

What is a portosystemic shunt?

A portosystemic shunt (PSS) is an abnormality associated with a blood vessel or blood vessels within an animal's tummy. The abnormal vessel can be within the liver (intrahepatic PSS) or outside of the liver (extrahepatic PSS).

In a normal dog/cat the blood that comes from the internal organs (in particular the bowel) drains into the liver and is 'detoxified'. It also provides an important source of oxygen and nutrition for the liver. If an abnormal blood vessel is present, it can allow this blood to bypass the liver and enter the general circulation. As some of the blood is bypassing the liver, the liver will not develop or function normally. This is often identified on a blood test (bile acid stimulation test).

What causes a portosystemic shunt?

Most of the PSS that we see are a congenital defect - i.e. a dog/cat is born with this problem. There are several risk factors but there are some breeds which are more likely have the condition. Intrahepatic PSS are usually seen in large dogs whereas extrahepatic PSS are usually found in small dogs.

Some PSS are 'acquired', meaning that they develop after birth. This is usually secondary to chronic liver disease.

What might I see if my pet has a portosystemic shunt?

Because the blood from the bowel is not being 'cleaned' by the liver, toxins can enter the circulation. These can result in a wide variety of problems including:

- Neurological signs ('vacant' episodes, seizures, unusual behaviours such as head pressing, subdued demeanour)
- Poor or stunted growth in young patients
- Urinary signs (secondary to the formation of bladder stones)

Clinical signs can occur at any age, depending on the type of shunt present.

How is a portosystemic shunt diagnosed?

An initial suspicion of a PSS is often raised by a combination of the above clinical signs and changes on blood tests (including a bile acid stimulation test to assess liver function).

A definitive diagnosis requires imaging. This may be in the form of an ultrasound scan, a CT scan or fluoroscopy. In the majority of patients we will recommend a CT scan as a rapid way of getting detailed information about the anatomy of a shunt and to assist with surgical planning (where appropriate).

What are the treatment options for a portosystemic shunt?

All PSS will initially be managed medically. This normally involves:

- Medication (lactulose, antibiotic) to try and reduce the amount of toxins produced
- Specific diets which contain plant or dairy protein rather than meat protein (Most often we will recommend a diet called Purina HA)
- Some dogs/cats may be prescribed anti-seizure medication if they are suffering from neurological signs

Medical management is used in the short-term to decrease the risk of anaesthesia/surgery. It can also be used in the long-term but is generally associated with poorer long-term success rates when compared to surgery.

In most cases surgery will be recommended. The aim of surgery is to reduce/stop the blood flow going through the shunt. This will allow more blood to flow to the liver, which allows the liver to develop more normally and allows the 'toxins' to be removed from the blood before it enters the rest of the body.

The shunt can be surgically closed off (occluded) in several ways:

- Some shunts can be tied off completely in one surgery. This is ideal, as the blood flow is immediately redirected. Careful assessment during surgery is required and often involves using fluoroscopy (live x-rays) and pressure measurements. In many cases completely tying off the shunt is not possible and a more gradual approach is required.
- Placement of an ameroid device. This is a stainless steel ring with a material inside that swells when it gets wet. These devices aim to occlude the shunt over a period of several weeks.
- Placement of a cellophane band. This allows some closing of the shunt at surgery and then relies on scarring to close the rest of the shunt over time.

The main downside to an ameroid or cellophane is that they will not always close the entire shunt fully and some patients will have persistent shunting in the long-term. While most patients still improve despite this, some require a second surgery in order to close the shunt further.



An ameroid constrictor

How successful is surgery?

For shunts outside of the liver (the most common type) the long-term success rates following surgery are good in approximately 80-90% of patients. This means that patients usually have a good quality of life and a normal life expectancy. Most patients will not require ongoing medical management.

Another benefit of surgery is a decrease in the risk of forming bladder stones. If these do form, particularly in male dogs, then can result in a blockage of the urinary tract and the need for emergency surgery.

Are there any risks with surgery?

As with any surgery there are always risks to consider. The main concern with PSS surgery is the risk of seizures following the operation. These differ from many types of seizure in that they can be very challenging to treat.

Your surgeon will discuss the pros and cons of surgery with you in detail at the time of the consultation.

How long will my pet stay in hospital after surgery?

Following PSS surgery there is a requirement for very close inpatient care and monitoring. Your pet will stay in our high-dependency ward when they are recovering from anaesthesia to ensure that they receive dedicated round-the-clock care. Many patients are discharged within two days of surgery but occasionally will need to stay longer if any concerns develop.

PORTOSYSTEMIC SHUNTS

