

**VALLEY HOSPITAL,
Jaqua Same Day Services at the Luckow Pavilion, Paramus, NJ**

Criteria for Patient Selection ESWL

Patient Selection/Criteria Factors for ESWL (extracorporeal shock wave lithotripsy)

1. **Anesthesia** – Each patient’s overall general health must be such that they can undergo local, MAC or an epidural with reasonable safety. Each patient is evaluated by an anesthesiologist prior to ESWL to ensure that he/she meets these criteria.
2. **Cardiac Status** – Patients with non-convertible rapid rate arrhythmias, severe/uncontrolled angina, severe CHF are not candidates. Patients with a pacemaker, ICD, or any implanted electrical device will be considered only at the main campus after review by an anesthesiologist.
3. **Pulmonary Status** – Patients with severe chronic obstructive pulmonary disease or bronchitis may not be candidates.
4. **Pregnancy** – Not candidates at this time.
5. **Medications** – Patients on any medications which would affect platelet adhesiveness or inhibit normal coagulation should be taken off such medications for 3-14 days prior to ESWL, depending on the particular medication. Examples of such medications include: aspirin, Coumadin, indomethacin, or any of the nonsteroidal anti-inflammatory agents (Motrin, Feldene, Clinoril, etc.) – see itemized list on pre-procedure instructions and pre-admission testing policy.
6. **Size** – Patients weighing over 330 pounds are not candidates for the Delta. Patients who are taller than 6 feet 6 inches may not be candidates due to limitations of the patient gantry. Patients who are shorter than 4 feet tall are marginal candidates and will need pre-ESWL simulation. The Dornier Compact Delta weight limit is 330 pounds.
7. **Age** – No limitations as long as anesthesia and size requirements are met.
8. **Miscellaneous**
 - a. Patients with aortic or renovascular calcifications in the renal area should be approached cautiously.
 - b. Patients with obstructive uropathy distal to the stone require drainage of the affected kidney either by ureteral drainage catheter or nephrostomy.
 - c. Patients with a history of Malignant Hyperthermia are not candidates for lithotripsy at the Center.

Stone Factors

1. Renal Stones

- a. **Size** – In general, the greater the “stone burden”, the greater the difficulty with fragments elimination. The larger the stone, the more fragments produced, the more likely the patient will have problems with colic, hydronephrosis and the possible need for adjunctive procedures. Patients with larger stone burden may be candidates for another procedure initially (i.e. percutaneous lithotripsy) and ESWL for retained fragments.
- b. In some cases bilateral stones can be treated simultaneously if the burden is such that risk of bilateral obstruction is minimal. Often it is better to treat each side on separate visits. This can be determined in consult with the physician responsible for treatment. A stent on one side is recommended.

- c. Composition – Most urinary stones are calcium oxalate or calcium phosphate and these usually pulverize well with ESWL.
 - 1. Cystine Stones – These stones are malleable (not brittle) and they usually require multiple ESWL treatments and even then may not be adequately pulverized. Percutaneous lithotripsy and/or open surgery may be required.
 - 2. Uric Acid Stones – These stones are usually radiolucent but can be treated by ESWL at the center by insertion of catheter and instillation of contrast. Dissolution or PCL are also recommended for treatment.
 - 3. Infectious Stones – These may be treated with ESWL but aggressive pre-ESWL antibiotic therapy is mandatory in order to avoid systemic bacteremia when treated.
 - 4. Staghorn Stones – Branched stones may be treated; however, multiple ESWL procedures are usually needed and frequently, primary percutaneous lithotripsy is preferable. Retained fragments can be easily treated by ESWL (often with nephrostomy tube still in place).
- d. **Patients for SECOND TREATMENT OF SAME STONE or SECOND STONE IN AN IPSILATERAL KIDNEY should wait 14 DAYS BETWEEN TREATMENTS. Stones treated PRIOR TO 14 DAYS need to be CONSULTED WITH THE DEPARTMENT DIRECTOR.**

2. Ureteral Stones

- a. Stones above the iliac crest i.e. upper ureter:
 - 1. Calculi may be treated either in situ or after manipulation into kidney or with wire/catheter by passing the calculus.
 - 2. If the patient has acute colic, fever, infection, or severe obstruction, lithotripsy may not be indicated until the acute situation has resolved. Lithotripsy is an elective procedure. Intermediate intervention (e.g. stent, pcn) may be necessary.
- b. Stones overlying the sacrum – Placement of a stent or marking catheter is most helpful and recommended. For patients treated on the Dornier Compact Delta, the therapy head can be flipped around on top of the patient to allow the patient to remain in the supine position.
- c. Lower Ureteral Stones - Stones over the sacroiliac area can be attempted to be pushed up above the iliac crest where they can be treated with ESWL or they can be treated as is in the supine position. Lower ureteral stones can in many cases be treated with primary de nova ESWL if the stone appears to be able to be seen on monitors. If it is soft or too small, then a marking catheter or stent is appropriate. Stenting of lower stones is not necessary unless the patient has severe pain or obstruction requiring intervention.

Follow-up

This is exceedingly important, and is most preferably done by a urologist as anywhere from 5 - 20% of patients may need adjunctive procedures (e.g. cystoscopic, urethroscopic manipulation of fragments, percutaneous nephrostomy placement, or surgical lithotomy).

Close follow-up may be necessary for weeks (even months) until there is no longer radiographic evidence of stone fragments and that baseline renal function has been maintained. This usually requires a KUB 7 - 10 days post ESWL (looking for fragments or a column of sand in the ureter) and additional x-rays at 2 - 4 weeks intervals until free of stone. If there is any question about function or obstruction at any point, an IVP or renal ultrasound should be done.