

**PATIENT PRESENTING CLINICAL SIGNS**

Lily Singh recurrent UTI, has had 3 since Oct 2020, each one resolves with ABs meds: clavamox, apoquel  
Abnormal PE/Chem/CBC/UA Results: please see attached urine C&S

**SPECIES ULTRASONOGRAPHIC EXAMINATION OF THE ABDOMEN**

Canine

**Urinary System**

**BREED**

Pug

The urinary bladder is moderately distended with mild primarily suspended echogenic debris present. The Bladder wall, trigone, ureteral papillae and visible urethra (to a depth of 2cm) appear normal with no evidence of wall thickening, mucosal irregularities, or masses. There is a small pile of dependent shadowing sandy mineralized debris in the dependent portion of the urinary bladder. Echogenic debris of this type can be associated with small crystals, cellular debris and proteinaceous debris.

**SEX**

Spayed Female

The left kidney has a normal shape and size (3.72 cm) Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**AGE**

9 Years

The right kidney has a normal shape and size (4.45 cm). Overall echogenicity is normal with adequate corticomedullary distinction and a typical 1:3 cortex:medulla ratio. There is no evidence of perinephric inflammation or effusion. There is no evidence of pyelectasia, nephroliths, infarcts or hydroureter. Renal vasculature is normal.

**WEIGHT**

10.4 kg

**Adrenal Glands**

The left adrenal gland is normal in size measuring 0.43 cm at the caudal pole. It is observed in its normal position cranial to the left renal artery. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

**INTERPRETED BY**

Kathleen Sennello DVM,  
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(Small Animal Internal  
Medicine)

The right adrenal gland is normal in size measuring 0.40 cm at the caudal pole. It is observed in its normal position between the cranial aspect of the right kidney and the caudal vena cava. It is normal in appearance (uniformly hypoechoic) and shape with no evidence of a mass effect.

**IMAGING PERFORMED BY**

Kelly Reschny

**Spleen**

The spleen is subjectively normal in size, echotexture is homogenous, and the splenic capsule is smooth with no irregularities. The blood flow through the hilus and splenic parenchyma appears normal. There is a small, hypoechoic nodule measuring 0.42 cm in the parenchyma of the spleen.

**HOSPITAL NAME**

Hawkins AH

**Liver**

The liver is large in size, and normal in echogenicity with smooth peripheral margins. The parenchyma is heterogenous in echotexture with subtle, indistinct focal mottling. The visible portions of the vasculature and biliary tract appear normal. No focal nodules or cystic lesions are observed.

**REFERRING VET**

Dr. Hawkins

The gallbladder lumen is moderately distended. The wall of the gall bladder is not thickened and has a smooth mucosal surface. Luminal contents are primarily anechoic. The cystic and common bile ducts are normal/not visible.

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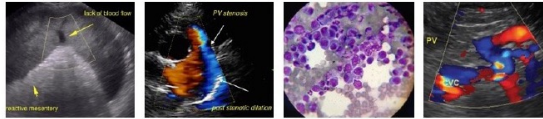
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**Gastrointestinal**

The stomach is moderately dilated with fluid and irregular shadowing material most consistent with normal ingesta and gas. It measures at a normal thickness of <0.7cm with some variability due to the

**DATE**

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**PATIENT** presence of rugal folds. The distinction of the gastric wall layering is adequate and there is no impression of reduced peristaltic activity. No masses or focal lesions were observed.

Lily Singh

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Canine

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 maintaining the typical 1:3 muscularis:mucosa layer ratio. The duodenum measured as normal (between 0.3-0.5cm in wall thickness) and the jejunum measured as normal (between 0.2-0.47cm.) Visualized peristalsis appears appropriate. There were no focal lesions consistent with obstruction or a mass effect observed.

**BREED**

Pug

The ileocecal junction was visualized and exhibited normal intact wall layering and is subjectively of normal thickness. 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.

**SEX**

Spayed Female

**Pancreas**

The pancreas is normal and isoechoic to surrounding mesentery. There is no evidence of nodules or cystic lesions. There is no evidence of regional mesenteric inflammation or fluid.

**AGE**

9 Years

**Free Abdomen**

Evaluation of the peritoneal cavity did not reveal any evidence of effusion, or subjective lymphadenomegaly. The Medial iliac nodes appear normal and there was no evidence of a caudal aortic thrombus at the bifurcation. The omentum is of normal uniform echogenicity.

**WEIGHT**

10.4 kg

**ULTRASONOGRAPHIC FINDINGS**

- Echogenic sandy debris in the urinary bladder – Correlate these findings with abdominal radiographs and urinalysis (culture already performed). Recommend reevaluation for this debris after the infection is treated.
- Hypoechoic splenic nodule – There is a non-cavitated, hypoechoic splenic nodule visualized. Differentials include lymphoid hyperplasia, extramedullary hematopoiesis, infiltrative neoplasia, inflammation, other. Cytology or histopathology would be necessary to get a definitive diagnosis.
- Large, heterogeneous liver – The diffuse hepatic changes are non-specific and could be consistent with vacuolar hepatopathy, nodular hyperplasia, inflammatory/immune-mediated disease, fibrosis, extramedullary hematopoiesis, toxic hepatopathy (e.g., copper), infiltrative neoplasia (less likely) or other hepatopathy. If liver values are normal, this could be an incidental finding.
- Moderate ingesta within the gastric lumen – Correlate with feeding history. If the patient was adequately fasted, then consider such differentials as delayed gastric emptying or partial outflow tract obstruction (none observed).

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Dr. Hawkins

**INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS**

There is some sandy mineralized debris in the dependent portion of the urinary bladder, but no focal mass lesions or large stones are visualized. Additionally, there is a small, hypoechoic nodule in the spleen. Options moving forward include either sampling with a fine needle aspirate or continued monitoring with ultrasound. An obvious cause for the frequent urinary tract infections is not identified.

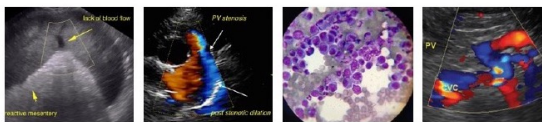
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- Consider metabolic causes such as renal disease, Cushing's disease, diabetes, medications that would inhibit urine concentrating ability, etc.



**PATIENT**

Lily Singh

- Additionally, consider anatomic abnormalities such as obesity with skin folds, juvenile vulva, urine pooling in the vagina, ectopic ureter, etc.

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Additionally, consider if these are asymptomatic or symptomatic and need to be treated, etc. At the very least, I typically recommend wipes and chronic probiotic therapy with close surveillance. Recurrent urinary tract infections can be very frustrating and complicated condition if they are severe, so early management is key before resistance develops.

**BREED**

Pug

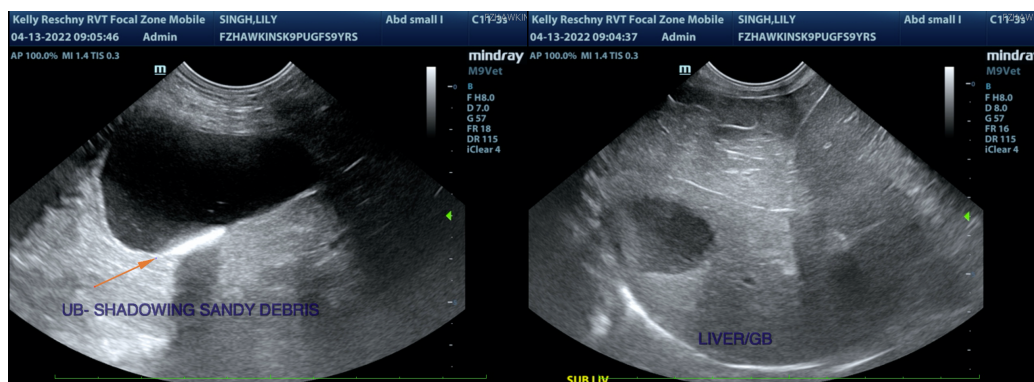
Consider recheck imaging before cessation of antibiotics to ensure that the mineralized debris has resolved.

**SEX**

Spayed Female

**AGE**

9 Years

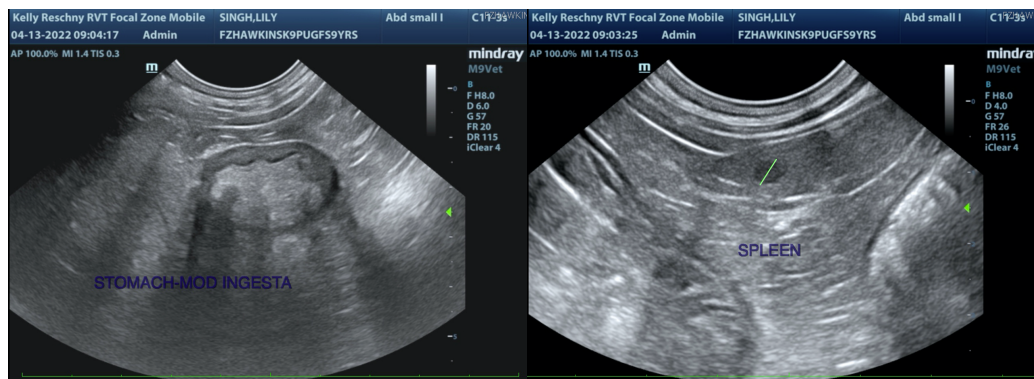


**WEIGHT**

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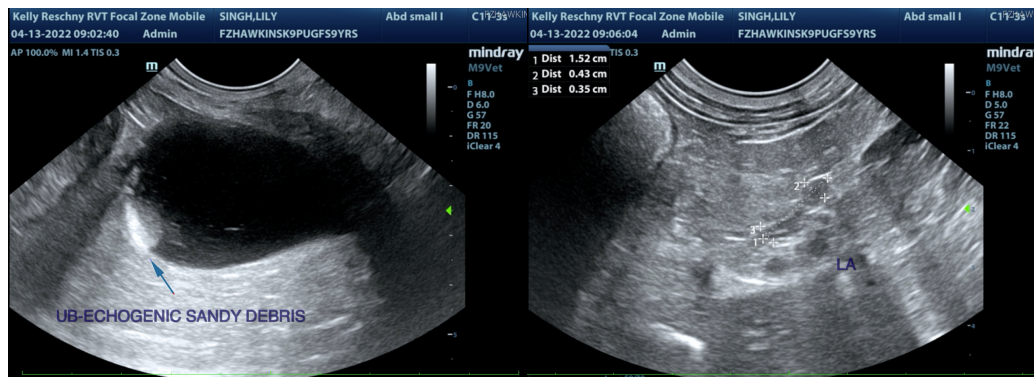


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**HOSPITAL NAME**

Hawkins AH



**REFERRING VET**

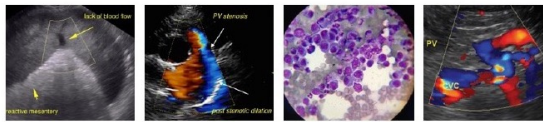
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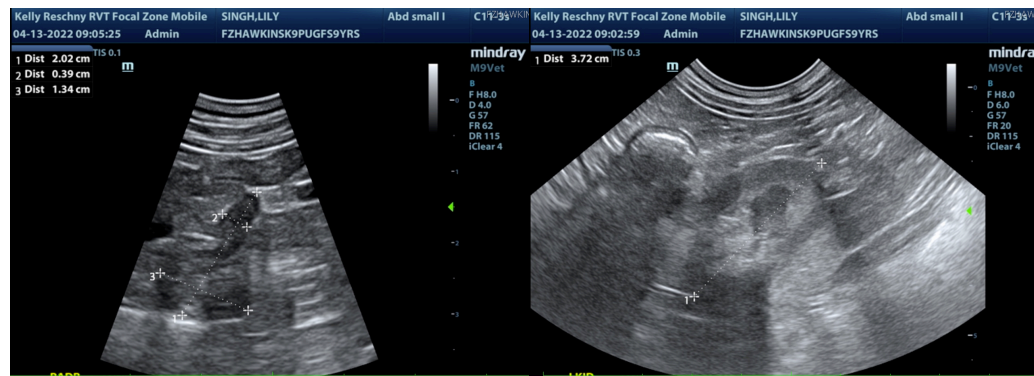
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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

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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