

EVALUATION OF PREPRANDIAL AND POSTPRANDIAL GALLBLADDER VOLUME USING THREE-DIMENSIONAL ULTRASONOGRAPHY IN HEALTHY DOGS

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Gallbladder diseases like gallbladder mucocele and cholecystitis can reduce gallbladder motility and may lead to cholestasis. Since impaired gallbladder emptying contributes to sludge and gallstone formation, the evaluation of gallbladder motility requires accurate and appropriate methodology. Three-dimensional (3D) ultrasonography has been shown to be accurate and appropriate tool for measurement of gallbladder volume in humans. Therefore, we applied this novel technique for the first time to study preprandial and postprandial gallbladder volume in 10 healthy mixed-breed dogs and compared the results to two-dimensional (2D) ultrasonography. The dogs were placed in dorsal recumbency to obtain ultrasonographic measurements of the gallbladder. Measurements by both 2D and 3D ultrasonography were recorded in preprandial state and after ingestion of full-fat milk. The preprandial and postprandial gallbladder volumes determined by 3D ultrasonography were significantly higher than corresponding volumes by 2D ultrasonography (1.11 ± 0.07 vs 0.77 ± 0.06 and 0.81 vs 0.61 ml/kg, respectively, $P < 0.05$). In 2D ultrasonography, most dogs (8/10 [80%]) had a preprandial gallbladder volume ≤ 1.00 ml/kg. However, in 3D ultrasonography, 6/10 (60%) of dogs had a preprandial gallbladder volume ≥ 1.00 ml/kg. Gallbladder contraction index was higher in 3D ultrasonography than 2D ultrasonography, however, it did not reach *statistical significance* ($P = 0.25$).

In conclusion, 3D ultrasonography showed larger gallbladder volumes than 2D ultrasonography in healthy dogs. It seems that 3D ultrasonography is appropriate adjunct device to 2D ultrasonography to estimate gallbladder volume when 2D ultrasonography could not detect whole gallbladder volume. More research is needed to determine clinical value of 3D ultrasonography in canine gallbladder imaging.

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