

What's Your Diagnosis???

Kristin Britton, Class of 2012

Signalment – “Mercy”, 10 month old, Female, Domestic Short Haired Feline

Presenting complaint – Abdominal swelling, diarrhea, and fever

History – Mercy was found a week ago covered in ticks and the owners took her to the referring veterinarian. On 6/24/11 she was given her Rabies, Panleukopenia, Rhinotracheitis, Calici, Chlamydia, and Leukemia vaccines. She was also dewormed and was negative on an FIV and FeLV test. Last night she had a high fever of 104.5F. The owners had seen her try to urinate but didn't see anything in the litterbox.

Physical Exam – Upon presentation to KSU her vitals were as follows; Temperature = 103.7F, Heart Rate = 200b/min, Respiratory Rate = 42 b/min, Blood Pressure = 120, BCS = 2/5, Weight = 2.36kg. Mercy's third eyelids were elevated, hair coat was rough, abdominal distension was noted as well as a 4mm sized nodule in the region of the left thyroid gland. Lymph nodes were normal in size and shape. There was a grade 1 heart murmur heard on the left side.

DDx – FIP, uroperitoneum, lymphoma, pancreatitis, prehepatic disturbance.

Diagnostics – Fluid was obtained from the abdomen which was yellow in color. A creatinine level of 1.0g/dL (this was not 2 times the blood creatinine levels of 0.8g/dL) and a low protein level was found on the abdominal fluid. Less than 2 times blood creatinine levels rules out uroabdomen and the low protein levels ruled out FIP. Urine Specific Gravity = >1.050. Urine culture resulted in no bacterial growth. CBC was unremarkable. Chemistry panel abnormalities included an Albumin of 3.0, PCV was 25 and otherwise the bloodwork was unremarkable.

Radiographs – A VD and 2 lateral abdominal views were taken.

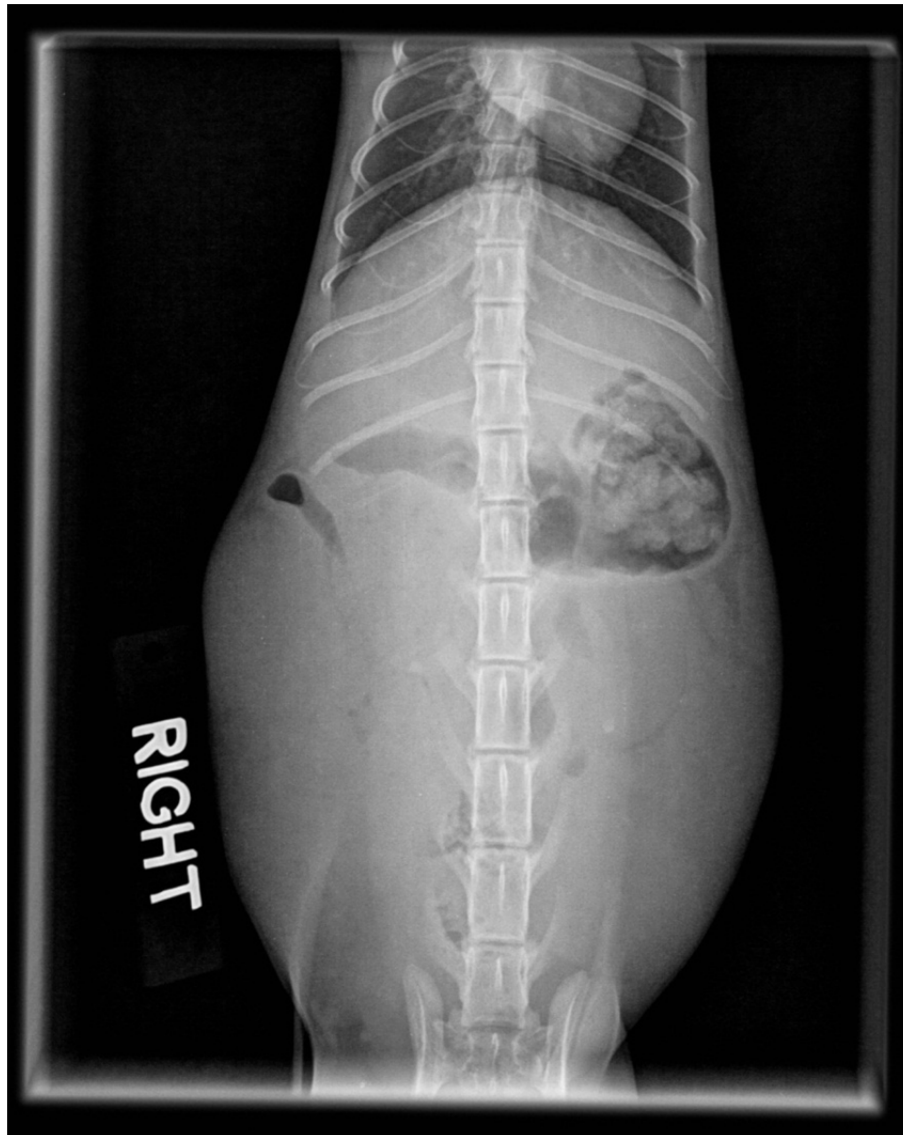


Figure 1 - VD Abdomen

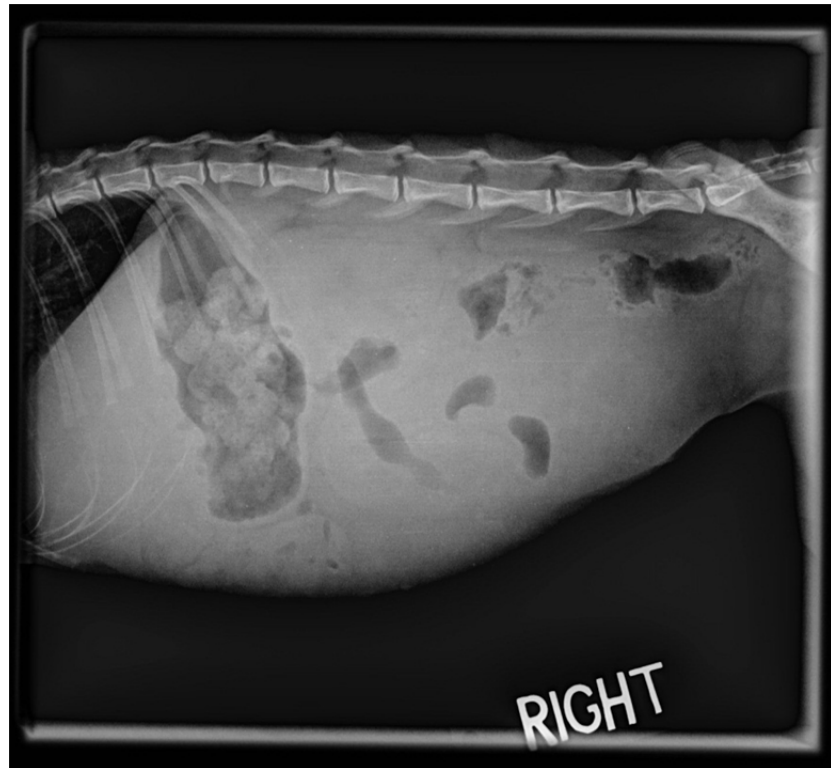


Figure 2 - Right Lateral Abdomen

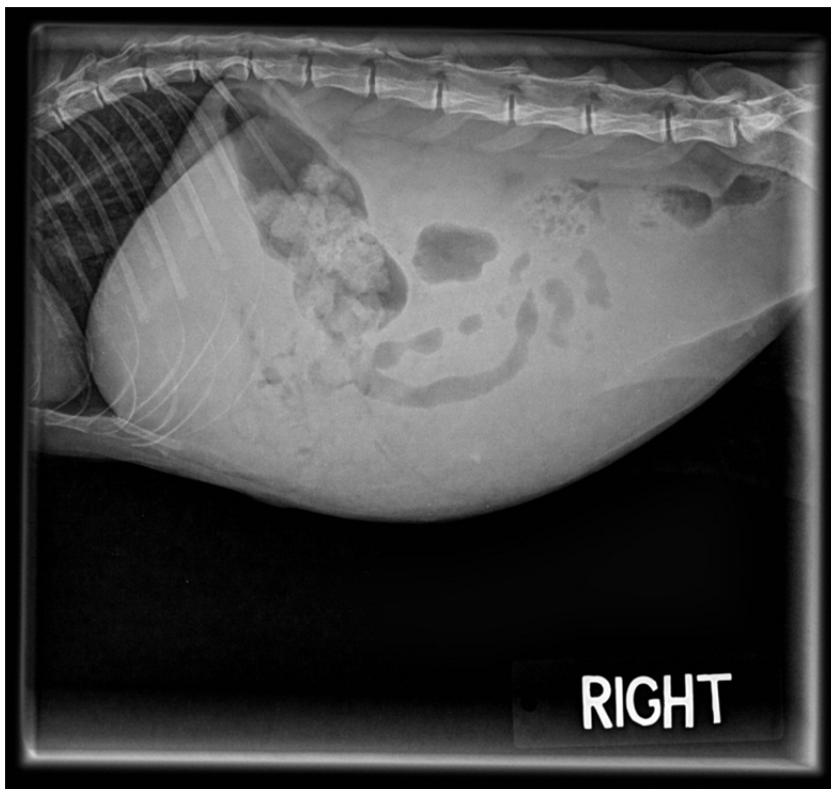


Figure 3- Right Lateral Abdomen

The abdominal body wall is pendulous in appearance. There is poor serosal detail. Gas is present in the stomach and some gastrointestinal loops. Differentials for poor serosal detail is peritoneal effusion (exudate, transudate, hemorrhage, urine).

Ultrasound – An abdominal ultrasound was performed.



Figure 4 - Left Kidney with Anechoic Fluid



Figure 5 - Comparison of Left Anechoic Kidney and Normal Right Kidney



Figure 6 - Left Kidney with Anechoic Fluid



Figure 7 – Fetus Surrounded by Anechoic Fluid

A large fluid filled lobular sac with a renal shape was seen in the region of the left kidney. The sac didn't show any normal kidney parenchyma. The fluid in the sac was anechoic and contained suspended echogenic foci. The right kidney was unremarkable. There was minimal anechoic free effusion in the abdomen. There were multiple (3-4) complete feti in an anechoic fluid filled uterus. The feti had no heart beats or fetal movement during the ultrasound. Intestines appeared to be displaced cranially and to the right due to the enlarged uterus.

Dx – Pregnant with non-viable feti (approx. 3-4), left kidney hydronphrosis, pyrexia

Tx – Urasyn 60mg IV TID and LRS 12ml/hr with 16mEq KCl added. Overihistorectomy and removal of the left kidney with hydronephrosis.

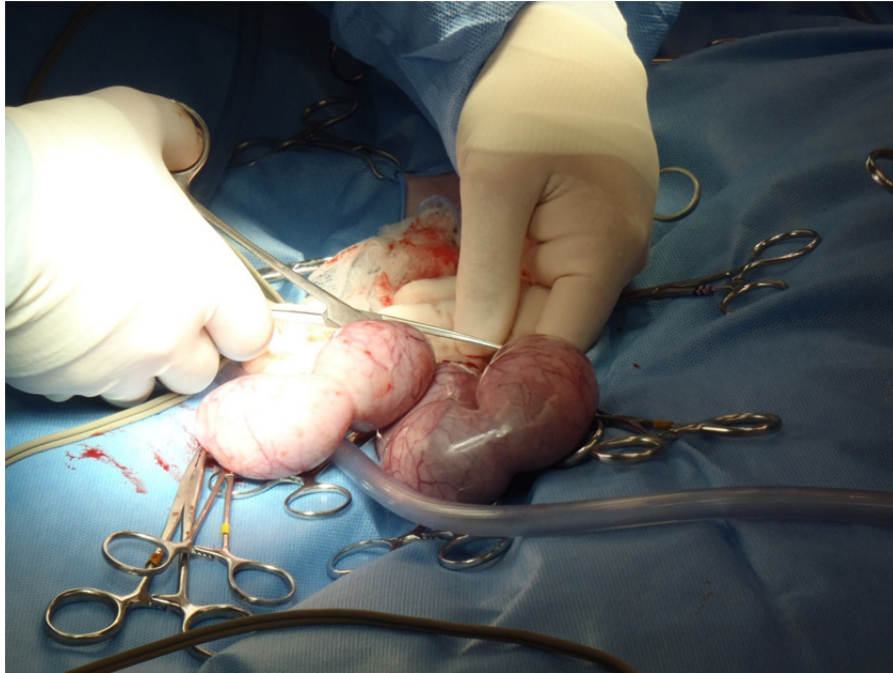


Figure 8 - OVH Procedure



Figure 9 - Uterus with non-viable feti

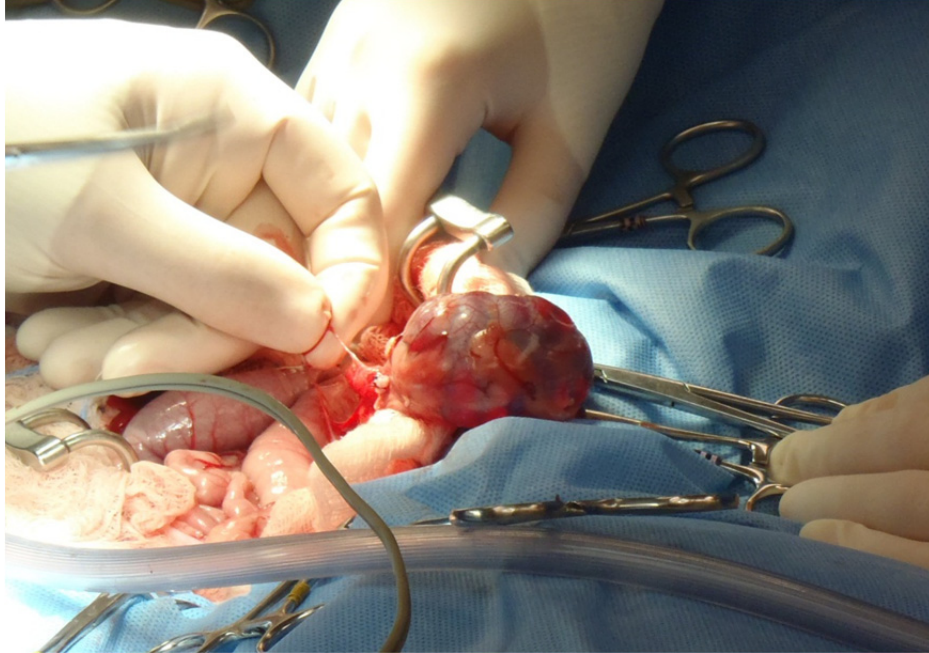


Figure 10 - Left Kidney Exteriorized Durring Sx

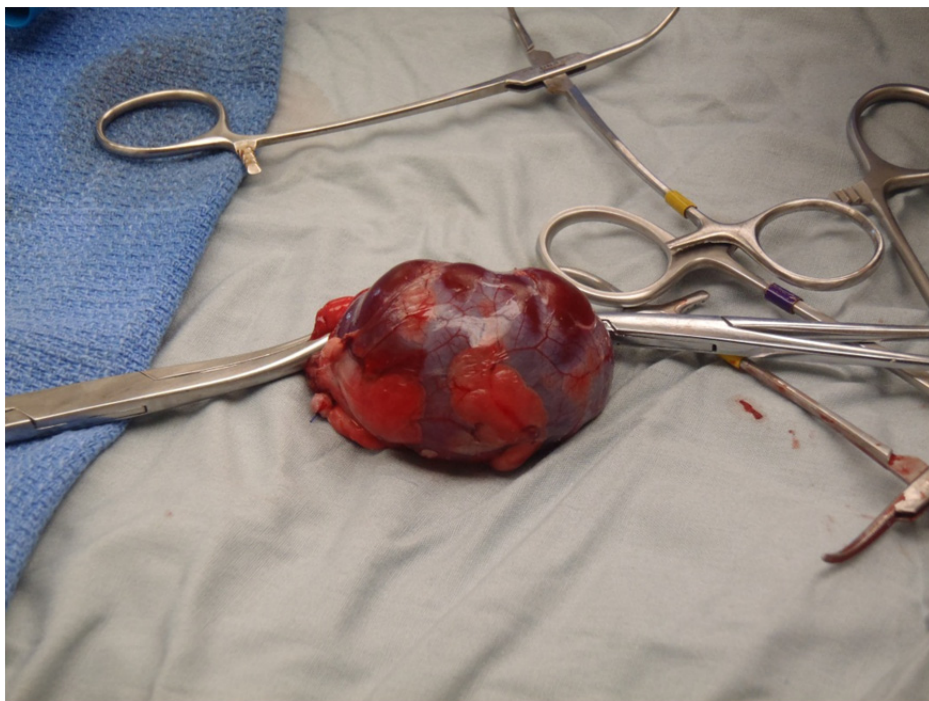


Figure 11 - Left Kidney Removed

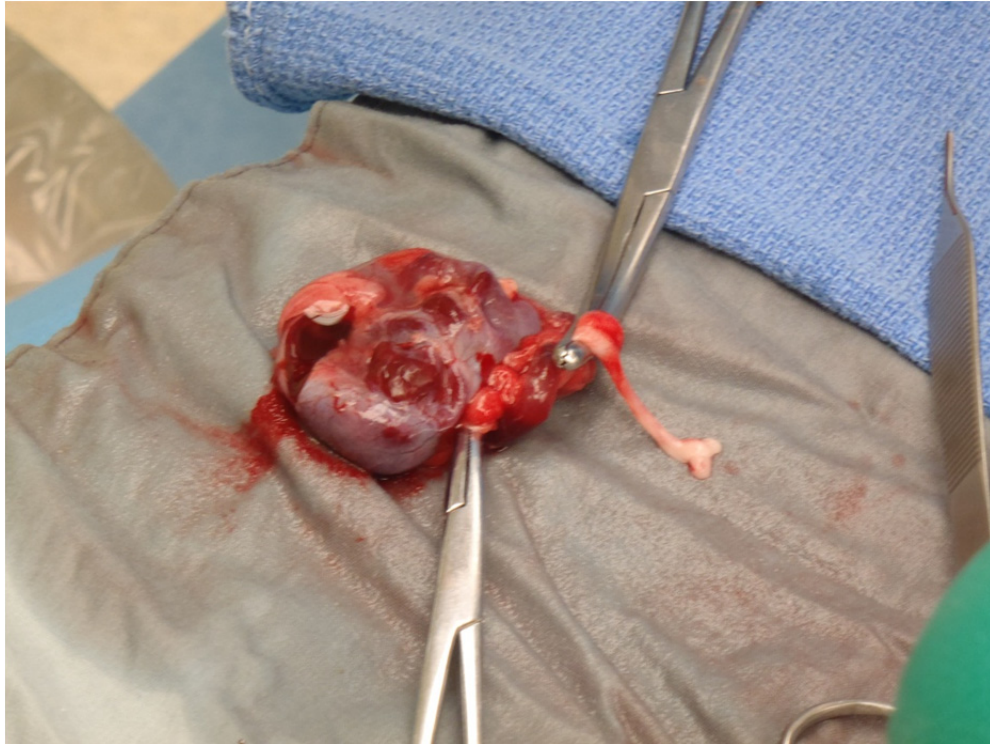


Figure 12 - Left Fluid Filled Kidney Incised

Post Surgery Diagnostics – An aerobic and anerobic culture was done on both the uterus and left kidney. Both samples had no bacterial growth.

Histopathology of the uterus and left kidney was performed.

The uterus showed minimal inflammation making bacterial infection less likely. The uterus samples also showed diffuse hyperplasia of the uterine crypts (some with sloughed karyorrhetic and pyknotic cells, but most were empty). In the lumen of the uterus samples there was multifocal necrosis with large numbers of karyorrhetic cells and protein. The necrosis appeared to only be affecting the fetal membranes and not the material tissues. Only a few foci had caused necrosis of maternal tissue. The placental vessels contained multifocal minneralization which is a normal finding. There was no evidence of lymphocytes or plasma cells associated with the uterus samples.

Cross sections of 2 of the fetuses were taken and showed that the tissues were very immature however didn't show signs of necrosis or inflammation.

When the kidney was incised for processing it was filled with fluid. The kidney wall was only 2-3 mm thick. The pelvis was extremely dilated and empty. The medulla was compressed but otherwise normal in appearance. The left kidney exhibited chronic inflammation that was found difusely along the cortex. There were multifocal, coalescing infiltrates of lymphocytes and

plasma cells found in the cortex along with a few macrophages. Many of the glomeruli were surrounded by fibrous bands of connective tissue. Inflammation of the peripelvic tissue and medulla was minimal or nonexistent.

Final histopathic diagnosis – gravid uterus with multifocal necrosis of fetal membranes, hydronephrosis of the left kidney, and interstitial nephritis, chronic lymphocytic left kidney.

Discussion

Hydronephrosis is a condition where there is distension of the renal pelvis and calices with urine due to some obstruction with atrophy of the kidney parenchyma.

Obstruction or impairment of urine outflow can be congenital (malformed ureter or kidney) or acquired (uroliths, ureter stricture, urethral stricture, neoplasia). Hydronephrosis can also be due to unknown causes. Acute obstruction can cause bilateral changes in the kidneys and survival time is short. In unilateral or partial obstruction cases the animal can survive longer and there will be more time for changes to occur in the affected kidney. Pressure builds up and causes atrophy of the renal parenchyma eventually causing cystic enlargement of the kidney. Hydroureter can also be seen if the obstruction is in the lower urinary tract system. The medulla papillae will be the first renal tissues lost and later on the renal cortex may atrophy over time. If this process continues the kidney will eventually turn into a non-functional sac filled with urine or serous fluid.

Clinical Signs – abdominal distension, anorexia, dehydration, diarrhea, fever, hematuria, internal abdominal mass, oliguria, anuria, abdominal pain, palpable enlarged kidney, polydipsia, polyuria, proteinuria, distended painful bladder, tachycardia, tenesmus, underweight, poor condition, thin, emaciated, unthrifty, vomiting, weight loss. Potassium levels can also be increased causing cardiac arrhythmias. In unilateral hydronephrosis there can be compensatory hypertrophy of the opposite kidney masking azotemia in bloodwork.

Diagnosis – history, clinical signs and physical exam can provide a clinical diagnosis of an obstruction. However an abdominal ultrasound or IV pyelogram can give you a more definite diagnosis.

Tx – in chronic unilateral cases a unilateral nephrectomy is often required. If the hydronephrosis is due to urethral obstruction such as uroliths, the obstruction should be removed. IV fluids will help improve renal function and correct hyperkalemia and electrolyte abnormalities. If severe hyperkalemia is present insulin and dextrose can be given to help drive potassium into cells.

This patient has an unknown cause of hydronephrosis as no abnormalities/blockages were seen in the urinary/renal system and bacterial causes were not evident.

Non-Viable Fetus – There are many causative agents for fetal death in cats. Some of the most common causes are as follows; Bacterial (*Escherichia coli*, *Streptococcus*, *Salmonella*), Drug Induced, plant toxins, Trauma/Stress, non-infectious cause of abortion – (malnutrition, metabolic disorders, stress of

transport), infectious causes - (feline panleukopenia, feline infectious peritonitis, feline leukemia virus infection, feline herpes virus, toxoplasma), Idiopathic.

Malnutrition and stress are most likely in this patient's case due to her poor body condition when she was found and the lack of infectious evidence in the uterine/fetal culture and histopathology.