



**PATIENT PRESENTING CLINICAL SIGNS**

Dudley Twomey History: anorexia, vomiting, soft stool, lethargic, markedly elevated liver enzymes, mild hypercalcemia, hyperglobulinemia meds: cerenia, vitamin E

**SPECIES ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

Canine **Urinary System**

**BREED** The urinary bladder, trigone, and visible pelvic urethra were of normal thickness. The ureters were not visible which is normal. There was normal wall layering with no masses, or abnormal thickening visualized. A gravity dependent cystolith present measuring 0.91cm.

Shih Tzu

**SEX** The kidneys have a smooth capsule and with hazing of corticomedullary definition to the point of inability to determine cortical/medullary ratio. No evidence of pelvic dilation was present. Hyperechoic shadowing in left\* renal pelvis with no dilation consistent with non-obstructive nephrolithiasis. The left kidney measures 4.69 cm. The right kidney measures 4.67 cm.

Neutered Male

**AGE Adrenal Glands**

12 Years Both adrenal glands were visualized and recognized as having normal shape, size, position and echogenicity for this breed. The phrenic vasculature, glandular echogenicity and detail were unremarkable. Capsule, cortex, and medullary definition were normal for this age patient. The left adrenal gland measured 1.86 cm in length and 0.45 cm at the caudal pole and 0.48 cm at the cranial pole. The right adrenal gland measured 1.62 cm in length x 0.48 cm at the caudal pole and 1.39 cm at the cranial pole.

**WEIGHT Spleen**

7.3 kg The spleen was normal in size with a slightly mottled parenchyma, solitary hypoechoic nodule and smooth capsule. Normal splenic vasculature with no signs of congestion or thrombosis.

**INTERPRETED BY**

Dr Brittany Sinclair, BVSc(hons), DACVECC

**IMAGING PERFORMED BY**

Kelly Reschny

**HOSPITAL NAME**

Hartzel AH

**REFERRING VET**

Dr. Morris

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22043

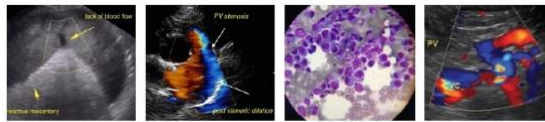
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**Gastrointestinal**

The stomach contains ingesta. It measures at a normal thickness of with some variability due to the presence of rugal folds. The distinction of the gastric wall layers is adequate and there is no impression of reduced peristaltic activity. No masses or focal lesions were observed.

The visualized areas of duodenum, jejunum and ileum have a relatively uniform diameter with minimal fluid distension. Wall thickness is normal. Bowel loops follow a curvilinear path with distinct wall layering



**PATIENT**

maintaining the typical 1:3 muscularis:mucosa layer ratio. Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

Dudley Twomey

**SPECIES**

Sections of colon are visualized with formed fecal material and gas shadowing distally. There is no observed focal or generalized colon wall thickening or loss of layering.

Canine

**Pancreas**

**BREED**

The base and limbs of the pancreas were observed to be largely isoechoic to surrounding omental fat. Pancreatic duct and capsular contour and parenchyma were normal. No overt evidence of active inflammatory or neoplastic disease was noted.

Shih Tzu

**SEX**

**Lymph Nodes**

No clinically significant lymphadenopathy or abnormalities noted.

Neutered Male

**Free Abdomen**

**AGE**

No masses or free fluid are noted.

12 Years

**ULTRASONOGRAPHIC FINDINGS**

**WEIGHT**

- Degenerative renal changes with nephrolithiasis
- Gall bladder debris
- Cystolith
- Splenic parenchymal changes with smooth capsule

7.3 kg

**INTERPRETED BY**

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

Dr Brittany Sinclair,  
BVSc(hons), DACVECC

The liver parenchyma appears normal. Biliary tracts contain mineral throughout which represents cholelithiasis. While this appears non-obstructive and may be an incidental finding, they can act as a nidus of infection and inflammation. Movement of choleliths may also cause pain and GI signs which can present in dogs as lethargy. In the face of elevated liver enzymes fine needle aspirate is recommended to further characterize parenchymal changes and bile acid profile to assess liver function (if total bilirubin is normal). Ultimately liver biopsy is often required for more definitive diagnosis. Empiric treatments (SAM-E, milk thistle, Vitamin E, ursodiol if bilirubin elevated or gall bladder sludge) could be tried and liver enzymes re-evaluated, especially if liver FNA does not show significant pathology before more invasive liver sampling is pursued.

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Renal changes are likely age related degenerative changes. Correlate clinical significance with blood work/urinalysis findings and clinical signs. Nephroliths may act as a nidus of infection and predispose to urinary tract infections. They have the potential to move into the ureters or bladder causing obstructive uropathy.

Dr. Morris

Urinary bladder cystoliths may lodge in the urethra causing obstruction, with male pets carrying a higher risk due to smaller urethral size. They may also act as a nidus of infection and inflammation. Dissolution diets (hills c/d, royal canin urinary S/O, purina proplan UR, etc) may be tried if struvite stones are suspected with serial imaging used to monitor progress. If small enough in relation to patient size, urohydropulsion under general anesthesia may successfully remove stones. Surgical removal of stones should be considered if risk of urethral obstruction is unacceptable or dietary therapy is not successful. Cystoscopic removal of stones, with or without lithotripsy may be considered if locally available. A flexible cystoscope is required for male dogs. Calcium oxalate, struvite, urate, and cystine stones are all susceptible to laser lithotripsy. Some dogs are not considered good candidates for laser lithotripsy including:

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Neutered Male

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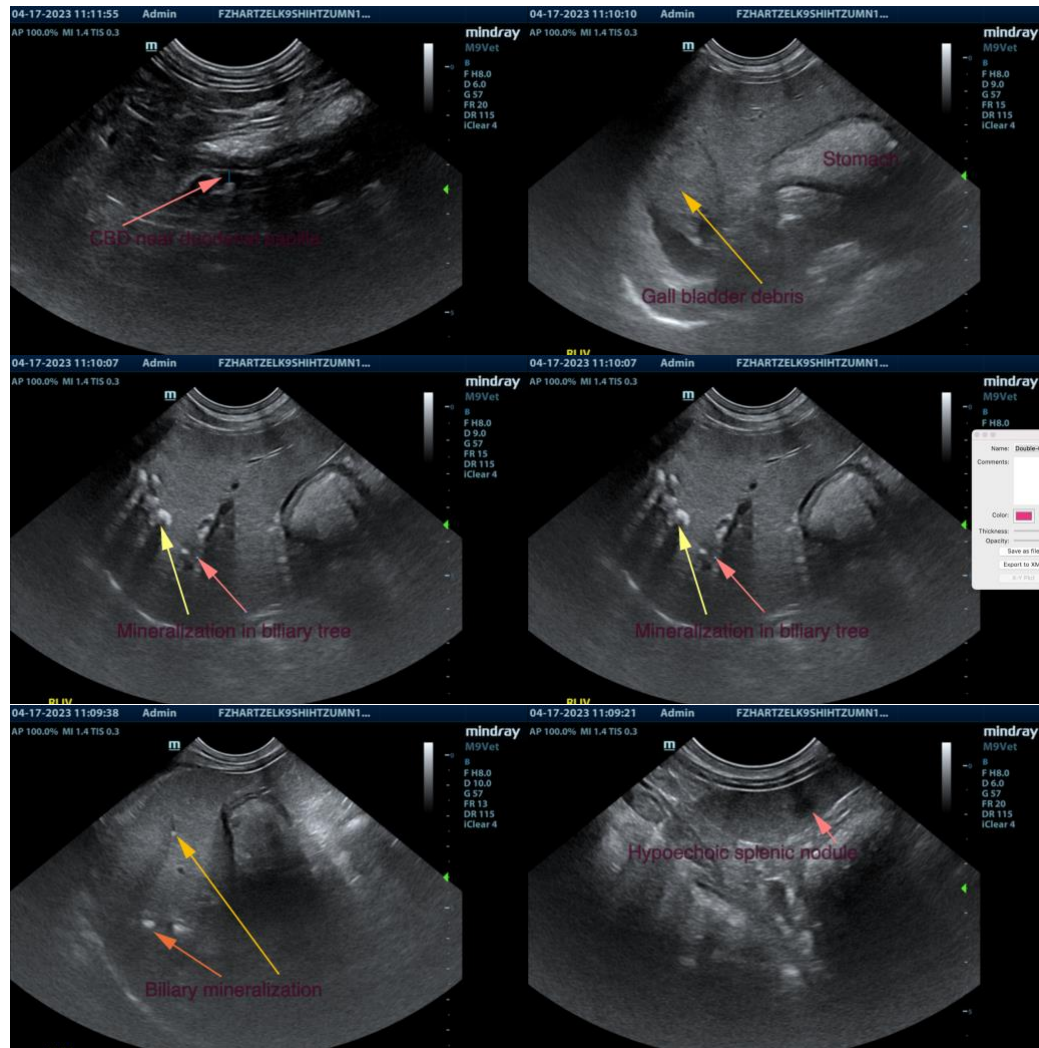
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- Male dogs less than 15 pounds: The endoscope may be too large to traverse the urethra.
- Male dogs with more than two bladder stones greater than 5 mm in diameter (depending on the size of the dog)
- Female dogs whose entire bladder is full of stones greater than 5 mm in diameter
- Dogs with uncontrolled urinary tract infection: Once infection is controlled, lithotripsy can be considered.

Splenic changes are a common benign age related change, or may represent reaction to immune stimulation, but infiltrative disease (lymphoma, MCT, other) cannot be definitively ruled out. No significant disruption of architecture noted to suggest significant pathology. Fine needle aspirate could be considered to further characterize parenchymal changes if clinically indicated, especially if any weight loss is noted or for baseline cytological assessment.





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**SPECIES**

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**SEX**

Neutered Male

**AGE**

12 Years

**WEIGHT**

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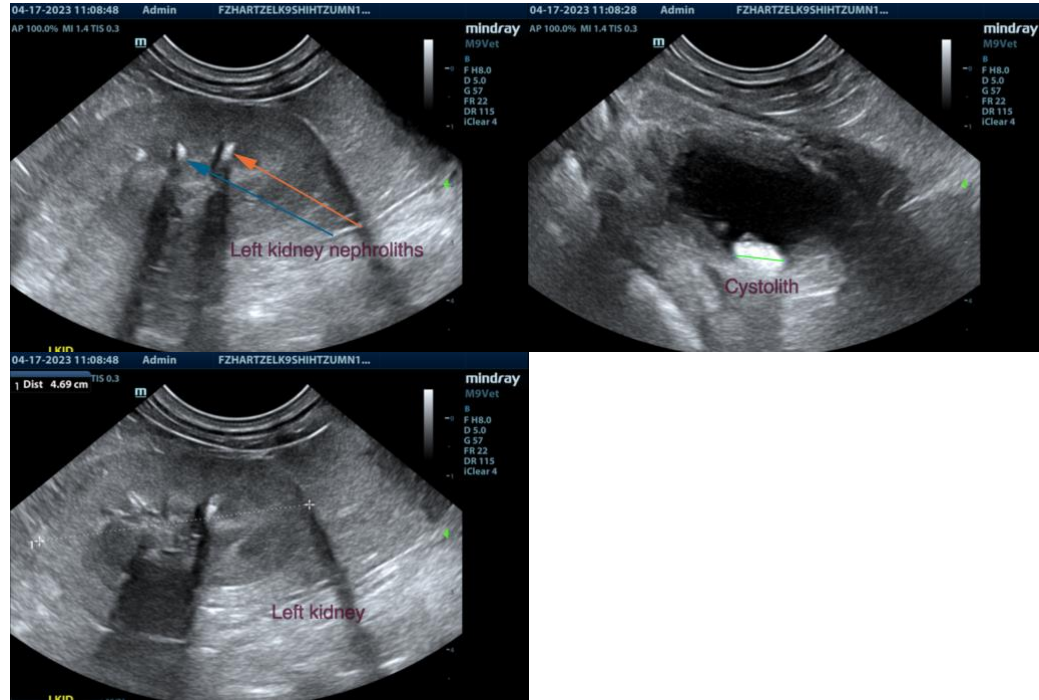
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

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