

# Getting the Most Out of Liver Biopsy

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## KEYWORDS

- Liver biopsy • Histopathology • Complications • Sampling error
- Interobserver variation • Tru-Cut • Laparoscopy

## KEY POINTS

- Liver biopsy often plays an essential role in diagnosing canine and feline hepatobiliary diseases.
- Liver biopsy is generally associated with a low rate of complications but, of these, excess hemorrhage is the most important.
- Despite its value, this technique has several diagnostic limitations, including its invasive nature, sampling error, and suboptimal interobserver agreement associated with histopathologic evaluation.
- The commonly used liver biopsy techniques in dogs and cats are percutaneous needle biopsy, laparoscopic liver biopsy, and surgical liver biopsy. Each has advantages and disadvantages.
- To optimize the value of this procedure it is essential to collect adequately sized biopsy specimens from several liver lobes.

## INTRODUCTION

As previously discussed, laboratory testing and diagnostic imaging play an important role in the diagnosis of hepatobiliary disease in dogs and cats (See Yuri A. Lawrence and Jörg M. Steiner's article, "[Laboratory Evaluation of the Liver](#)"; and Angela J. Marolf's article, "[Diagnostic Imaging of the Hepatobiliary System: An Update](#)," in this issue). In human hepatology it is often possible to use noninvasive or minimally invasive tools to identify the underlying cause of liver disease (eg, serologic diagnosis of hepatitis C).<sup>1</sup> Because of this ability and the availability of validated noninvasive tests for hepatic fibrosis, the necessity for hepatic biopsy is being called into question for many human patients with suspected hepatobiliary disease.<sup>2,3</sup> However, in companion animals a liver biopsy is usually required to definitively diagnose hepatobiliary

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disease, guide treatment decisions, and provide important prognostic information. Otherwise unobtainable information gained from histopathologic assessment of the liver specimen includes assessment of the structural integrity of the liver tissue, the type and degree of injury, and the patient's response to that injury.<sup>4</sup> Histopathologic assessment also provides the basis for the diagnosis and classification of hepatic tumors.<sup>4</sup> Histopathologic assessment of the liver allows a histomorphologic and sometimes a causal diagnosis to be made. Liver biopsy also allows collection of samples for the quantification of copper, zinc, and/or iron as well as for bacterial and/or fungal culture. However, liver biopsy and histopathologic assessment of hepatic tissue both have important limitations and the success of this diagnostic procedure can be reduced at any stage of the process, including patient preparation, the biopsy procedure, sample processing, histopathologic assessment, and communication between the clinician and pathologist.

This article discusses the indications for liver biopsy, the risks associated with liver biopsy, advantages and disadvantages of different biopsy techniques, and strategies to get as much useful information as possible out of this process (**Box 1**). Fine-needle aspiration and cytologic assessment of the liver are reviewed elsewhere.<sup>5-7</sup>

### INDICATIONS FOR LIVER BIOPSY

Every case is different and there are many indications for a liver biopsy. Therefore, it is difficult to make definitive and universal recommendations as to when this procedure is indicated. Although by nature a liver biopsy is invasive and can be costly to perform it is important to remember that a liver biopsy is just a diagnostic tool so, if a clinician thinks that primary liver disease is a possibility, then it is usually indicated. However, when extrahepatic disease is suspected, this should be ruled out before performing a liver biopsy. A liver biopsy is especially valuable for diagnosing hepatic parenchymal disease, such as chronic hepatitis, and biliary tract disease, such as lymphocytic

#### Box 1

##### Key points to optimize the clinical utility of a liver biopsy

- Before biopsy assess the patient's hemostatic system by performing a platelet count (also check a blood smear), prothrombin time, activated partial thromboplastin time, measurement of fibrinogen concentration, and a buccal mucosal bleeding time.
- Ideally perform laparoscopic or surgical biopsy to optimize sample quality. If performing percutaneous needle biopsy use a 14-gauge needle for dogs and use a 16-gauge needle for small dogs or cats.
- To ensure that representative samples are collected, biopsy several liver lobes. Biopsy specimens of specific lesions should be submitted separately.
- Save samples for aerobic/anaerobic bacterial culture and copper quantification (dogs).
- Collect bile for aerobic/anaerobic bacterial culture and cytologic analysis.
- Consider submitting samples to a pathologist with an interest/expertise in hepatic histopathology.
- Provide the pathologist with a complete but succinct clinical history.
- Staining sections for copper, iron, connective tissue, and lipofuscin can provide additional information.
- Read all parts of the pathology report and ideally talk directly to the pathologist to discuss the findings and make clinical correlations.

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