



# Veterinary Specialists of Alaska, P.C.

## General information on Porto-Systemic Shunt (PSS)

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A PSS is a vessel that diverts blood around the liver instead of leading it into liver tissue. Thus, blood is not filtered and toxic contents may reach the brain. Therefore, dogs with PSS frequently exhibit neurological abnormalities or seizures (=hepatoencephalopathy). Most PSS in small breed dogs are extrahepatic (a vessel that goes around the liver). This informative handout covers this type of vascular abnormality. Supportive medical treatment is possible, but the expected survival time is described to be only between 2 months and 5 years. Surgical treatment is usually the treatment of choice and provides usually a normal life expectancy.

Pre-surgical medical treatment should help to decrease the risk for complications. This is indicated especially for cases that have shown neurologic abnormalities (hepatoencephalopathy). To prevent episodes of intra- or postoperative hypoglycemia, a 5% Dextrose infusion will be administered during anesthesia.

Surgery usually consists of application of an Ameroid constrictor or of cellophane banding. These techniques will slowly constrict the shunting vessel and allow adjustment of the liver to the increased blood flow. In some cases it is necessary to perform an intra-operative contrast study using fluoroscopy (example see page 2) to identify the shunting vessel. A liver biopsy will be taken to evaluate the histological structure of the liver. In addition, liver cultures will routinely be submitted.



Picture: Dirsko von Pfeil

An Ameroid constrictor placed around a porto-systemic shunt.

In most cases with typical presentation, PSS is evident and surgical correction can be performed. However, some dogs present like a typical PSS, but have a primary liver disease, which can only be treated using specific liver supportive medications. This diagnosis is made based on the obtained liver biopsies.

Complications after PSS-surgery may occur and include in the worst case scenario death of the animal. However, the mortality rate for these procedures is less than 10%. Some complications (see below) may develop up to several days after the procedure. Subsequently, it is advised to keep the animal in close proximity to a practice that is equipped to treat any post-operative complications for 5-7 days after surgery

Other possible complications with PSS-surgery may include but are not limited to hypothermia, hemorrhage, anemia, hypoglycemia, seizures and hepatoencephalopathy, portal hypertension, or recurrence of clinical signs.

The treatment for postoperative portal hypertension is administration of hetastarch or isotonic intravenous fluids (based on CVP), broad spectrum antibiotics, lactulose, omeprazole, and possibly a Lidocaine CRI.

Seizures may be controlled with Propofol, Mannitol, Phenobarbital, NaBr, Keppra, or removal of the attenuation device. The electrolyte status should be monitored also, especially the Na concentration, when there should be seizures.

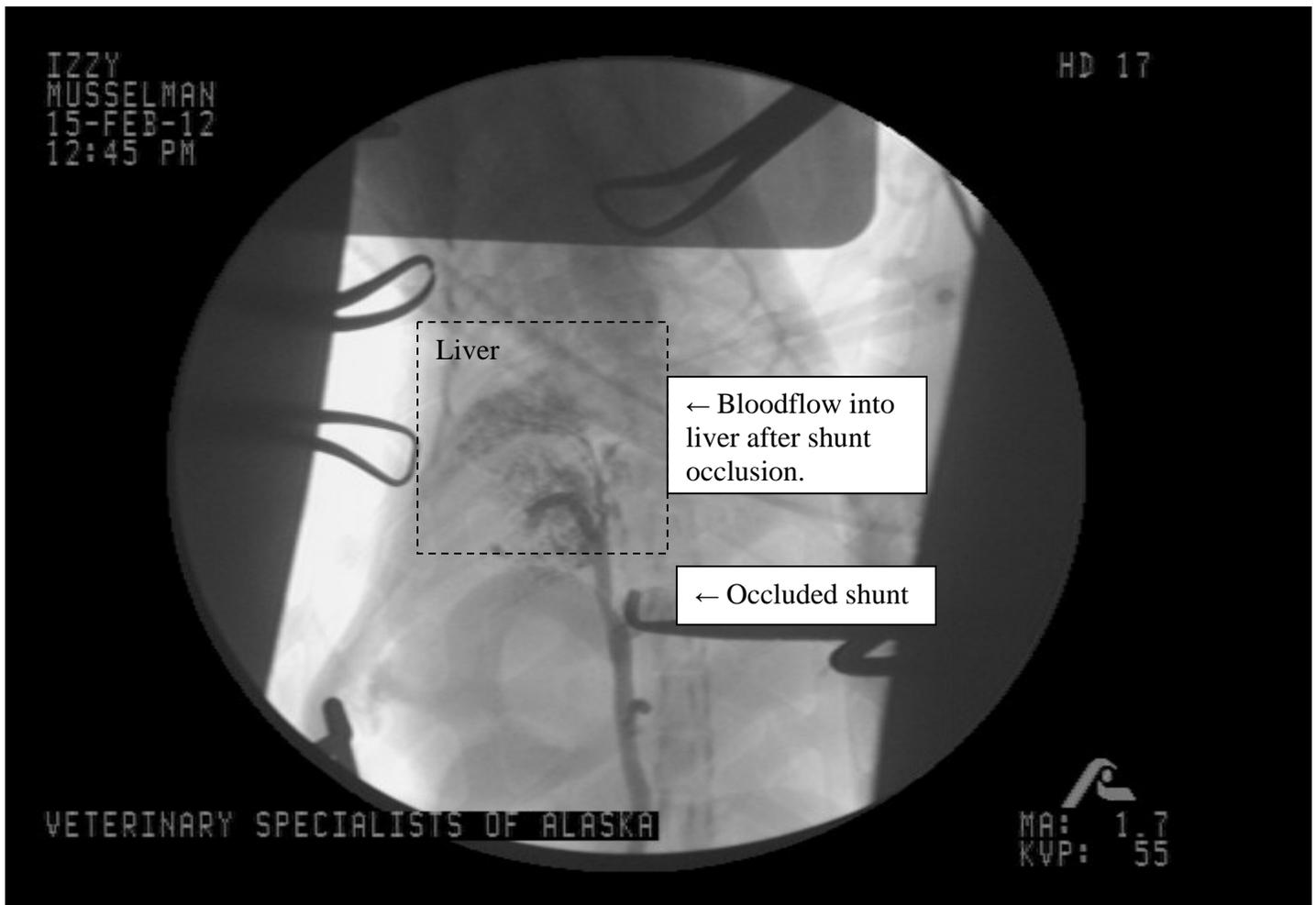
Frequently, affected dogs are spayed or neutered at the time of PSS-surgery. This is a standard procedure and is indicated in these patients, as PSS has been shown to be hereditary.

Most dogs with PSS have a good outcome and excellent quality of life after surgery.

If your dog should show signs consistent with PSS or if you have any other questions, please don't hesitate to contact us any time (contact information see below).

Your VSOA-Team

1y old, Female, Yorkie, 4.8 lbs. PSS surgery



Picture by Dr. Dirsko J.F. von Pfeil, Dr.med.vet., DVM, DACVS, DECVS, Adjunct Professor, Small Animal Surgery, Michigan State University; Staff Surgeon: Veterinary Specialists of Alaska, P.C. [www.vsoak.com](http://www.vsoak.com)

Portogram showing the contrast material flowing towards the liver, after the shunt was occluded.