INJURIES TO LIVER, SPLEEN, PANCREAS

1) LIVER

General Causes: Blunt trauma, Poisoning, Leptospirosis, Rupture or blockage of gall bladder and bile ducts, Tumours.

Signs: -Pain in the anterior abdomen. All pain in this region can lead to the "praying posture" when the dog lowers itself on its forelegs, but stays up on its back legs. - Vomiting occurs both because of the pain and because toxins accumulate which the liver is no longer removing from circulation. These affect chemical sensors in the brain. - Jaundice is seen in the mucous membranes and white skinned areas. It occurs due to the accumulation of bilirubin in the blood when the liver fails to deal with the breakdown products of haemoglobin. Laboratory testing can distinguish between indirect reacting bilirubin, which indicates that the liver's processing capacity has been overwhelmed (either too much to process or a damaged liver) and direct reacting which indicates that the liver has processed the bilirubin, but it is accumulating in the blood (usually bile duct obstruction). Note that internal haemorrhage may overload an otherwise normal liver and so give rise to signs of jaundice, but in this case, jaundice does not reflect a liver problem.

a) Trauma: Can lead to severe haemorrhage due to tears in the liver.
Treatment: Prevent shock developing, so copious fluids needed, blood transfusions. Binding the abdomen with a tight bandage may help, but this is best performed after a vet's examination to check for other damage which may be made worse.

b) Poisoning: A variety of poisons are liver toxic, particularly lead and the heavy metals, antifreeze (ethylene glycol) also paracetamol, which is lethal at low doses in cats, as they lack a particular detoxifying liver enzyme.

Treatment: Causing the animal to vomit may be appropriate first aid, depending on the poison and the time elapsed since ingestion. There are also antidotes for a few liver toxins- ethanol for antifreeze, acetylcysteine for paracetamol. Remember that caustic poisons do damage on the way down then on the way back in vomiting animals.

c) Leptospirosis: Causes severe acute damage to liver tissue. This disease is a zoonosis so take strict hygiene precautions in jaundiced febrile dogs, particularly if unvaccinated.

Treatment: First aid is supportive- fluids etc. Leptospirosis responds to antibiotics.

d) Gall Bladder and bile duct problems: Calculi can cause obstruction. Cholangiohepatitis in cats is an infection which causes the formation of thick bile and leads to an apparent obstruction. If the bile ducts are ruptured by trauma, then accumulation of bile in the abdomen can cause peritonitis, even though there may be no infection involved. Jaundice will develop in all these cases. First aid is not really specifically indicated.

e) Tumours: Liver tumours often bleed profusely when damaged, but this may not be obvious as the bleeding will be internal.

Treatment: First aid will be fluid replacement, particularly blood transfusion.

SPLEEN

Causes: Torsion, Rupture or blunt trauma, Neoplasia

a) Splenic Torsion: The spleen rotates around the ligament attaching it to the outer curved wall of the stomach (the greater curvature). This ligament is short, so the condition is rare. Blood vessels in the ligament become strangled, and so the spleen loses its blood supply, and initially swells then becomes necrotic.
Treatment: Fluids for shock, which develops rapidly as blood is trapped in the spleen.

b) Rupture: Occasionally seen in RTA's, but more commonly haemorrhage is associated with-

c) Tumours: The commonest splenic tumour is the haemangiosarcoma, which is very malignant, although it also has a less common relative the haemangioma, which is more benign. Medium to large breeds are usually affected, particularly GSD's, and the tumour may be very large on diagnosis. Haemorrhage may be slow and prolonged, leading to anaemia, or rapid and catastrophic if the tumour ruptures. Animals with splenic tumours often have irregular hearts which you may detect when you take the pulse.

Treatment: Abdominal compression may help to slow the bleeding, but take care in RTA's! Rapid intravenous fluid replacement- blood or colloids are desirable.

THE PANCREAS

Causes: Pancreatitis and Traumatic injury. Both cause the release of digestive enzymes into the tissues of the pancreas and surrounding area. This is very painful indeed. Usually pancreatitis is treated symptomatically to reduce inflammation and via low fat diets to prevent recurrence. Release of pancreatic enzymes can cause shock which will need emergency fluid therapy. Traumatised pancreatic tissue may need surgical removal.