

What Is Your Diagnosis?

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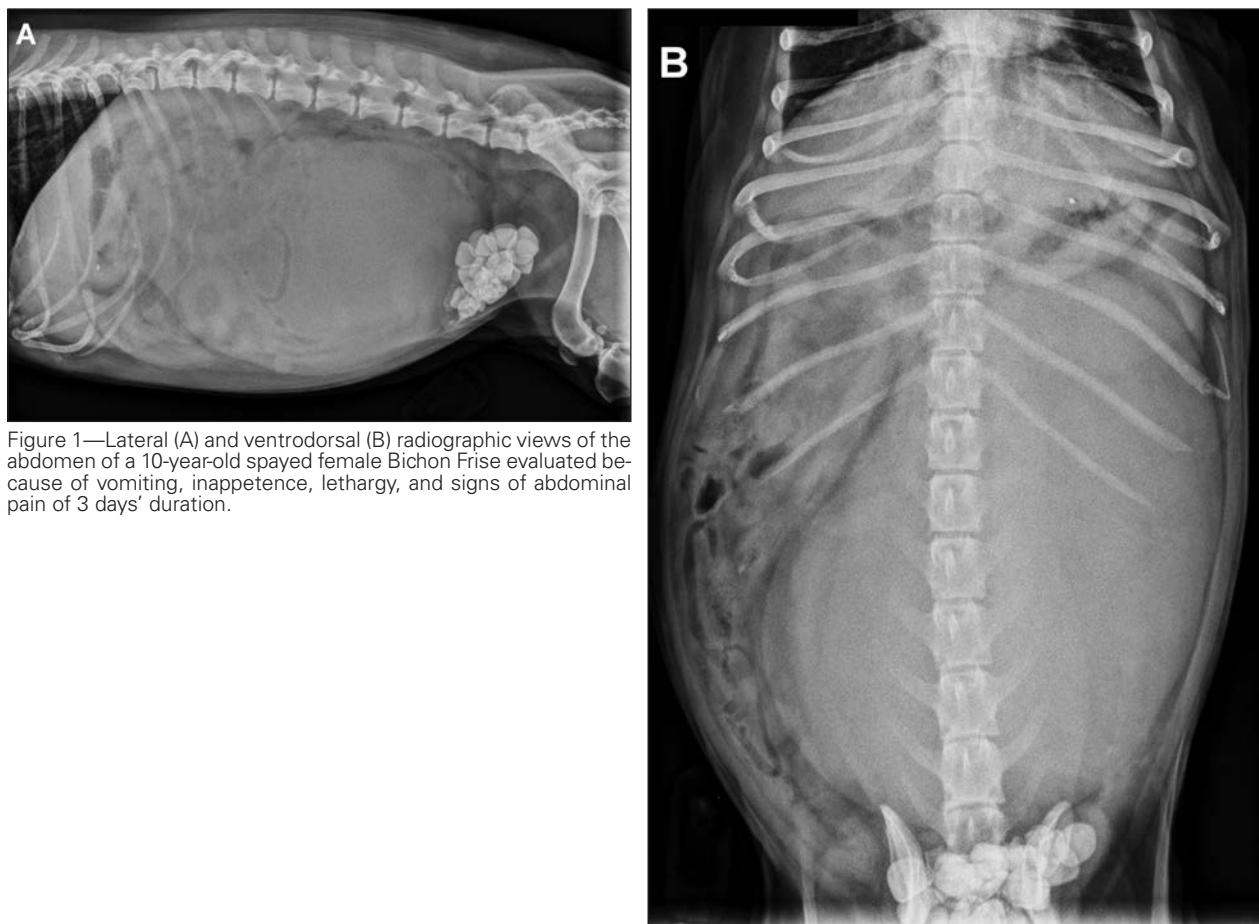


Figure 1—Lateral (A) and ventrodorsal (B) radiographic views of the abdomen of a 10-year-old spayed female Bichon Frise evaluated because of vomiting, inappetence, lethargy, and signs of abdominal pain of 3 days' duration.

History

A 10-year-old spayed female Bichon Frise was evaluated because of signs of abdominal pain, lethargy, inappetence, and vomiting of 3 days' duration. On physical examination, the dog was quiet and alert, with a distended abdomen and signs of abdominal pain on palpation. Results of a CBC and serum biochemical analyses were within reference limits. A urinalysis revealed that the dog had hematuria, pyuria, bacteruria, and ammonium magnesium phosphate crystalluria. Abdominal radiographs were obtained (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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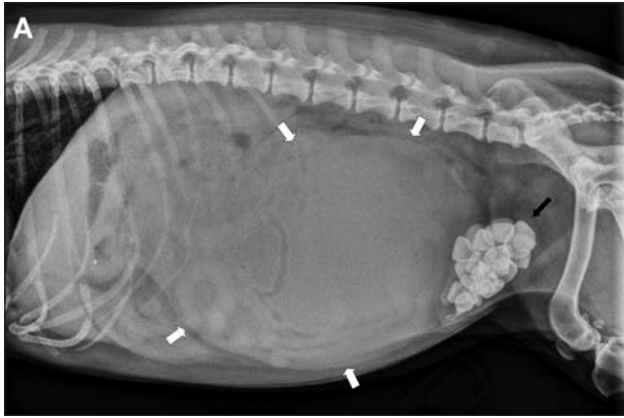


Figure 2—Same radiographic views as in Figure 1. Notice the left-sided abdominal mass (white arrows) of renal origin crossing the midline and extending into the caudal portion of the abdomen. The urinary bladder (black arrow) contains numerous cystic calculi.

Diagnostic Imaging Findings and Interpretation

A large (20 × 13 × 11.5-cm) mass is evident in the abdomen. The mass appears to originate from the left side but crosses the midline and extends into the caudal portion of the abdomen (Figure 2), causing marked displacement of the gastrointestinal tract. The urinary bladder contains numerous large calculi. Both kidneys are obscured by the mass. Differential diagnoses for the mass included left renomegaly secondary to hydronephrosis, neoplasia, and a perinephric pseudocyst. An omental neoplasm, abscess, and granuloma were other possible differential diagnoses.

Abdominal ultrasonography was performed. Extreme hydronephrosis of the left kidney with complete destruction of the cortical and medullary architecture was observed (Figure 3). The left ureter could not be identified because of the size of the left kidney. The right kidney and ureter had a normal ultrasonographic appearance. Numerous, large cystic calculi were confirmed within the urinary bladder. Differential diagnoses for the mass that were considered on the basis of the ultrasonographic findings included severe hydronephrosis secondary to ureteral or cystic urolithiasis, ureteral stricture, and ureteral neoplasia.

Treatment and Outcome

Abdominal exploratory surgery revealed a massively enlarged, fluid-filled left kidney occupying the entire left side of the abdomen. There was diffuse dilation of the left ureter, but the source of the obstruction could not be identified. The left kidney and ureter were released from the retroperitoneum, and a nephrectomy was performed. A cystotomy was also performed to remove the cystic calculi. The urinary bladder mucosa appeared grossly normal. The dog recovered from surgery without complication.

Results of aerobic bacteriologic culture of urine were negative, and stone analysis confirmed struvite urolithiasis. Gross and histologic examination of the left ureter and kidney revealed transitional cell carcinoma with secondary necrosis and chronic inflammation. Definitive renal structures could not be identified, likely as a result of advanced hydronephrosis.

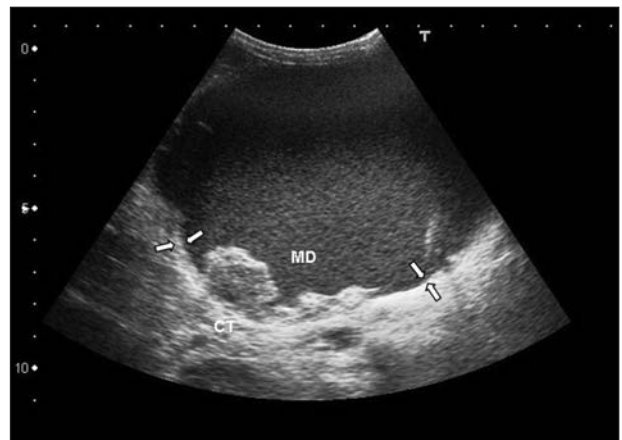
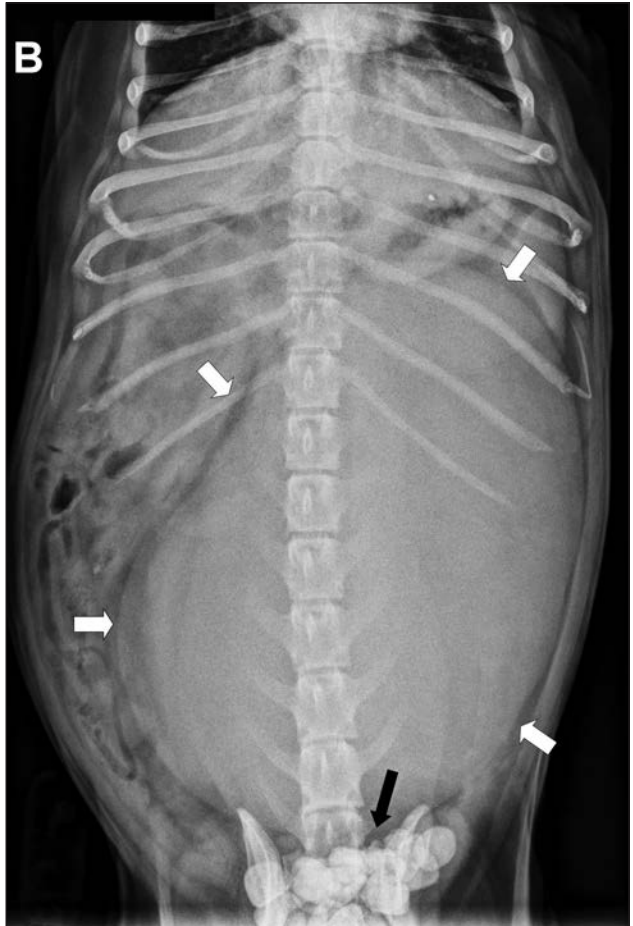


Figure 3—Transverse ultrasonographic image of the left kidney of the same dog as in Figure 1. Notice the severely dilated renal pelvis. The arrows demarcate the outwardly compressed renal cortex (CT) and medulla (MD) secondary to extreme hydronephrosis.

Following surgery, a several month course of adjuvant chemotherapy was administered, with no apparent recurrence of gross disease. Seven months later, the patient was euthanized because of an acute onset of neu-

rologic signs. At the client's request, neither advanced imaging studies nor necropsy was performed.

Comments

Transitional cell carcinoma is the most common neoplasm affecting the urinary tract in dogs.¹ The condition typically affects the urinary bladder or urethra, and primary renal and ureteral transitional cell carcinomas are less commonly reported (In 1 study,² 9/49 dogs had primary renal carcinoma). Hydronephrosis is defined as dilation of the renal pelvis caused by an obstruction of urine outflow from the kidney, resulting in progressive atrophy of the renal parenchyma.^{3,4} The obstruction may be unilateral or bilateral and may occur in either the upper or lower urinary tract. Ureteral obstructions are the most common cause of hydronephrosis in dogs and cats and are often due to ureterolithiasis, neoplasia, inflammation, fibrosis, stenosis, stricture, foreign bodies, or blood clots.⁵ Medical and surgical management of dogs and cats with ureteral obstruction has been described, and prompt recognition and relief of the obstruction is necessary for preservation of renal structure and function. The prognosis for recovery of renal function is ultimately dependent on the severity, degree, and duration of the obstruction.⁵

As seen in the case described in the present report, when the ureteral obstruction is unilateral, signs of obstructive uropathy may not be readily apparent and hydronephrosis may become so advanced that all function of the affected kidney is lost and only a fluid-filled sac remains.^{3,4} Abdominal radiography was useful for identifying a mass effect and a possible cause of the abdominal distension in this dog, and ultrasonography allowed for further characterization of the mass and other abdominal structures. On the basis of the diagnostic imaging findings, surgical exploration of the abdomen was warranted and facilitated identification of the source of the ureteral obstruction.

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