of spontaneous passage
- Lower chance of stone passage after intervention
  - Lower pole
- Little chance of stone progression
  - Calyceal diverticula

Renal Anatomy



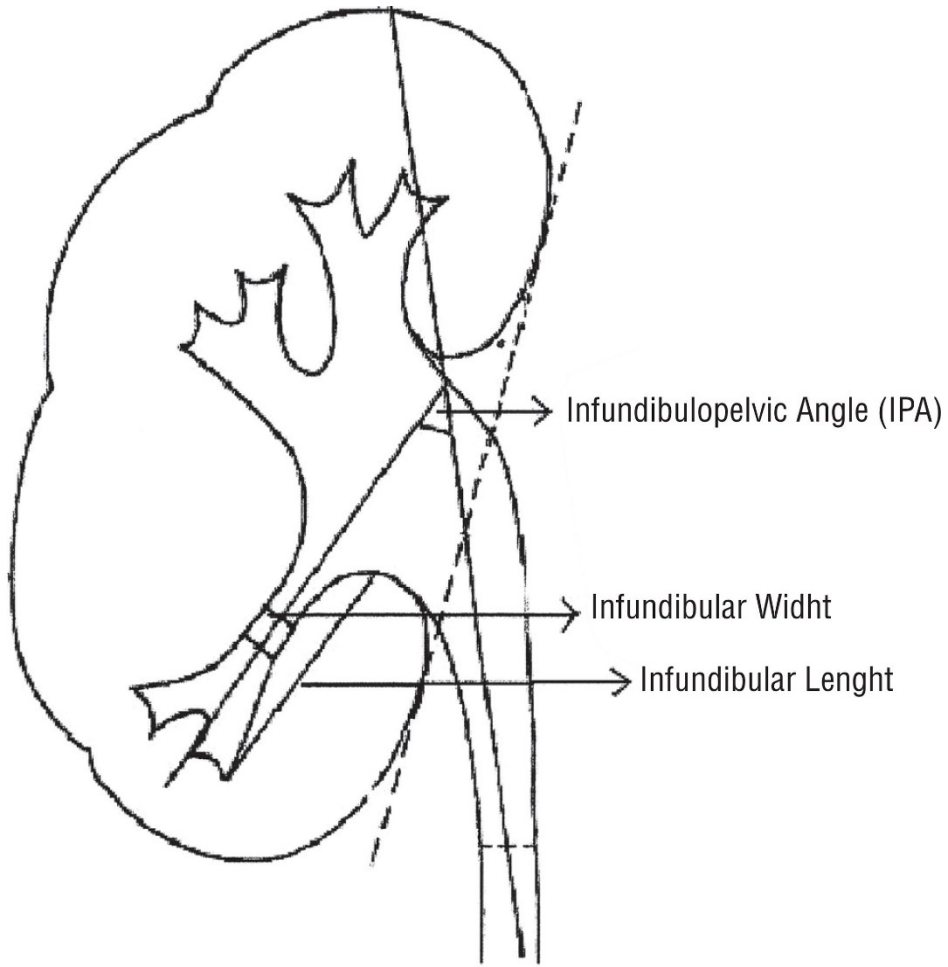
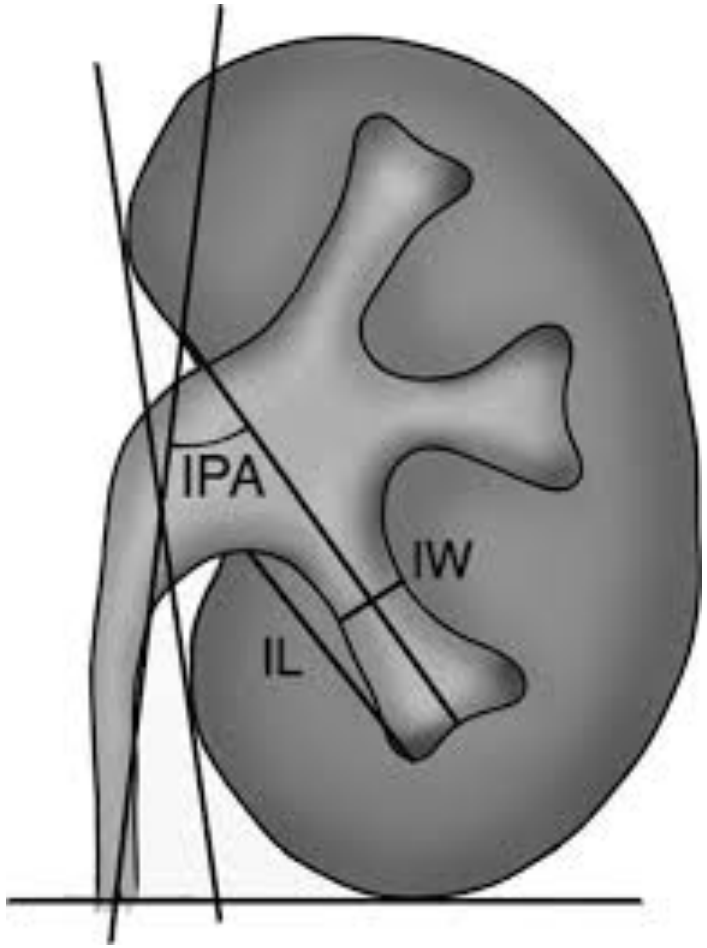
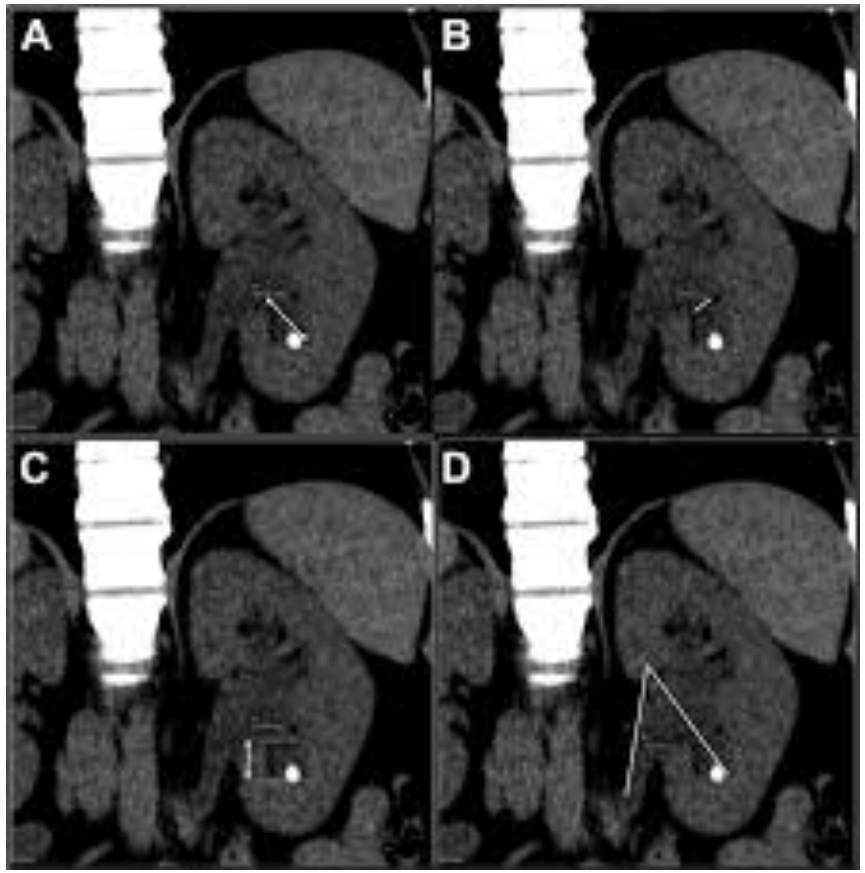
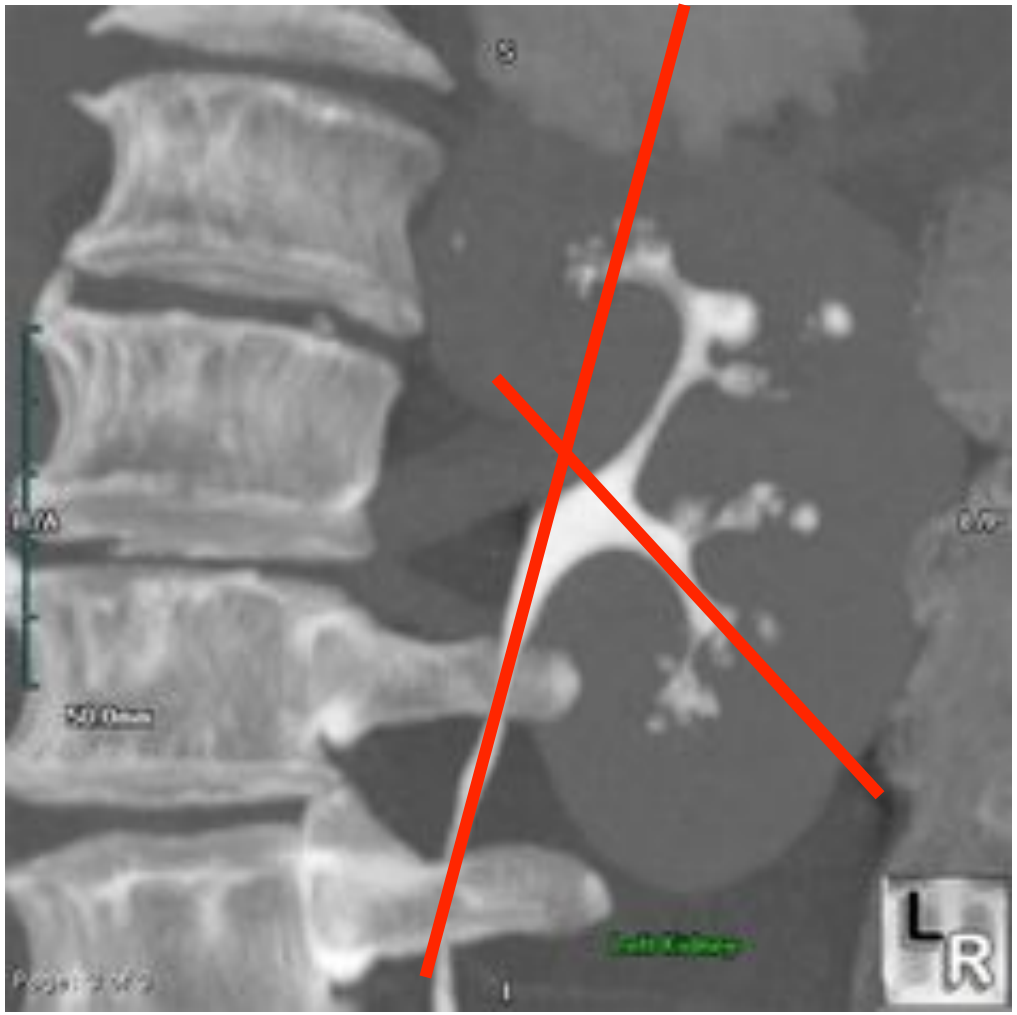


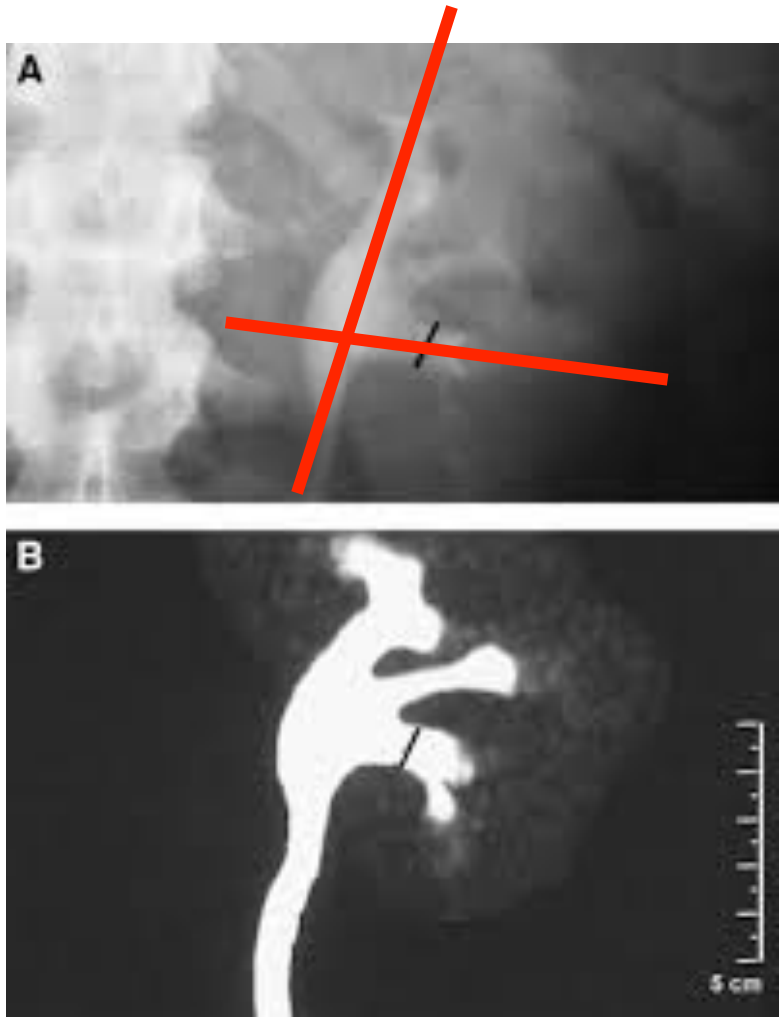
***Table 6** - Elbahnasy et al. (17): Clearance rate according to caliceal width, length and the angle between infundibulopelvic and ureteropelvic axis.*

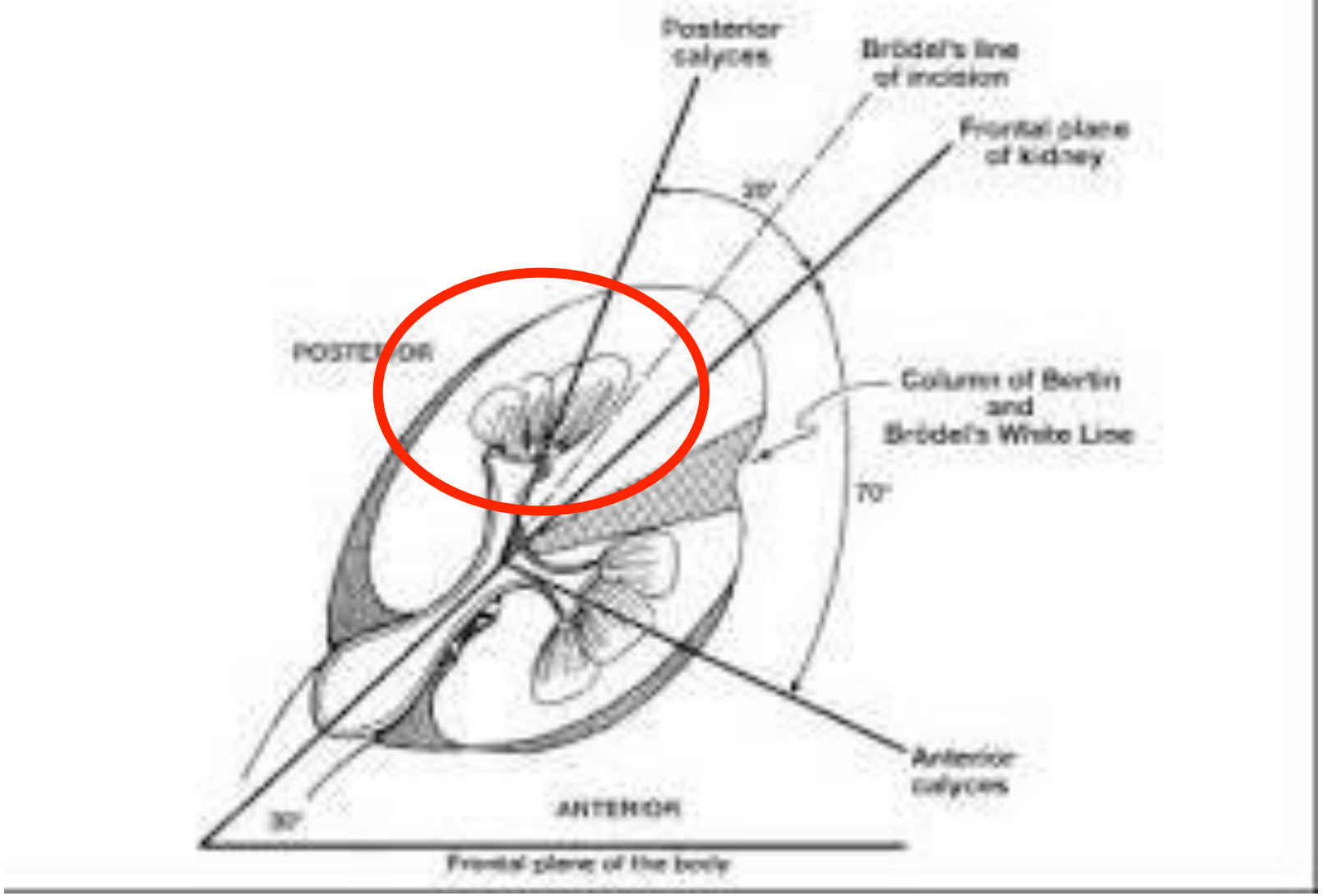
	Clearance (%)
Caliceal width > 5mm	60
Caliceal width ≤ 5 mm	33
Caliceal length ≤ 30 mm	75
Caliceal length > 30 mm	42
Angle ≥ 90°	100
Angle < 90°	47


IPA
IW
IL


A
B
C
D


L
R


A
B
5 cm


Posterior calyces
Bridel's line of incision
Frontal plane of kidney
30°
POSTERIOR
Column of Bertin and Bridel's White Line
70°
Anterior calyces
30°
ANTERIOR
Frontal plane of the body

Mean ureteric diameter

Children (int) Berrocal 2002 IVU

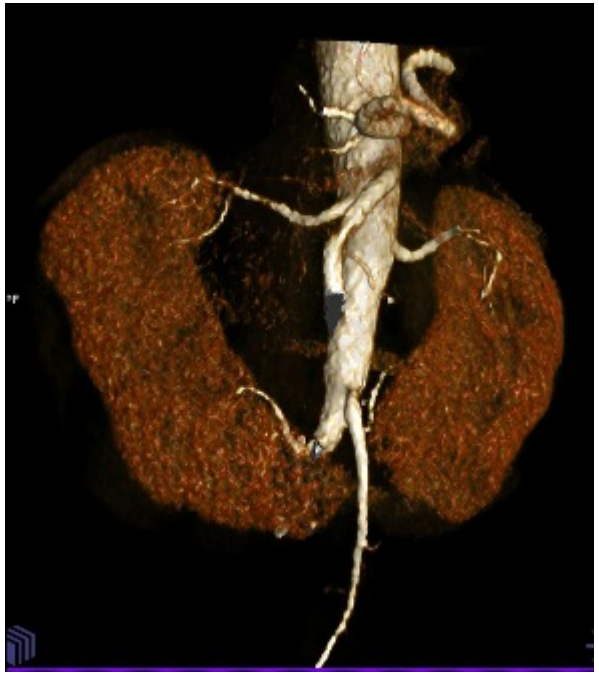
- ≤5mm
- 16Fr

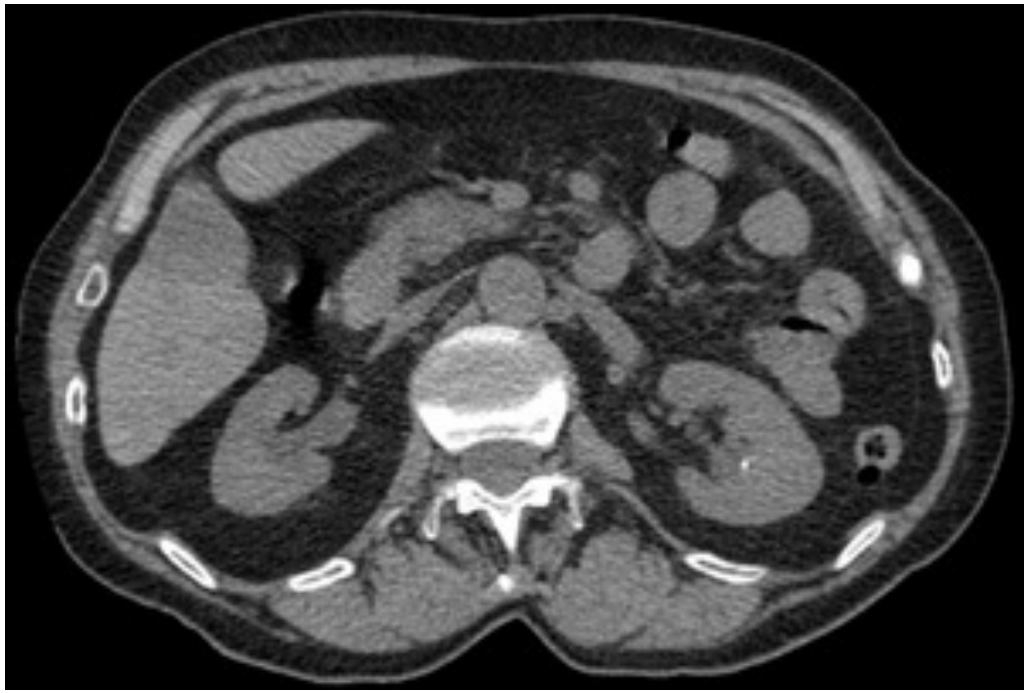
Adult (Ex) Zelenko 2004 CT

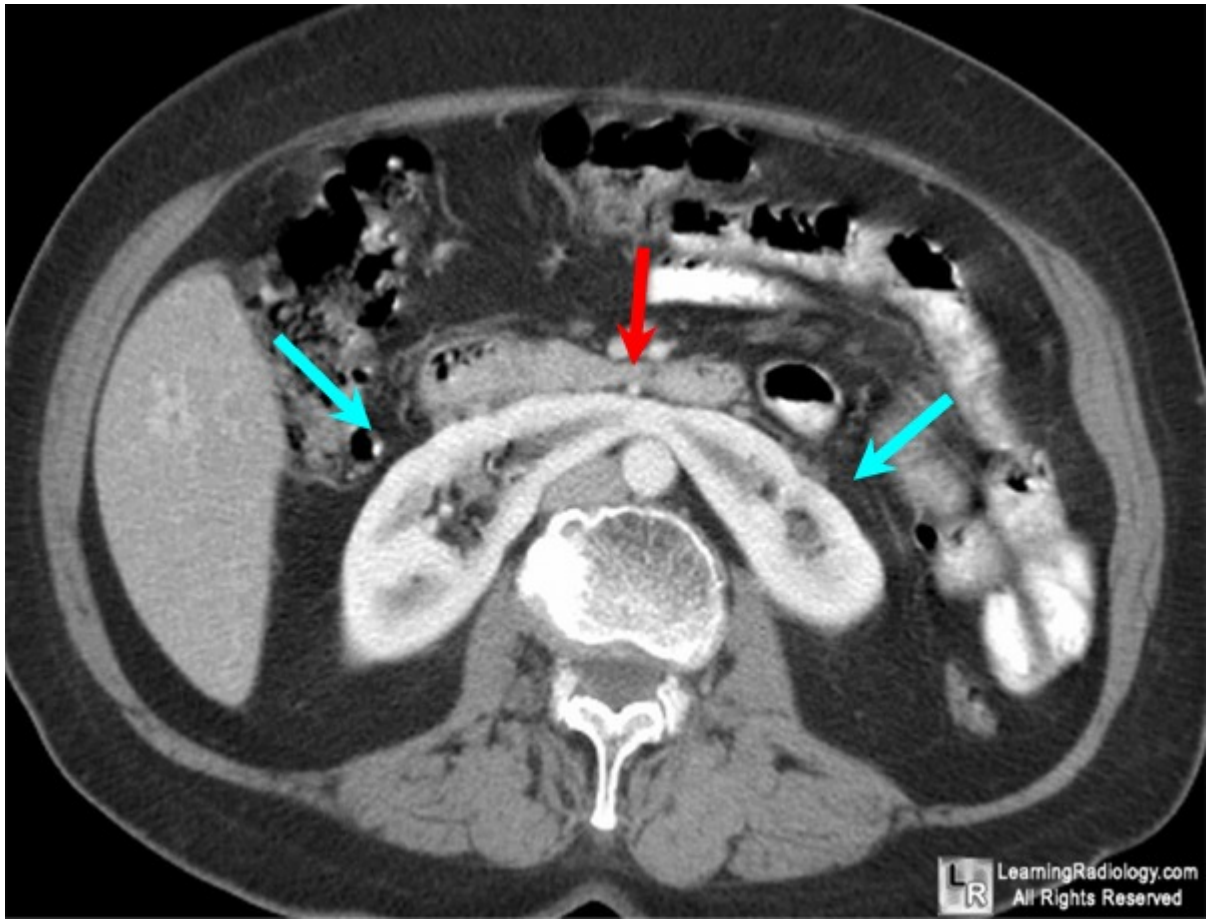
- ≤ 3mm
- 9 Fr

Abnormal Anatomy

- Renal
  - Horseshoe Kidney
  - Crossed Renal Ectopia
  - Pelvic Kidney



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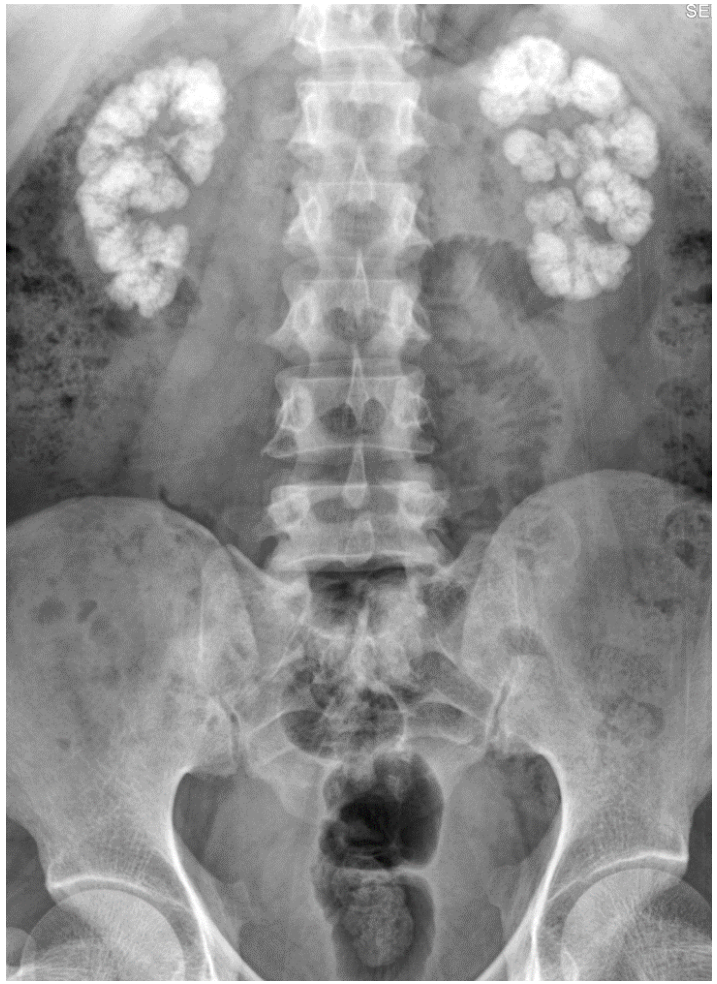
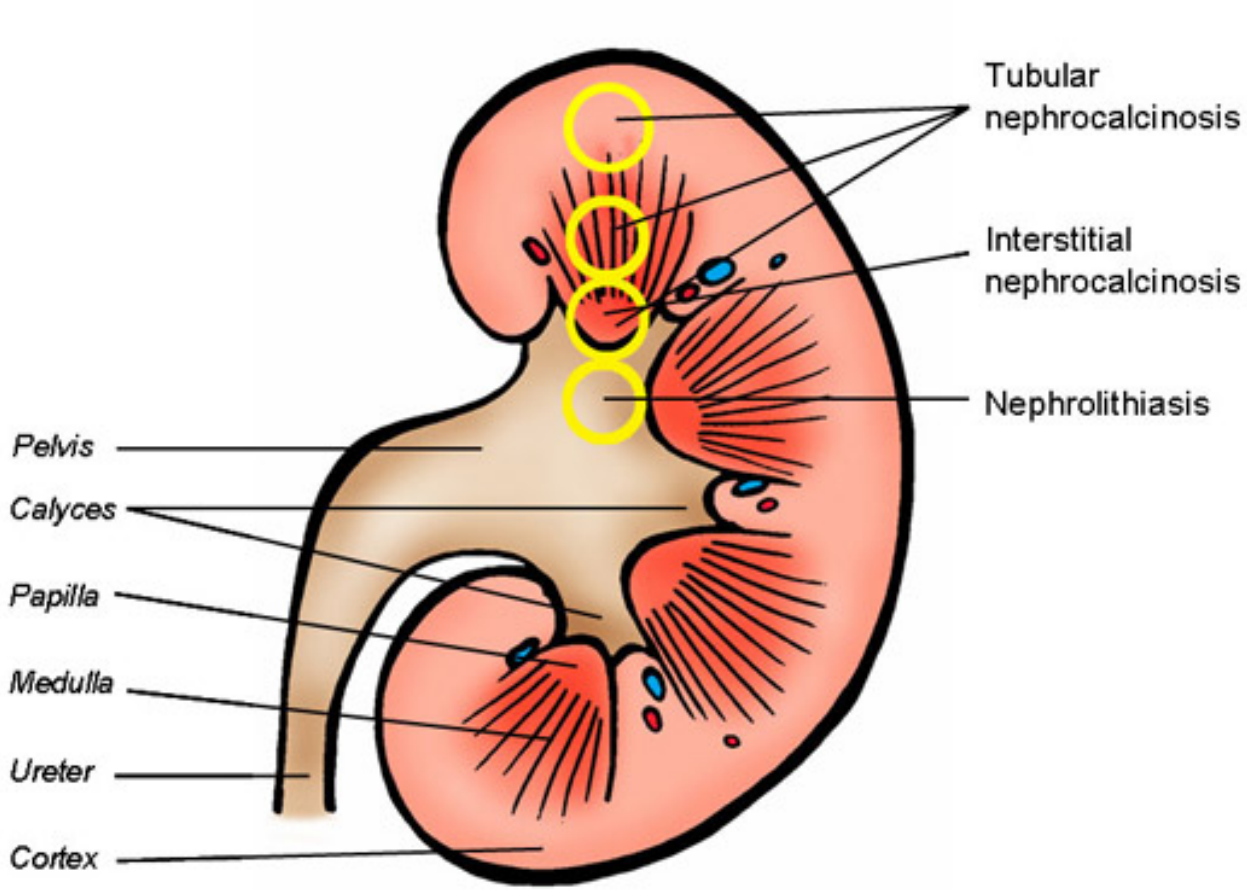
Abnormal Anatomy

Patient
- Spina Bifida
- Cerebral palsy/spasticity
- Scoliosis/kyphosis

All that is white is not stone

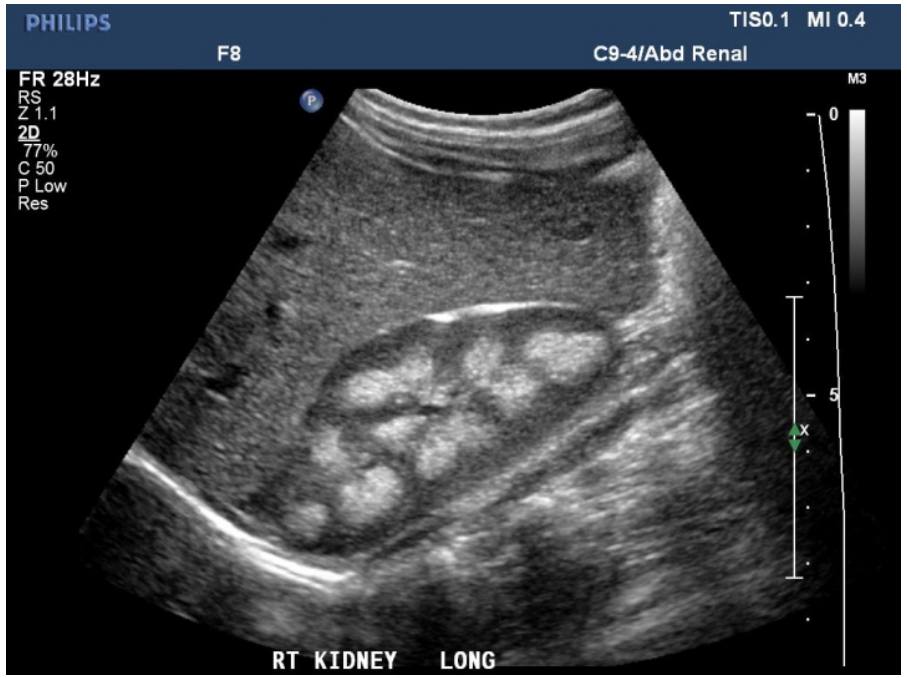


Nephrocalinosis

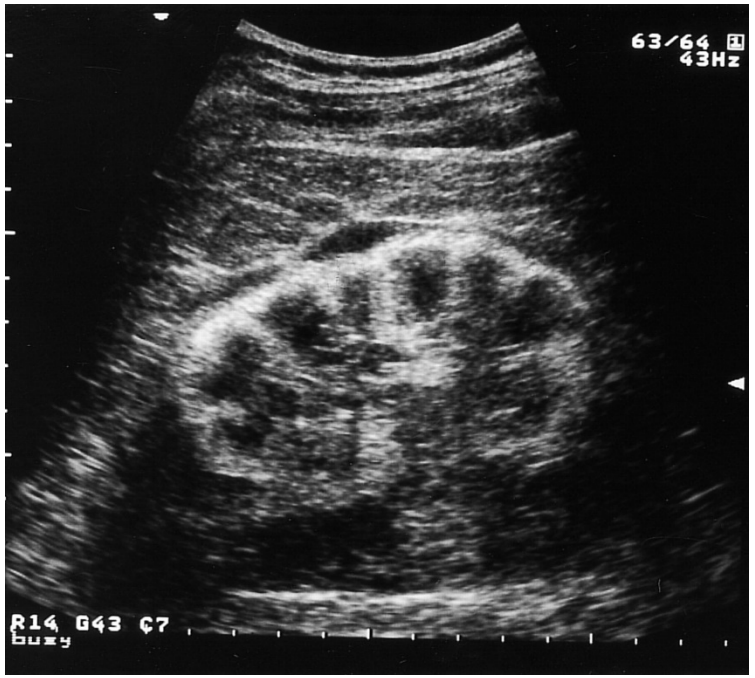


Nephrocalcinosis

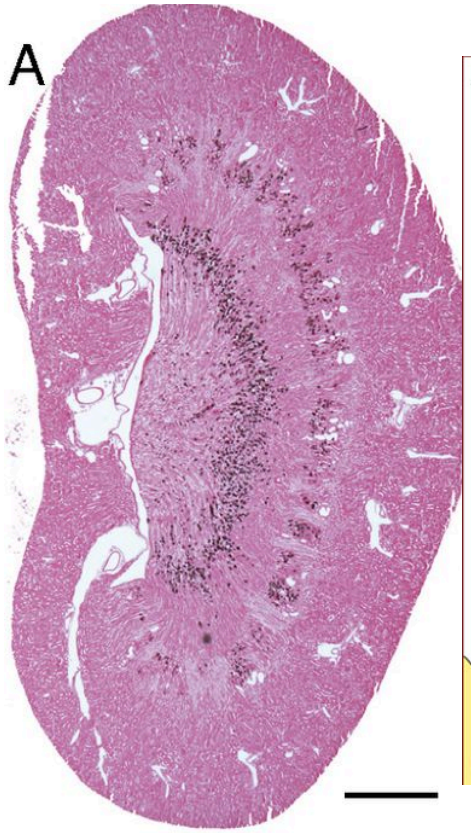
Medullary

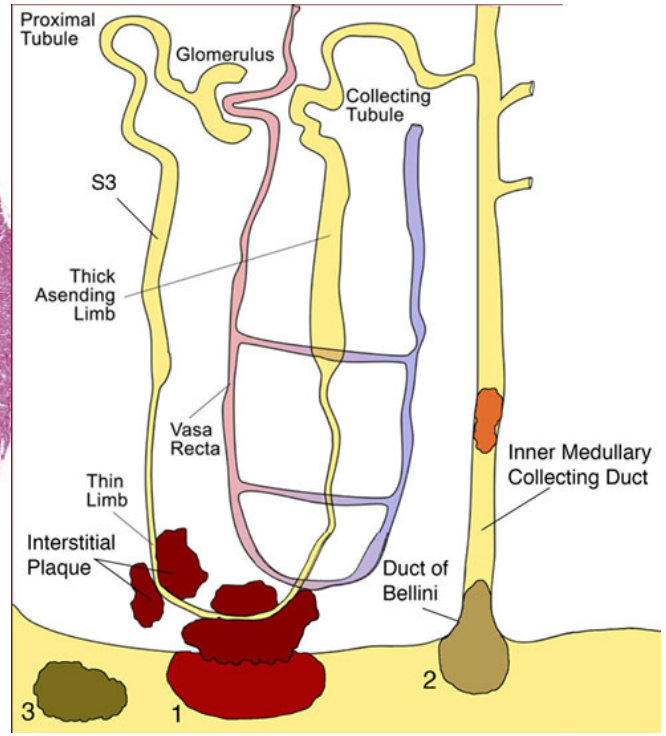


cortical

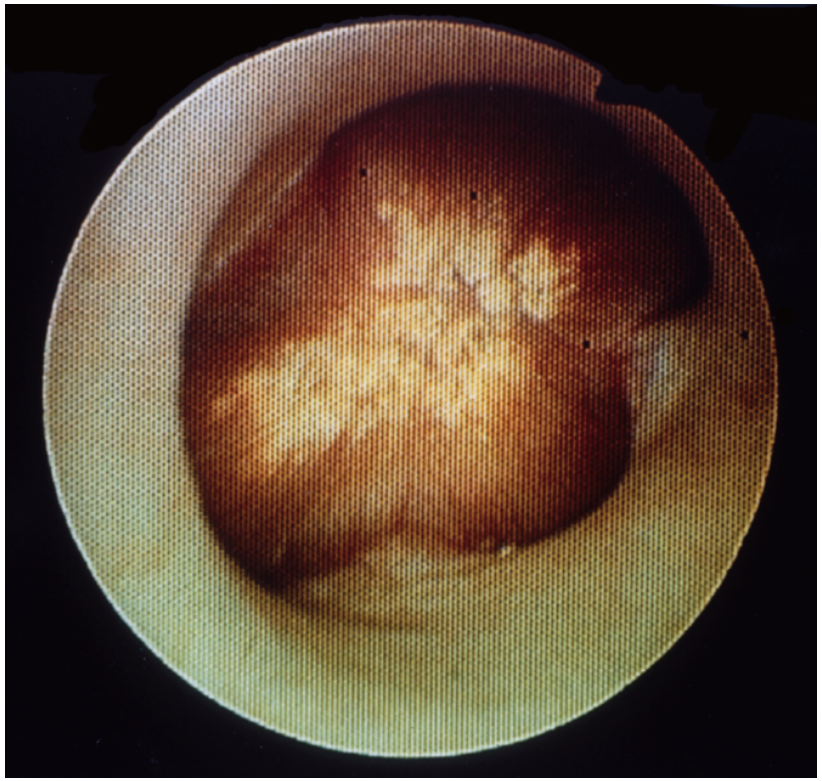


Nephrocalcinosis





Randall's Plaque (Interstitial Ca)



Even the most innocuous treatment for the most innocuous stone can have disastrous consequences

- Symptomatic Left Staghorn Calculus — Left mini PCNL uneventful, stone free
- Right 6mm lower pole asymptomatic calculus wanted to be completely stone free
  - ESWL — stone migrated to UU
    obstructed
    sepsis/ITU
    Nephrostomy
  - URS and Laser — stone free
  - Mass in right loin — LP abscess/infected haematoma
    prolonged nephric drain