

## **Extracorporeal Shock Wave Lithotripsy 體外衝擊波碎石術**

### **Introduction**

Extracorporeal shock wave lithotripsy (ESWL) is an operation using shock wave from a stone breaker to crush stones into small fragments, in which shock wave is transmitted and focused in the stones through the contact of the stone breaker with skin. Stone fragments will naturally pass with urine.

Shock wave lithotripsy is one of the treatment options for renal calculi and ureteric calculi. Other options include conservative treatment, percutaneous nephrolithotripsy, ureteroscopic lithotripsy, and open or laparoscopic surgery. Additional procedures may be needed, including insertion and removal of a ureteric stent.

### **Indications**

Renal calculi and ureteric calculi

### **The procedure**

1. No need for general or spinal anaesthesia
2. Patient is required to lie on the bed of the stone breaker
3. A small shock wave generator will put on the skin of lumbar or abdominal region of patient
4. Patient is required to have X ray for localization of stones
5. Patient may feel pain during the procedure, and analgesic will be given for pain relief
6. The procedure takes approximately one hour

### **Possible risks or complications**

1. Haematuria, painful and difficult urination and renal colic (common)
2. Injury to the urinary system including rupture and hematoma of the kidney(s) that requiring blood transfusion (<1%), radiological or surgical intervention and nephrectomy
3. Failed to localize stone on X ray
4. Failed stone fragmentation and ureteric obstruction due to stone fragments requiring repeating procedures and ancillary procedures, such as ureteric stent insertion
4. Arrhythmia, radiation hazard, side effects of sedative and medications
5. Injury to adjacent organs including lung, liver, pancreas, spleen and bowel, and organs of lung and pelvic cavity, skin and soft tissues
6. Infection of urinary tract and kidney, septicemia
7. Residual stones and stone recurrence
8. Loss of renal function, and renal failure
9. Mortality (rare)

This list is not exhaustive and rare complications cannot be listed.

### **Preparation before the procedure**

1. Before operation, patient is required to have physical examination, blood and urine tests, X ray tests and electrocardiogram. Aortic aneurysms, untreated hypertension and active urinary tract infection are contraindications of ESWL. If indicated, patient will be arranged to visit the specialist(s). Antiplatelet (e.g. Aspirin) or anticoagulants should be stopped before the procedure according to doctors' instruction.
2. If you carry an implanted pacemaker or implantable cardioverter defibrillator (ICD), please tell your doctor. Cardiology specialist will be consulted and precautionary measures will be carried out.
3. Female patients in reproductive age should be screened for pregnancy because X ray would cause serious harm to fetus.
2. Patient is required to take low fiber diet or take laxatives the night before operation.
3. Patient will be asked not to eat or drink for 4 hours before operation.
4. Patient may be given intravenous infusion or medications before the operation.
5. In case of an emergency event, the operation will be cancelled but will then be arranged.

### **After the procedure**

1. Haematuria, painful and difficult urination and renal colic (common)
2. There may be some bruising around the treatment site
3. Painful urination, blood-stained urine, mild pain between lumbar region and inferior abdomen are common within one week after surgery. They will gradually subside after one or two weeks.
4. Patient is encouraged to drink plenty of water over the next few days for passing stone fragments through urinary tract. In some cases, there will be mild pain or various severities of haematuria during urination.

### **Consideration after discharge**

1. Frequent and uncontrolled urination or slight hematuria is common after procedure.
2. Patient is allowed to walk or climb stairs, but to avoid straining or heavy lifting.
3. Try to drink plenty of water.
4. You should attend the specialty clinic as arranged for follow-up of the progress of stone clearance after the procedure.

### **Remarks**

This is general information only and the list of complications is not exhaustive. Other unforeseen complications may occasionally occur. In special patient groups, the actual risk may be different. For further information, please contact your doctor.