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Outcome of Pediatric Percutaneous Nephrolithotomy (PCNL) - Single center experience

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Extracorporeal shock wave lithotripsy (ESWL) is a procedure that uses high-energy shock waves to break down kidney stones into crystals small enough to be passed out in your urine.

You will meet the doctor carrying out your procedure to discuss your care. It may differ from what is described here as it will be designed to meet your individual needs.

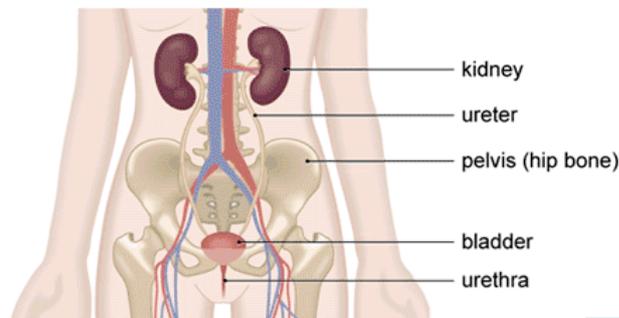
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About extracorporeal shock wave lithotripsy

ESWL is a procedure used to break down [kidney stones](#).

Kidney stones are small, hard stones that can form in one or both of your kidneys. They can form if there is an imbalance of salts or minerals in your urine. Sometimes, a stone may move out of your kidney into the ureter – the tube that carries urine from your kidneys to the bladder – and cause severe pain, called renal or kidney colic.

Often, stones are small enough to pass harmlessly out of your body in the urine by themselves. But if your kidney stone can't be passed out in your urine, your doctor may advise you to have ESWL.



The location of the bladder and surrounding structures



Figure 1.

What are the alternatives to extracorporeal shock wave lithotripsy?

Depending on the size, density and position of your kidney stone, your doctor may recommend alternative treatment options.

- Ureteroscopic stone removal. If the stone is lodged in your ureter, your surgeon will use a long fine, flexible instrument called a ureteroscope to administer laser beams or shock waves to break up the stone. This procedure is usually done under general anaesthesia. Often a stent may be left in your ureter to stop further blockage.
- Percutaneous nephrolithotomy (PCNL). If the stone is large or in an awkward place, your surgeon will pass a fine instrument through your back into the kidney to remove the stone. This procedure is usually done under general anaesthesia.
- Medical expulsive therapy (MET). If your stone is less than 10mm (1cm), your doctor may give you medicines to help the stone pass out in your urine. This treatment isn't commonly used in the UK at present, however there is ongoing research to assess how well it works.

Preparing for extracorporeal shock wave lithotripsy

Your doctor will explain how to prepare for your procedure.

ESWL is routinely done as an outpatient or day-case procedure, without the need for anaesthesia. This means you will be awake during the procedure and can go home the same day. You will usually be offered a sedative to relieve anxiety and help you relax, and an injection of painkiller.

You can drink fluids as normal on the day of your procedure. But don't eat any food in the four hours before your treatment.

If you are on regular medication (eg, tablets for blood pressure), continue to take this as usual unless your doctor specifically tells you not to. If you're unsure about taking your medication, contact the hospital.

At the hospital, your nurse will check your heart rate and blood pressure, and test your urine.

Your doctor or radiographer will discuss with you what will happen before, during and after your procedure, and any pain you might have. This is your opportunity to understand what will happen, and you can help yourself by preparing questions to ask about the risks, benefits and any alternatives to the procedure. This will help you to be informed, so you can give your consent for the procedure to go ahead, which you may be asked to do by signing a consent form.

What happens during extracorporeal shock wave lithotripsy?

ESWL takes about 30 to 60 minutes. Usually only one kidney is treated per session.

You will be asked to lie on your front. You may be offered headphones to wear, as the machine can sometimes be loud. The technician



or nurse carrying out the procedure will use ultrasound to pinpoint the exact position of your kidney stone(s). He or she will apply a gel to your skin, and then use a device called a lithotripter sensor to direct shock waves onto each stone. The intensity of the shock waves will be increased gradually. Try not to make any movements during the treatment, otherwise the kidney stone may move out of position. The shock waves can cause pain in your kidneys and a stinging pain in the skin on your back. Depending on how many kidney stones you have, you may need to have more than one treatment to completely get rid of your stones.

Animation – How extracorporeal shock wave lithotripsy is used to treat kidney stones

What to expect afterwards

You will need pain relief to help with any discomfort. Your doctor will usually prescribe strong painkillers for the first 48 hours, and he or she may also give you antibiotics to reduce the risk of infection.

Your nurse will give you a date for a follow-up appointment and ask you to pass urine before you go home.

Sedation temporarily affects your co-ordination and reasoning skills, so you must not drive, drink alcohol, operate machinery or sign legal documents for 24 hours afterwards. If you're in any doubt about driving, contact your motor insurer so that you're aware of their recommendations, and always follow your doctor's advice.

Recovering from extracorporeal shock wave lithotripsy

Once home, it's sensible to take it easy for the rest of the day. Most people feel able to resume normal activities within a couple of days. You should make sure you're drinking enough water in the first 24 hours, to help flush the kidney stone fragments out of your urinary system.

You will feel some pain and discomfort as the stone fragments move out of your kidneys. Continue to take your painkillers as directed by your doctor. Always read the patient information that comes with your medicine and if you have any questions, ask your doctor or pharmacist for advice.

What are the risks?

As with every procedure, there are some risks associated with ESWL. We have not included the chance of these happening as they are specific to you and differ for every person. Ask your doctor to explain how these risks apply to you.

Side-effects

Side-effects are the unwanted but mostly temporary effects you may get after having the procedure.

Side-effects of ESWL include:

- pain and discomfort
- some blood and fragments of stone in your urine for two or three days
- bruising or blistering of the skin of your tummy or groin

Complications

Complications are when problems occur during or after the treatment. Most people are not affected.

Specific complications of ESWL are uncommon, but include:

- a urinary tract infection – you may need antibiotics to treat this
- a blockage in your ureter – if stone fragments get stuck in your ureter, you may need further treatment to remove them
- kidney damage – a serious infection or a blocked ureter can damage your kidney function

Contact your GP straight away if you develop sudden spasms of pain (renal colic); or any of the following symptoms, which may be a sign of infection.

- Persistent, severe pain with an inability to pass urine.
- A high temperature.
- Burning sensation on passing urine that gets worse or starts again after any initial stinging has worn off.
- An unpleasant smell to your urine.
- Blood or blood clots in your urine.