


Calculosis

***Kidney*:**	Is enlarged Cystic (moderately) ***Shows:*** • Dilated calyces • Calculosis
The calculus:	• In the calyces • Extending till the renal pelvis • Single Large (4 x 3.5 x 3 cm.) • Brownish in colour • Firm in consistence • **Stag horn**



N.B.:

- A urinary calculus is a stone-like body composed of urinary salts bound together by a colloid matrix of organic material.

The calculus:

1. **Primary which forms in the urine without any apparent causal factor**, antecedent inflammation or obstruction (uric acid stone, urate stone and oxalate stone); forms usually in an **acid urine**; is common in the renal pelvis.
2. **Secondary which forms as a result of inflammation, obstruction or/and stasis** (ammonium magnesium phosphate stone, amorphous phosphate stone and ammonium urate stone); occurs usually in an **alkaline urine**; is common in the urinary bladder.

Factors reacting together (or separately) to produce calculus formation

1. **Infection.**
2. **High concentration of urinary salts + reduced water intake + excessive water-loss.**
3. **Disturbance in the colloid content of urine; and, excessive calcium-mobilization.**
4. **Nature and constituents of the diet specially absence of vitamin-A and hypervitaminosis-D.**
5. **Urinary obstruction and stasis (stagnation) of urine.**
6. **Reaction of urine.**
7. **Hyperparathyroidism; a tumour in the parathyroid gland; metastases in bones.**
8. **Calculus-diathesis (in certain families); a slight preponderance in males over the age of 35 years.**

Calculosis and Pyelonephritis IV-1. 51		
Kidney:	• Shows a reduced renal tissue proper • False appearance of enlargement (due to cystic dilatation)	
	Cortex:	• Is rather indistinct from medulla
	Calyces:	• Show a coralline stone • Hydronephrosis is apparent • Evidence of pyonephrosis • ***Lined by:*** Dirty yellow suppurative material
	The calculus:	• Present in calyces • Extending into renal pelvis • Branching (**coralline or stag-horn calculus**) • Moderately large in size • Has a smooth surface (in most parts) • Irregular (in some parts) • Dark brown • Moderately hard
	Renal pelvis:	• Shows increased peri-pelvic fat • Extension of the coralline stone into it.

N.B.:

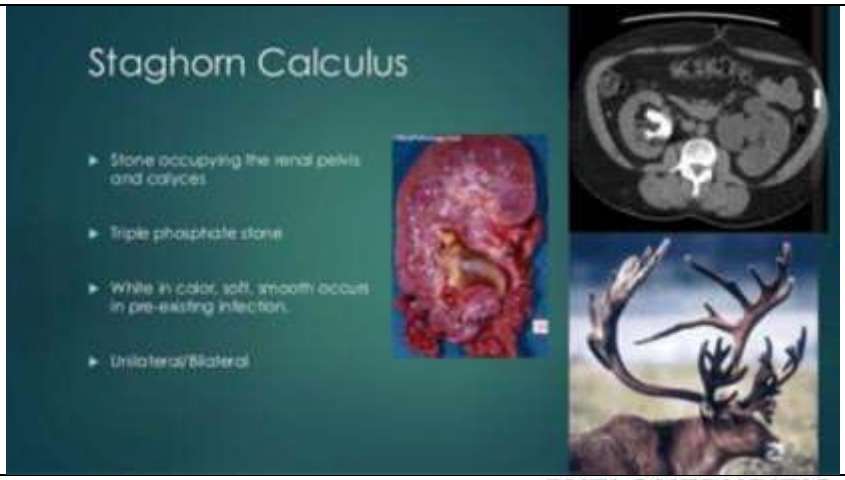
The gross features are those of uric acid and urate stone.

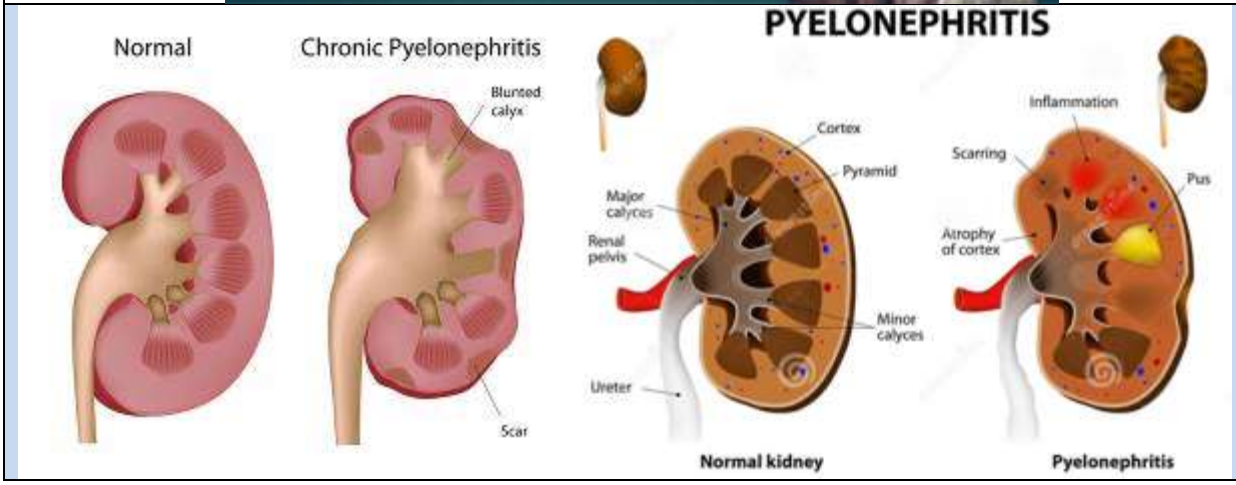
The stone has produced :

1. An obstructive type of pyonephrosis.
2. Some degree of pyelonephritis.

Effects and complications of stones

1. Haematuria.
2. Infection./
3. Ulceration.
4. Obstruction.
5. Stricture.
6. Anuria.
7. Pain and renal colic.





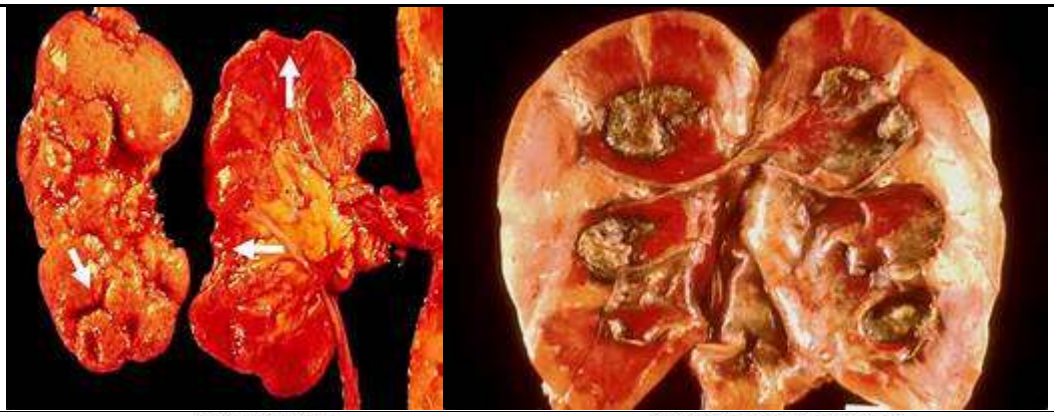
Renal Calculi and Chronic Pyelonephritis		
Kidney:	***Cortex:***	Is reduced in thickness Irregular Ill-defined from medulla
	Calyces:	Dilated Show a stone
Renal pelvis and calyces:		Show evidence of infection Contain calculi
	Calculi:	More than one Moderately big Dark to light brown (uric acid stone)
	Cut surface:	Wavy concentric markings (rings)
	Colour:	Brownish tan
	Consistence:	Fairly hard

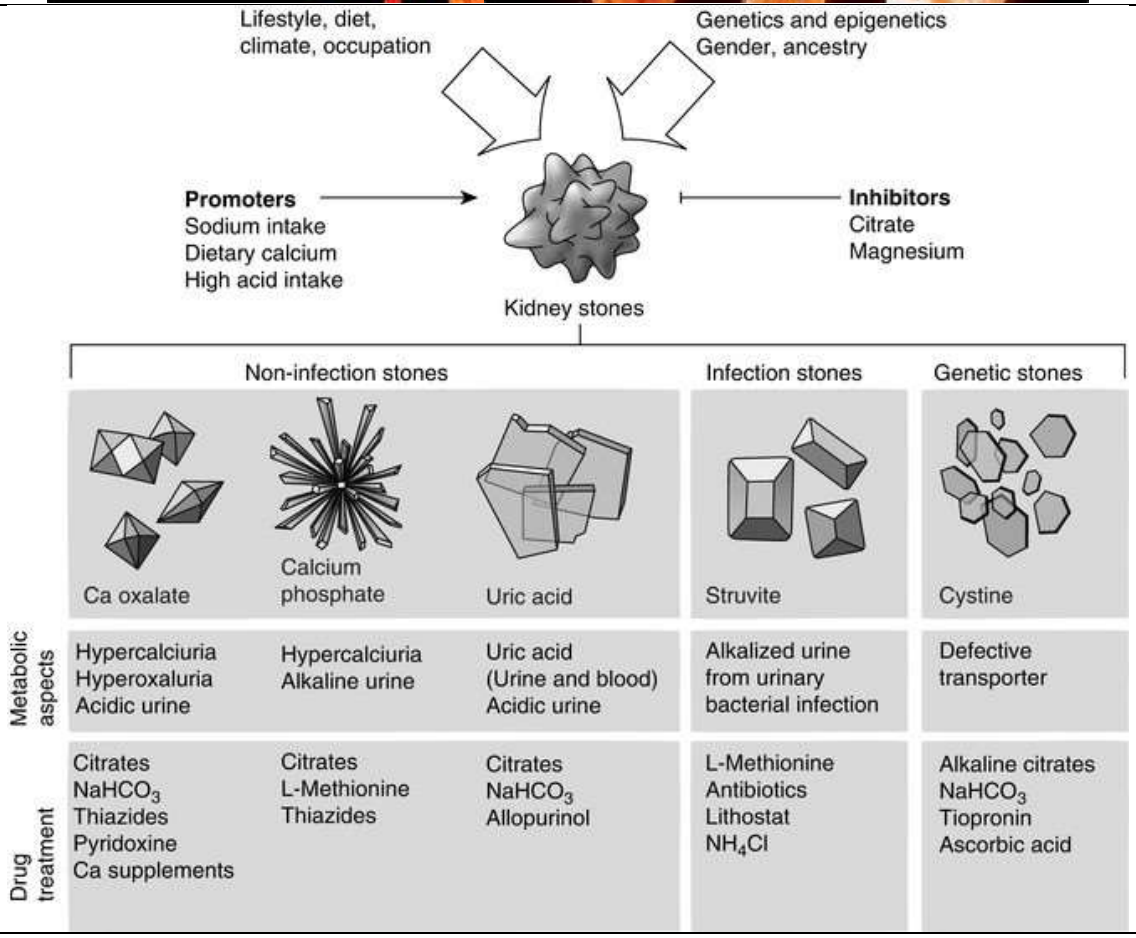
N.B.:

Some effects of renal calculi on the kidneys

1. **Retention of urine** due to obstruction
2. Calculus **anuria.**
3. **Atrophy** of kidney.
4. **Infection** and suppuration:
   - Pyelonephritis.
   - Pyonephrosis.
5. **Ulceration** due to pressure of calculus:

- Ulcer of pelvis.
- Destruction of kidney tissue.
- Escape into abdominal cavity.





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Uric Acid	Brushite	Carbonate Apatite	Calcium Oxalate Monohydrate deposited over Silica
Silica (Canine)	Struvite	Uric Acid	Calcium Oxalate Monohydrate
	Calcium Oxalate		