

# Portosystemic Shunt

## Surgery Service



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29080 Inkster Rd.  
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(248) 354-6660

## Anatomy

The main blood vessel that brings blood into the liver is called the portal vein. This vein carries blood from the “contaminated organs” such as the intestines. Once the blood enters the liver it is passed through tiny filters, which remove toxins and bacteria.

## What is a portosystemic shunt (PSS)?

A fetus normally has a shunt, which directs blood away from the liver to the placenta for cleansing via the mother’s body. Within three days after birth, this vessel typically closes. Occasionally, the vessel will fail to close off and allows unfiltered, contaminated blood to reach the venous system without going through the liver, thus the dog has a PSS. The liver is often small in dogs that have a PSS. PSS can either be inside (intrahepatic) or outside (extrahepatic) of the liver. They can be congenital or acquired secondary to chronic liver disease.

## Diagnosis

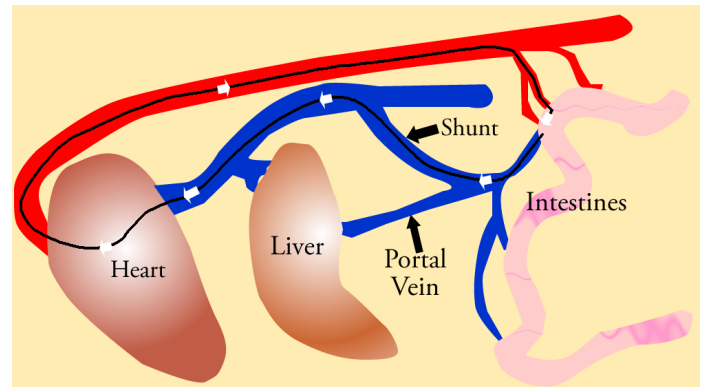
A congenital extrahepatic PSS is the most common type of shunt and is usually seen in small breed dogs such as York shire terriers, toy poodles, and miniature schnauzers. Intrahepatic PSS are typically found in large breed dogs such as Australian cattle dogs and Labradors. Affected dogs can be seen at any age, although congenital shunts are usually diagnosed before one or two years of age.

Clinical signs of a PSS may be more pronounced after the affected pet has eaten a meal of food and may include disorientation, pressing the head on a wall, standing in corners, blindness, and seizures. Other signs may include stunted growth, bladder stones, or the inability to urinate. Some dogs have no clinical signs of a shunt and the problem is noted on blood work. Yet others have intermittent signs with variable severity.

A number of tests will be recommended by our specialists to evaluate a patient that may have a PSS. General blood work including a CBC, serum chemistry panel, urine testing will be done. The main test that gives supporting evidence of a PSS is a fasting (12 hour) and post eating (2 hours) bile acids test. Ultrasonography is used to evaluate the size to the liver and to check the bladder for stones. In addition, a PSS may be identified by experienced ultrasonographers in about 75% of the cases. Nuclear scintigraphy is a test that can be done to identify patients that have a PSS and is about 85% accurate.

## The day of surgery

Our anesthesia and surgical team will prescribe a pain management program, both during and after surgery that will keep your companion comfortable. This will include a combination of general anesthesia, injectable analgesics, oral analgesics and anti-inflammatory medication.



# Portosystemic Shunt Continued...

## Treatment

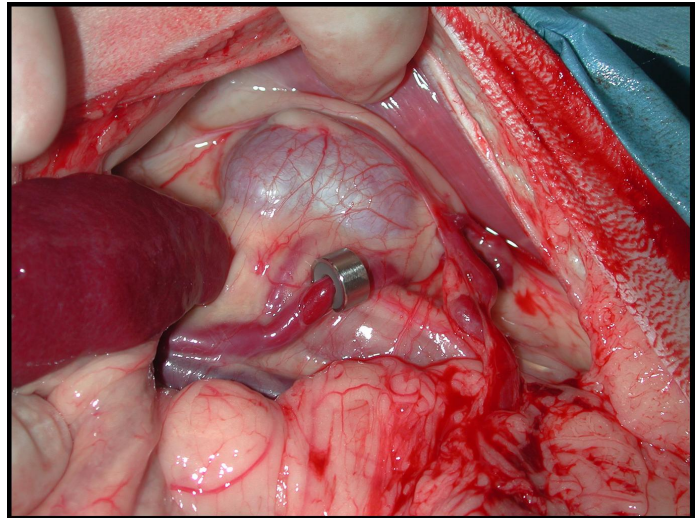
Animals exhibiting clinical signs associated with a PSS require medical management prior to surgical intervention. A low protein diet should be fed to decrease the toxins in the blood from protein metabolism. Lactulose is a medication that decreases the absorption of toxins from the intestines by trapping toxins and decreasing the transit time (laxative effect) of the stool in the intestines. Antibiotics are used to kill blood-borne bacteria that the liver fails to filter in the PSS patient.

Most PSS are visible during surgery. In order to treat the PSS, a device (ameroid constrictor or cellophane band) is placed around the abnormal vessel, which will gradually stop the blood flow through the shunt over a period of 6 weeks. If a PSS is not found at surgery, a portogram (a dye study of the blood vessels) will be performed to allow visualization of the portal system and identify the shunt if it is present. Biopsies are always taken of the liver to evaluate for the presence of concurrent disease processes. Dogs with abnormal bile acids and no PSS, often have a disease known as microvascular dysplasia. These dogs have many microscopic shunts that require medical treatment to control clinical signs.

Intrahepatic PSS's are often very large and may sometimes require multiple difficult surgeries.

## Aftercare and results

After surgery, you can continue to give your pet a prescribed pain reliever to minimize discomfort. A low protein diet such as Hill's KD should be fed for a few months after surgery. Lactulose is administered for a period of two weeks after surgery to help eliminate toxins from the body and an antibiotic may also be prescribed. It's also important to limit your dog's activity and exercise for 3 weeks after surgery while the abdominal incision is healing.



Warning signs of complications after surgery may include a red swollen incision, seizures, depression, bloody stools, vomiting and lack of appetite. If any problems are noted, please call us at any time.

The healing process will be monitored by the surgeon and your regular veterinarian with two follow-up exams. The first is scheduled for two weeks after the surgery and the second is at eight weeks after the surgery. By 2 weeks after surgery, most dogs are feeling very well and at this time the liver should be filtering more of the blood again. At 2 months after surgery, your regular veterinarian will perform bile acids testing (12 hour fasting and 2 hour post eating blood draws) and the results of the tests will be faxed back to the attending surgeon at MVS.

Most dogs will respond very well to the surgery performed. About 80 to 85% of the dogs will regain normal liver function and are cured of their condition. The remaining patients may require additional medical therapy if clinical signs of a PSS are seen.

# Portosystemic Shunt Continued...

## Assessment and recommendations

Patient: \_\_\_\_\_ Date: \_\_\_\_\_

### Treatment

- Surgery is recommended by a surgeon at MVS
- No surgery is recommended

### The following has been prescribed

- Low protein diet such as Hill's K/d or Hill's L/d or other (\_\_\_\_\_)
- Antibiotic: \_\_\_\_\_
- Lactulose: \_\_\_\_\_
- Other medication: \_\_\_\_\_

### Exercise

- Unlimited
- Confine your pet to the house other than very short leash walks necessary for bowel movements and urination
- Restrict exercise to leash walks 10 minutes twice daily

### Preparation for surgery

- Start fasting your companion at midnight before the surgery; water should not be withheld
- Pepcid AC 10 mg tablets: give \_\_\_\_\_ tablet(s) with water (use syringe if needed) at 6 AM on the day of surgery

*Composed by Daniel A. Degner, DVM, DACVS  
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