

Ureteral Obstruction.

Advances in Treatment Options: Subcutaneous Ureteral Bypass procedure (SUB) in the cat

What is a ureter?

The ureter is a tube that carries urine from the kidney (where it is formed) to the bladder (where it is stored). In cats it is very small, with an internal diameter of approximately 0.4mm diameter.

How does a ureter become diseased or blocked?

Some cats develop kidney stones (also called uroliths or calculi). Small stones can pass from a kidney into a ureter and block it. Other cats develop stricture in a ureter (narrowing due to scarring) that leads to blockage. Half of cats that present with ureteral obstruction have a ureteral stone, 25% have a stricture and another 15% have both.

If a ureter is completely blocked, the kidney will fail within a few weeks. If the opposite kidney is completely normal, then this may cause no clinical signs or mild pain, so it is usually a silent episode. If the second ureter then becomes blocked, or if both ureters block at the same time, urine cannot leave the kidneys. This leads to a rise in toxins normally excreted by the kidney and, sadly, this will rapidly be fatal.

Can ureteral disease be managed medically?

Ureteral strictures cannot be managed medically.

Almost all kidney and ureteral stones are made up of calcium oxalate. While some stones can be dissolved medically, this is not the case for calcium oxalate and even in the case of other types of stones, this cannot be done fast enough if there is ureteral blockage.

Occasionally ureteral stones may move through the ureter if a cat receives high volumes of intravenous fluids but this is only successful in less than 17% of cats. In order to avoid prolonged damage to the kidney, there must be rapid resolution of the obstruction, so most cats require surgery.

Cats are very ill when there is obstruction of both ureters or the second ureter. They need careful medical management prior to surgery and surgery is often performed within 24 hours of diagnosis. Some cats are very ill even with obstruction of only one ureter because the other kidney has early kidney failure and is unable to cope on its own.

What surgery does my cat need?

It is not possible to surgically remove stones from a cat's ureter, as they are too small. Attempts to pass a catheter into the ureter to bypass a stone have been trialled in the past but did not have good success rates. Fortunately, an implant has been developed to allow urine to bypass the ureter. The procedure is called Subcutaneous Ureteral Bypass (SUB).

An abdominal surgery is performed: a tube is placed in the affected kidney and another tube in the bladder. The tubes are connected to a small port that is sewn to the abdominal wall muscles, under the skin, usually in the groin area. In some cases, cats need two SUBS – one in each kidney. Urine will start flowing as soon as the first tube is placed into the kidney. Urine flows down the tubes into the bladder, so that urine bypasses the blocked ureter, and the kidney can start to recover.

How will my cat recover after surgery?

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Cats need to have ongoing medical treatment, including intravenous fluids, to treat the injury that has occurred to the kidney. Many cats will have a feeding tube placed, as they may have lost weight and been ill prior to surgery.

Long-term, we see cats on a regular basis to flush the tubes and check the urine is flowing normally. This is normally performed without sedation, but sedation can be given to cats that find visits to the vets stressful. Having the tubes flushed requires a simple injection through the skin into the port of the SUB, and is as well tolerated as any other simple injection, although a special needle is used and ultrasound is used to check the flow is normal at each end of the tubes.

What is the outcome after surgery?

Cats require a period of time in hospital, typically 3-5 days, after surgery. Happily, the majority of cats recover from kidney damage and are able to return home.

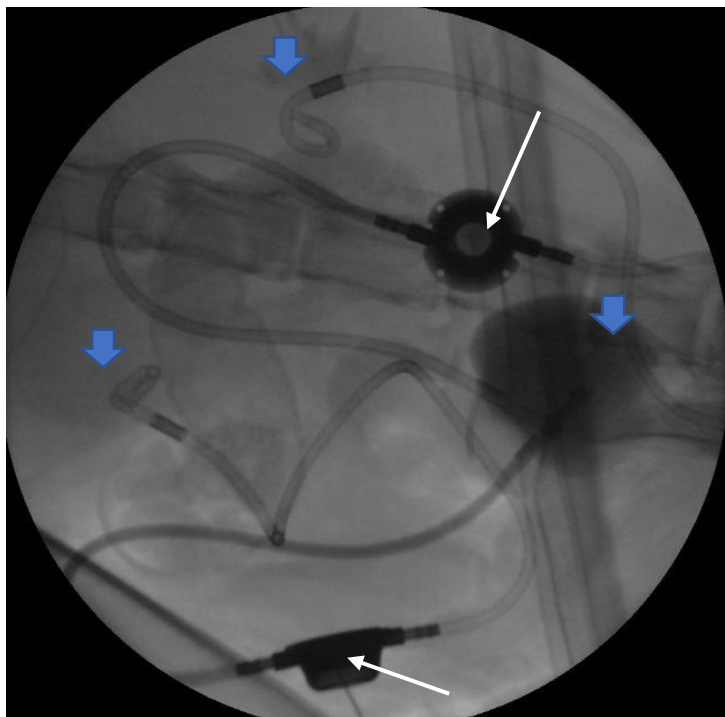
Complications are infrequent and usually mild e.g. mild straining to urinate, and the symptoms resolve with medical treatment. Some cats have complications due to leakage from the implants, and they may need another surgical procedure to adjust or change an implant.

Half of cats that present with ureteral obstruction have already been diagnosed with a degree of chronic renal (kidney) disease. Kidney disease may progress and ongoing medical management will be needed. However, studies have shown that cats with a SUB placed do not suffer persistent or repeated obstruction and survival times are good.

SUB placement is a relatively new technique, originally described in 2010. Several short-term studies have already been published, showing promising results in a disease that was previously always fatal.

All of the Soft Tissue surgeons at Anderson Moores can place SUB devices, and implants are always in stock in case your cat needs urgent surgery. You will be able to speak to a surgeon to discuss placement of the implants prior to your cat having surgery.

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The image shows an Xray of a cat that has had two SUBS placed. There are the two injection ports shown by the white arrows and the tubes connecting them to the kidneys and the bladder (blue arrows)

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