EXTRACORPOREAL LITHOTRIPSY

This intervention is aimed at fragmenting kidney or ureteral stones in order to get very small fragments that will be eliminated naturally when urinating.

WHAT DO WE KNOW ABOUT THE URINARY SYSTEM ANATOMY?

We are going to give you some elementary knowledge about the urinary system anatomy to help you understand better your surgeon's explanations.

The urinary system with its production, storage and evacuation procedures is located into your abdomen (belly).

The representation opposite is aimed at helping you spot the different parts of the urinary system.

The kidneys (R) are in the top right and left corners of the abdomen, in the back. Both usually exist. The kidney is about 12 cm high and has cavities named calyces to collect the urine. These calyces form what is called the renal pelvis (B). A small channel runs from the renal pelvis to the bladder (V), taking the urine down. This is the ureter (U). It is about 20 cm long. Both ureters (right and left) take the urine down to the bladder. The bladder is the urine storage container. The urine is then excreted (micturition) throughout a channel named a urethra.

WHAT DO WE KNOW ABOUT THE DISEASE?

10% of the population is affected, with a 50% risk of recurrence 5 years after the intervention. 80% of stones are oxalocalcic.

While migrating, these stones, depending on their size, may cause obstructions in different parts of the urinary system, thus blocking the urine.

Consequently, the urine pressure is increased in the kidney, which causes pain. This is renal colic.
Stones result from crystal aggregation of the urine in the kidneys. They may sometimes provoke some bleeding (red urine). The development of urinary infections may also be increased.

**WHAT ARE THE TREATMENT POSSIBILITIES SO FAR?**

Treatments other than lithotripsy exist for kidney stones and are sometimes performed. For example: ureteroscopy, percutaneous interventions, or even laparoscopic or open surgery. The technique chosen will depend on the size, location and type of stone. The patient's own characteristics are also important. Your urologist has informed you about the advantages and disadvantages of each technique and explained the reason why extracorporeal lithotripsy has been chosen.

**WHAT ABOUT THE INTERVENTION?**

Lithotripsy is an extracorporeal technique which enables the fragmentation of stones thanks to the use of a shockwave lithotripter. The head of the device is advanced to the patient's skin so as to focus the shockwave propagation onto the stone.

The stone is then fragmented into pieces that are eliminated in most cases. They are eliminated in the urine. In that case, no surgical opening is required.

A ureteral catheter might be placed between the kidney and bladder for treatment. One or more sessions might be required, depending on the size and resistance of the stone, and how you respond to treatment.

**HOW LONG IS THE TREATMENT?**

During the treatment, you lie on your back for less than 1 hour.

If you are hospitalised, you might stay from a few hours to 2 or 3 days, depending on the type of stone, your general condition and the surgical outcomes.
HOW TO GET PREPARED FOR THE INTERVENTION?

If you take drugs that thin blood (such as aspirin, antiplatelet agents or anticoagulants), if you are pregnant or have a pacemaker, you must inform your surgeon.

If general anaesthesia is required for your lithotripsy, you must see an anaesthetist before the intervention.

The health care team will make sure you have no urinary infection and check your radiology report.

HOW IS THE INTERVENTION PERFORMED?

You lie on an operation table under a positioning apparatus (with X rays or ultrasounds) that will locate the stone. A balloon is filled with water and covered with ultrasound gel before being placed on the skin to enable the shockwaves to propagate and reach the stone to fragment it into pieces. You will hear the noise of the shockwaves.

The number of impacts will be determined by your urologist. Another session may be required.

Pain management: the intervention is performed with or without anaesthesia, depending on the medical staff’s practice.

WHAT HAPPENS NEXT?

The urine is usually coloured with blood for a few hours or days. Pain and difficulty urinating may arise as the fragments are migrating. Painkillers can be prescribed by your urologist.

The fragments are naturally eliminated in the urine in a few days or weeks. If no pain is felt, drinking a lot will improve their elimination.

It is recommended that you filter your urine and collect the fragments for them to be analyzed. We will then be able to suggest appropriate food and drinks so as to decrease the risk of stone recurrence.

60 to 85% of interventions have been successful according to the medical literature.

In case lithotripsy should fail, your urologist might suggest another session or another type of treatment.

WHAT ABOUT DISCHARGE FROM THE HOSPITAL?

Before going back home, the health care team will give you the discharge and follow-up documents you need.

WHAT ARE THE RISKS AND COMPLICATIONS?

Each intervention presents risks of complications that are not always predictable and may be due to your disease and/or individual variations. They may sometimes be serious.

Lithotripsy can trigger the following complications:

- Renal colic

Strong pain may arise if one of the stone fragments causes obstruction between the kidney and bladder, and prevents the urine from going through. In that case, you should drink less. Appropriate medical treatment usually helps to relieve symptoms.
- **Shivers and/or fever**
  
  If you have shivers and/or a fever, you must immediately contact your urologist, the emergencies and/or your referring doctor for appropriate treatment.

- **Other complications**
  
  Haematomas in or around the kidney may exceptionally appear, and require blood transfusion and/or surgical intervention.

**WHAT ABOUT FOLLOW-UP?**

Your urologist will prescribe radiology examinations to evaluate the results of lithotripsy after a few days or weeks. They will help him determine the follow-up procedures and decide on an alternative treatment if needed.

The stone fragments analysis (with infrared spectrophotometry) is required to determine the type of stone with accuracy.

Later, metabolic assessment will be suggested to prevent any possible recurrence.

**FOR FURTHER INFORMATION:**

Urofrance Website: http://www.urofrance.org/

* The AFU (Association Française d'Urologie -- French Association of Urology) does not assume responsibility for possible harmful consequences due to the exploitation of data extracted from these documents, or resulting from mistakes or inaccuracies.