

Medical Treatment

A. CONSERVATIVE TREATMENT

1- Fluid intake : One mainstay of conservative management is the forced increase in fluid intake to achieve a daily urine output of 2 L .

2-Selective medical therapy : may be used in the following conditions:

A-Patients with hyperuricosuria should be instructed to decrease dietary purine intake. Allopurinol can decrease uric acid production and may be ideal for those patients with a history of gout.

B-Thiazides are first-line therapy for the treatment of renal induced hypercalciuria.

C-Citrates are effective therapy for the management of hypocitraturia.

D-Treatment options for cystinuria consists of aggressive fluid intake, urinary alkalinization, salt avoidance, and the use of a cystine-binding agent.

E-Struvite calculi are best managed with surgical removal and can be avoided with the use of antibiotic prophylaxis.

3-Dissolution agents: Oral alkalinizing agents include sodium or potassium bicarbonate and potassium citrate are especially effective with pH-sensitive calculi as in uric acid and cystine lithiasis.

B. RELIEF OF OBSTRUCTION

Urinary stone disease may result in significant morbidity and possible mortality in the presence of obstruction, especially with concurrent infection. A patient with obstructive urinary calculi with fever and infected urine requires emergent drainage by retrograde placement of a double-J ureteral stent or a percutaneous nephrostomy tube.

Most ureteral calculi pass and do not require intervention. Spontaneous passage depends on stone size, shape, location, and associated ureteral edema . Ureteral calculi 4–5 mm in size have a 40–50% chance of spontaneous passage. In contrast, calculi >6 mm have a <5% chance of spontaneous passage.

The vast majority of stones that pass do so within a 6- week period after the onset of symptoms. Ureteral calculi discovered in the distal ureter at the time of presentation have a 50% chance of spontaneous passage, in contrast to a 25% and 10% chance in the mid- and proximal ureter, respectively.

C. EXTRACORPOREAL SHOCK WAVE LITHOTRIPSY

The concept is using shock waves to fragment stones through an energy source to create the shock wave that a transferred from outside to inside the body. Most patients harboring small renal or ureteric calculi can be treated satisfactorily with SWL.

D. URETEROSCOPIC STONE EXTRACTION

Stone-free rates are dependent on stone size and location, length of time the stone has been impacted, and the experience of the operator. Laser system is the best variety of lithotrites can be used through an ureteroscope.

E. PERCUTANEOUS NEPHROLITHOTOMY

Percutaneous removal of renal and proximal ureteral calculi is the treatment of choice for large calculi and those resistant to ESWL .

F. OPEN AND LAPROSCOPIC STONE SURGERY

Open stone surgery is the classic way to remove calculi. The morbidity of the incision, the possibility of retained stone fragments, and the ease and success of less invasive techniques have made these procedures relatively uncommon .

Prevention

In general, 50% of patients experience recurrent urinary stones within 5 years without prophylactic intervention. Fluids should be encouraged during mealtime, after meals, and at nighttime. Life style changes should be encouraged with alterations in physical activity may significantly reduce the incidence of recurrent nephrolithiasis.

Studies have confirmed the advantage of a diet with reduced animal protein (meat) intake, a diet high in fruits and vegetables and dietary sodium restriction in stone formers.

Metabolic evaluation, in addition to prophylactic medications that inhibit stone formation are required for those patients with recurrent calculi.

BLADDER STONES

Bladder calculi usually are a manifestation of an underlying pathologic condition, including voiding dysfunction or a foreign body. Voiding dysfunction may be due to a urethral stricture, benign prostatic hyperplasia, bladder neck contracture, or flaccid or spastic neurogenic bladder, all of which result in static urine. Foreign bodies can serve as nidi for stones. Most bladder calculi are seen in men.

A solitary bladder stone is the rule, but there are numerous stones in 25% of patients. Patients present with irritative voiding symptoms, intermittent urinary stream, urinary tract infections, hematuria, or pelvic pain. A large percentage of bladder stones are radiolucent (uric acid). Ultrasound of the bladder identifies the stone.

Cystolitholapaxy allows most stones to be broken and subsequently removed through a cystoscope. Cystolithotomy can be performed through a small abdominal incision.

URETHRAL STONES

Most ureteral stones that pass spontaneously into the bladder can pass through the urethra unimpeded. Urethral stones may develop secondary to urinary stasis, secondary to a urethral diverticulum, near urethral strictures, or at sites of previous surgery.