

Types of stones

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Calcium oxalate stones This is the most common type of stone, constituting 60–85% of all stones. Hypercalciuria, hypercalcaemia, hyperoxaluria, hyperuricosuria and hypocitraturia are known metabolic abnormalities that can predispose to its formation. Hypercalci - uria is the most common metabolic abnormality and occurs as a result of dysregulation of transport at various sites, including the intestine, bone or kidney . Primary hyperparathyroidism is the most common disease associated with hypercalcaemia and stone disease. Increased parathyroid hormone causes increased bone resorption and increased synthesis of 1,25-dihydroxyvitamin D₃. This causes increased intestinal absorption of calcium, leading to hypercal - - caemia and hypercalciuria. Hyperuricosuria causes uric acid crystal formation, especially in association with acidic urine, over which calcium oxalate crystals aggregate.

Calcium phosphate stones Pure calcium phosphate stones are rare. Common forms seen are apatite and brushite stones. Apatite is seen with infection and brushite stones are usually seen with distal RTA.

Uric acid stones Hyperuricosuria promotes the formation of both calcium oxalate and uric acid stones. Uric acid precipitates into crystals in acidic urine and remains soluble in alkaline urine. Conditions that can cause hyperuricosuria are gout and myeloproliferative disorders after cytotoxic treatment.

Infection stones These are struvite and apatite stones. They form as a result of urease-producing bacterial infections, such as those caused by *Proteus* , *Klebsiella* , *Serratia* or *Enterobacter* . Alkalinisation of urine takes place as urease hydrolyses urea to carbon dioxide and ammonium. Staghorn calculi are infection stones that grow in a branching pattern, taking the form of the pelvicalyceal system. significant morbidity , which includes loss of renal function owing to chronic infection and obstructive uropathy . Complete clearance of a staghorn calculus is necessary , as residual fragments after treatment can cause rapid recurrence and persistence of bacteriuria. Long-term chemoprophylaxis is mandatory for a few months after successful removal of infection calculus.

Cystine stones Cystine stones constitute approximately 1% of stones. Cystinuria is an autosomal recessive inherited disease that causes decreased reabsorption of cystine from the intestine and the proximal tubule of the kidney . Cystine is insoluble even at physiological pH and worsens with increasing acidity . Cystine stones are very hard stones as a result of disulphide bonds and do not fragment with SWL.

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