Percutaneous Nephrolithotomy and Nephrolithotripsy (PCNL)

Information for patients

Introduction

- Percutaneous nephrolithotomy and nephrolithotripsy (PCNL) is an invasive procedure aiming at removal of renal stone or disintegration of large renal stone for subsequent management through a tract created from the skin to the kidney where the stones are situated.
- PCNL is useful where non-surgical measures such as ESWL (Extracorporeal Shock Wave Lithotripsy) fails, contraindicated or not available.
- Almost any renal stones may be removed by PCNL.
- Overall success rate is 96-98% for renal pelvic stones and 85% for ureteral stones.
- Generally, the procedure will be performed by a team consisting of Radiologist with special training in intervention radiology and Urologist in the operation theatre or Department of Radiology. Either local anesthesia and intravenous analgesic or general anaesthesia will be used for pain control.
- Patient can resume normal activity sooner than conventional surgery and the convalescent period after discharge from hospital is only 3-10 days.

Procedure

- Your vital signs (blood pressure, pulses and blood oxygen level) will be monitored throughout the procedure.
- Before the procedure, the collecting system of kidney can be opacified by several methods including direct injection of contrast medium in the ureter through a small catheter introduced earlier through the urethra, or injection of contrast in the vein.
- Usually the kidney will be punctured by a needle under X-ray or ultrasound control. The needle position is confirmed by either outflow of urine or contrast medium from the needle. Contrast will then be injected through the needle to confirm the position.
- A guidewire will be inserted through the needle to enter the collecting system and if possible into the bladder along the ureter. A stiff guide-wire will then be exchanged. The tract will then be dilated with either serial insertion of dilators or with a balloon catheter.
- A large working sheath (1-cm diameter) is inserted to provide an access. A nephroscope and other stone fragmentation devices will be inserted through this tract for stone fragmentation and removal.
- Upon completion, the percutaneous track will be preserved by a drainage catheter for urinary drainage and bleeding control.
- The whole procedure usually takes 2-4 hours.
- Catheter connected to a urinary bag will be kept for a few days or a week if the stones are removed and your urine is clear. It may be kept for a longer period if additional treatment is necessary, such as dilatation of ureteral narrowing. Bed rest is advised and drugs for pain control may be given. Antibiotics will be given if there is suggestion of infection.

Potential Complications

- Blood in urine (common) Most will subside spontaneously.
- Severe bleeding (transfusion in 11%) Blockage of the bleeding artery may be needed if the bleeding is severe or persistent.
- Retroperitoneal haematoma (large blood clot at the back).
- Infection.
- Fever.
- Urine collection around kidney.
- Dislodgement or loss of drainage tube.
- Perforation or injury to the renal pelvis or ureter.
- Residual stone.(4%).
- Electrolyte imbalance.
- Procedure related death (0.2%).
- The overall adverse reactions related to iodine-base non-ionic contrast medium is below 0.7%. The mortality due to reaction to non-ionic contrast medium is below 1 in 250000.

Disclaimer

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