



Reimagining the office visit for every urinary tract disorder using POCUS.

A Case Study by:

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Key Points

- Abnormalities involving the urinary tract are a common presenting complaint in dogs and cats.
- Using point of care ultrasound (POCUS) at every urinary tract related visit can inform the diagnosis and treatment recommendations and may lead to better outcomes.
- Misdiagnosis of urinary tract disease can lead to longer courses of treatment, inappropriate use of antimicrobials, greater expense and frustration to the owner, and lack of confidence in the veterinarian.
- The use of handheld, portable ultrasound units makes this approach to the urinary disorder office visit readily accessible and more practical.

Abnormalities involving the urinary tract are a common presenting complaint in dogs and cats. Clients may notice a change in a pet's urine color or odor, or typical urinary habits. Changes in frequency or urine volume, straining or appearing uncomfortable, and inappropriate location of urination are common presenting complaints leading to a visit to a small animal veterinary clinic.¹ Adding a focused ultrasound scan to the diagnostic workup may improve patient outcomes and client satisfaction, while practicing progressive best medicine.

Point-of-care ultrasound (POCUS) evaluation of the bladder is appropriate for all of these patients. Traditionally, a complete history and physical exam findings have directed the diagnostic workup and treatment. Urinalysis is commonly recommended, together with a CBC and blood chemistry, depending on the patient's age and signalment. Radiographs or ultrasound is also frequently recommended.² However, imaging is often postponed. Radiographs can be expensive and time consuming, possibly requiring sedation and the attention of multiple technicians. Radiation safety is also a consideration for veterinary staff.³ Ultrasound is not always readily available. When using larger, hospital-based ultrasound machines, it can be challenging to maneuver the equipment into the exam room for a simple, brief bladder evaluation. Therefore, this simple diagnostic tool is often reserved only for cystocentesis to collect a sterile urine sample for culture and sensitivity in the treatment area of the clinic.

POCUS enables the clinician to gather valuable information in a non-invasive way in the presence of the client in the exam room. In addition to urinary tract infection there are other etiologies, some non-infectious, that can cause similar clinical signs.⁴ Bladder stones, crystals in the urine, chronic cystitis, and neoplasia may present with the same clinical signs. The gold standard for a suspected urinary tract infection involves urine culture and sensitivity⁵, however, a trial of empirical antibiotics is sometimes implemented as a first line therapy. There may be transient improvement of clinical signs with this approach. However, if infection is secondary to an underlying disorder, the clinical improvement will be short lived, and the patient and the owner will have endured the unnecessary stress of medication administration, undiagnosed primary disease, and increased cost associated with repeat visits to the veterinarian's office. The addition of a POCUS evaluation of the bladder can potentially avoid this.

A scan of the bladder with POCUS enables the veterinarian to assess the bladder for volume, bladder wall thickness or abnormalities (potentially consistent with neoplasia), bladder stones, and diseases of associated structures. If desired, the clinician can also evaluate the ureters and kidneys, the prostate in the male dog, and the uterus or uterine stump in the spayed female patient. Identifying abnormalities in the aforementioned areas can lead to an earlier, more accurate diagnosis, an appropriate treatment plan, and a more positive clinical outcome. An additional benefit of POCUS in urinary disorder cases includes ruling out neoplasia before the traditional "blind stick" cystocentesis technique is used. Ultrasound identification of a possible cancerous lesion may prevent seeding of the needle tract and abdominal wall with cancerous cells.⁶ While relatively rare (2% of all canine cancers, very rare in the cat), the risk does exist in the case of transitional cell carcinoma.

Low cost, durable, portable, easy to use; POCUS equipment gives veterinarians the opportunity to rule out a myriad of underlying, non-infectious disorders of the urinary tract, allowing more accurate and confident diagnoses and treatments for our patients. This simple diagnostic addition to the work up of any patient presenting for urinary tract signs may lead to better clinical outcomes for the pet, the pet owner, and the veterinarian.

1. <https://www.petinsurance.com/healthzone/pet-health/health-conditions/top-10-reasons-pets-visit-vets/>

2. <https://pets.webmd.com/dogs/guide/lower-urinary-tract-problems-infections-dogs>

3. <https://www.idexx.com/en/veterinary/diagnostic-imaging-telemedicine-consultants/radiation-safety-center/>

4. <https://www.vet.upenn.edu/veterinary-hospitals/ryan-veterinary-hospital/services/advanced-urinary-care/urinary-care-services/common-urollogical-ailments>

5. <https://pubmed.ncbi.nlm.nih.gov/15223214/>

6. https://www.mspca.org/angell_services/transitional-cell-carcinoma-in-dogs/

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