

Ureteral Obstruction in Cats

What is it?

Ureteral obstruction occurs when the tube linking the kidney to the bladder becomes blocked. It can be blocked by a stone (most common), a blood clot or as a result of narrowing of the tube. The most common type of stone seen is Calcium Oxalate and some cats with these stones have high concentrations of calcium in their blood, so it is important to check this. As the cat's ureter is very small (2mm in diameter) it is a very difficult problem to deal with.

Once the ureter is blocked pressure starts to build up to the kidney and this causes kidney failure. This causes weight loss, increased thirst, vomiting, poor appetite and sometimes pain over the back. It is not uncommon for the blockages to occur in both ureters either at the same or different times. If the blockage is present for a long time the kidney stops working permanently.

If it occurs at different times sometimes the first kidney will essentially stop working and shrink resulting in a small kidney. Clinical signs then become apparent when the second kidney becomes blocked – when the cat comes to the vet at this point, they will have a big kidney on one side and a little kidney on the other, so called “big kidney-little kidney”.

Treatment

There is no “fix” for this problem. We can manage the disease and surgical techniques will prolong life expectancy, but cat will require frequent visits to the vet for re-examination and procedures. If a cat is severely unwell they need to be re-hydrated first. Some cats can have such severe kidney failure that the potassium (a salt) levels in the blood are life-threateningly high. This will require intensive treatment for management. Once the cat is stabilised further investigations are performed to check the degree of swelling within the middle (pelvis) of the kidney (which reflects how bad the blockage is).

There are 2 main ways of managing the blockage medical and surgical. Surgical management is more effective and more likely to lead to recovery of the kidney. If the condition is managed medically there is a higher chance of irreversible kidney failure. Surgery is complicated and it is usually recommended that it is carried out by a specialist surgeon who has done the procedure before. Surgery is not always possible. If the kidney pelvis is very small it is very difficult to manage the condition surgically. The bigger it is the easier it is to place the device.

Medical management

There is very little written about medical management in cats. The aim of medical treatment would be to encourage the stone to move down the ureter into the bladder. Due to the small size of the ureter this is difficult as the stones are stuck fast. Medical treatment includes the use of fluid therapy given into the vein, diuretics to increase urine output and smooth muscle relaxants to help the ureter relax so the stone can move. One retrospective study of medical management showed that 13% of cats had significant improvement in kidney function at the time of discharge, with 57% of these cats having documented stone passage from the ureter to the bladder.

However, 30% of cats in the same study did not have a significant improvement in kidney function with medical management despite documented stone passage in most of these cats. In

people smooth muscle relaxants are most effective when the stone is small (<5mm in diameter). Medical management is not a long-term option as many cats are at risk of developing more stone and further episodes of obstruction. Antibiotics may be used as well if there is a urine infection. Long term the cat may be put on a special diet to decrease the risk of more stones forming.

Surgical management

Direct removal of the stone is very rarely in cats. Other treatments that have been tried include tubes placed within the ureter, but the short- and long-term outcome with these in cats is poor. Current surgical treatment is the use of a subcutaneous ureteral bypass system (SUB). This provides an artificial ureter and connects the kidney to the bladder through a system of tubes. The tubes meet at a port under the skin which is accessible and allows long term flushing of the whole system.

If surgery is to be performed it is recommended that it is done as soon as possible to ensure that as much kidney function can be preserved as possible.

The system is placed under an anaesthetic using specialised imaging to ensure the tubes are placed correctly and are working. The abdomen is opened to allow us to access the kidneys and bladder. The surgery takes between 45 minutes and an hour for one side and an extra 30 minutes for the second side. If surgery goes to plan the cat will stay in the hospital for 2-3 days afterwards to make sure that the tubes are in the right place and working well.

Aftercare

The cat will need regular check-ups, initially at 7-10 days for a post-op check and to remove any stitches. Further checks at 1, 3, 6, 9 and then 3-6 monthly after that are needed to check the device is still working and flush it. Some cats will allow this to happen without sedation, but for the first 2-3 we recommend sedation to make sure that everything is as it should be.

Outcome

The aim of surgery is to recover as much kidney function as possible and to provide a bypass should any more stones form. In most cats there is improvement in kidney function. Survival times of up to 10 years have been reported. Kidney function at 3 and 6 months is associated with long term outcome.

Complications

Complications associated with surgery include leakage of urine from the kidney or the bladder which can be difficult to manage. Other surgical complications include kinking or blockage of the tubes. There is a 7-25% risk of urinary tract infections after placement of the device. Infection can be difficult to manage due to the presence of the device in the kidney/bladder. About 10% of cats will have problems with urination (cystitis or pain). About 25% of tubes will become blocked over time, but not all of these will need to be changed.

Decision making

Deciding what to do with a cat with ureteral obstruction is very hard. It is a long-term problem and not one we can fix easily. Your cat will need repeated and regular visits to the vet for the rest of its life. Placement of a SUB device will prolong the life of your cat, but the impact of this on quality of

life has not been well established and a number of these will become blocked. There is also a risk of cystitis and urine infections.

Blockages near the kidney are very difficult to manage medically as there is a long way for the stone to travel. Blockages near the bladder are almost through and medical management can be attempted, but preferably not for too long as the affected kidneys will be damaged and this is not reversible. We recommend the use of a sub for management of cats with this problem.

More information is available here:

These are veterinary articles and contain images of patients having surgery. Please do not open these links if you are sensitive to blood.

<https://norfolkvetproducts.com/products/sub/>

<https://onlinelibrary.wiley.com/doi/full/10.1111/jsap.12844>

<https://onlinelibrary.wiley.com/doi/full/10.1111/jsap.12861>