

# South Georgian Bay Veterinary Ultrasound and MIS Liver Biopsy Options

One of the most common indications for abdominal ultrasound in small animal medicine is working up a patient for elevated liver enzymes. Ultrasound is an excellent diagnostic tool to evaluate the liver looking at size, echogenicity, capsular contour, presence of masses and nodules, and evaluating the gall bladder and the biliary tree. From here a list of differential diagnosis can be formulated, but in most cases, biopsy is required in order to make a definitive diagnosis. Liver samples can be safely collected by several methods each with their advantages and disadvantages:

**Ultrasound Guided Fine Needle Aspirates:** This is easily accomplished with ultrasound guidance and can usually be safely performed in an awake or mildly sedated patient. No specialized testing is required prior to performing. The disadvantage is that only cytological samples can be collected and many important disease processes in the liver such as chronic active hepatitis and copper hepatopathy can not be easily diagnosed using this method. FNA's can be used to screen for round cell neoplasias, carcinomas and hepatic lipidosis, but important liver diseases such a chronic active hepatitis can be missed if relying solely on this method.

**Ultrasound Guided Core Needle Biopsy:** Because a much larger sample is obtained using this method, core needle biopsy is preferred over FNA of the liver as a histopathological analysis and copper testing can be performed. Core biopsy requires heavy sedation or general anesthesia and a clotting profile (PT/PTT and platelet count) is required prior to sampling. SGBVUS conveniently offers on site PT/PTT testing so that liver biopsy can be performed on the same day of the scan. Ultrasound-guided core biopsy samples are excellent for targeting liver masses or diffuse liver disease processes but in some cases, lesions may not be safely accessed via this method, particularly if the lesion is close to the gall bladder, porta hepatitis or in a region too deep to be reached with ultrasound guidance. Small patient size or liver location may also limit the ability to perform this type of biopsy safely. Risks are minimal and serious complications are rare but may include bleeding (mild to life-threatening) or organ laceration. Pet owners should be advised on possible complications and informed consent given prior to performing this procedure.

**Laparoscopic Liver Biopsy:** In many specialty practices, laparoscopic liver biopsy has become the preferred liver biopsy collection method. This method has many advantages over ultrasound-guided methods as direct visualization of the liver can be seen, several liver lobes can be safely sampled, and larger high quality sample sizes can be obtained which will make your pathologist happy! Large samples for bacterial culture, histopathology and copper quantification can be obtained. The procedure is safe to perform on an out-patient basis and there is very little discomfort encountered by the patient as only a small port-hole is made in the abdomen compared to a traditional laparotomy incision. General anesthesia and a PT/PTT and platelet count are required prior to performing. This option is available through our mobile services using a high definition laparoscope and a mobile laparoscopic suite.

**Laparotomy:** Exploratory surgery and biopsy using a round-punch biopsy and clotting powder or using a wedge biopsy and suture is also an option. Diagnostic yield is often excellent. The advantage of this is that bleeding can be directly controlled at the time of the procedure. The disadvantage is the need for a much larger abdominal incision which is more invasive and leads to a longer recovery time, more post-op discomfort and in most cases need for longer anesthesia times. Pet owners can be hesitant to put their pets through major abdominal surgery to perform liver biopsies but this is a good method if multiple organs need to be sampled at the same time.

### Contraindications to Liver Biopsy

Patients with evidence of end-stage liver disease on ultrasound and blood parameters will likely not benefit from liver biopsy. Anemia, thrombocytopenia, hypoalbuminemia and abnormal clotting parameters are contraindications. The presence of ascites can also be problematic interfering with proper clot formation post-biopsy.

Which method is right for your patient? This will depend on the disease processes you are looking for, the ultrasound findings and your client's budget. Please do not hesitate to contact Dr. Pankatz at 705 446-0261 or e-mail: [sgbvus@gmail.com](mailto:sgbvus@gmail.com) with any liver biopsy questions.