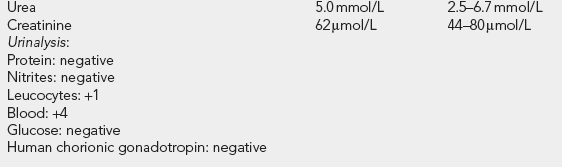
**History**

A 33-year-old female office worker presents to the emergency department complaining of severe left-sided abdominal pain. The pain woke her in the early hours of the morning and has persisted throughout the day. She is unable to keep still and has vomited bilious material on five occasions. She reports no diarrhoea or rectal bleeding. Previous medical history includes appendicectomy and irritable bowel syndrome. She has had a recent colonoscopy, which was normal. She takes mebeverine for irritable bowel syndrome and multivitamin tablets. She smokes 15 cigarettes per day.

**Examination**

On examination, she has a temperature of 37°C, a blood pressure of 125/88 mmHg and pulse rate of 96/min. There is marked left loin tenderness, but the rest of the abdomen is non-tender. Heart sounds are normal and the chest is clear.

**Questions**

1. What is the likely diagnosis?
2. What investigation would you like to do to confirm your diagnosis?
3. What are the indications for admitting this patient?
4. What is the initial management?
5. What are the most available pharmaceutical care plans?****

**Answers:**

**1.** The combination of left loin pain and microscopic haematuria, in the absence of abdominal peritonism, suggests a diagnosis of renal/ureteric colic. In 10–15 per cent of cases of renal colic, the dipstick will be negative for blood.

**2.** The gold standard investigation in the work-up of renal colic is a non-contrast computerized tomography (CT) KUB (kidneys, ureter, and bladder) scan.

**3.** Indications for admitting the patient include:

* Pain not controlled with simple analgesia
* Evidence of sepsis, e.g. pyrexia, raised white cell count or signs and symptoms of septic shock
* Obstructing calculi in a solitary kidney, or bilateral ureteric stones
* Deranged renal function
* Renal drainage via percutaneous nephrostomy or retrograde ureteric stent insertion is required urgently in patients with sepsis and obstruction and is a urological emergency.

**4.** The analgesic of choice is rectal diclofenac, although in some cases opiates will be required. Fluids should be given and in cases of suspected infection, antibiotics with good Gram negative cover administered. The CT KUB in Figure 58.1 clearly demonstrated the offending urinary calculus, which is the opacification seen in line with the ureter.

**5.**

\***Texas Urology Update for PCP's**

1. The initial form of treatment is medical expulsion therapy (MET). Numerous studies have shown that alpha blockers (Off Label) can promote the passage of stones via the relaxation of the smooth muscle of the ureter. The alpha blockers can be given to either males or females, although you must warn the women that if they look on-line they will think you are treating them for a prostate problem. Additionally, if one is going to use Flomax or Rapaflo, one should warn the patient about the potential for retrograde ejaculation, but tell them not to panic, as that it is temporary.
2. Obviously, all patients should strain their urine since stones won't necessarily cause pain on their way out from the bladder. They can purchase paint strainers at one of the hardware stores or use coffee filters, if necessary. I find the paint strainers are actually quite nice since they are inexpensive and can be used once and discarded.
3. Antibiotic should not be given routinely unless there is a strong possibility of urinary tract infection (Nitrate positive and leukotrace positive. You can check the dip-stick urine for that).
4. kidney stone treatment lewisville, kidney stone treatment flower mound, kidney stone treatment carrollton
5. A urine culture should be obtained as well as a serum creatinine on patients with stones.
6. One of the mainstays is narcotics of the hydrocodone family. If, indeed, the hydrocodone doesn't take care of it, it is rare that going to a stronger opiate will be of benefit.
7. IM Toradol works quite well for controlling the vast majority of patients with renal colic in the urologic office setting. For some patients, you may even feel comfortable giving them a prescription to do their own Depo injections. The dose is typically 30 mg. and may be repeated once in a 24 hr. period. There is a nasal Toradol, Sprix, which is also available and does a fairly good job of controlling severe colic. It is important for the patients to know that they should not inhale the medication into the lungs as it can cause significant burning. Rather, they should take a deep breath and hold their breath and then spray the medication laterally in each nostril. Maximum dose is two sprays four times a day.
8. Indication for Intervention

* Fever along with a stone is potentially a life-threatening emergency and requires immediate urologic consultation. It is not impossible for a patient with a fever and a stone to get septic very quickly. This is a special concern, obviously, in diabetic patients and also those who are immuno-compromised.
* Persistent pain or if the patient is tired of the pain.
* Nausea and vomiting.
* Persistent elevation of renal functions.
* Urinary tract infection associated with a stone.
* Additional stones in the kidney.

1. Intervention Options

* Medical Expulsion Therapy.
* Electric Shock Wave Lithotripsy (ESWL). Success with lithotripsy depends on the size of the patient, the size of the stone, the location of the stone, the Hounsfield units (density of the stone) and the type of stone. On a cat scan, the radiologist can measure the Hounsfield Units. Studies show Hounsfield Units greater than 1000 are less likely to be successful with lithotripsy. There is a limit of approximately 2500 to 3000 shocks that can be given in the kidney, however, one can easily go up to 4000 or more shocks at a higher voltage for stones that are in the ureter blow the kidney.
* Ureteroscopy. This is where following cystoscopy, a smaller telescope (ureteroscope) is passed up into the ureter, a laser used to fragment the stone into pieces and then the pieces are removed. The vast majority of the time, a ureteral stent is placed afterwards which is a small coiled tube between the kidney and bladder typically with a piece of string on the distal end that comes out to the meatus or just short of the meatus. Stents are no fun. Patients often have frequency, urgency, and pain with urination in the kidney, bladder spasms, and gross blood in the urine.
* Open Ureterolithotomy. This is almost never done; in fact, most operating rooms don't even have preference cards for urologists for this procedure.

\* **Urolithiasis Guideline (PCP)**

Urolithiasis Treatment Guidelines

**Stones less than 5 mm in the Ureter**

* Stones less than 5mm are likely to pass without surgical intervention
* If a stone is 2 mm or smaller, no referral to urology is needed. Please refer to PCP and give adequate pain medication
* Urology recommends utilizing Ketorolac in a pain regimen, unless precluded by renal insufficiency, age or allergy
* Some literature supports Tamsulosin as helpful in expulsion of small stones in the ureter. Its usage is at the discretion of the ED physician, however if supplying a prescription, please do so for one month.

**Stones greater than 5mm in the ureter**

* + These stones are less likely to pass and patients need referral to a urologist from the ED
  + Recommended time frame for follow-up with the urologist is one week. Patients should call the urologist to schedule follow-up and indicate they are an ED patient.