Urinary Tract Endoscopy of Horses

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The purpose of this presentation is to demonstrate the normal endoscopic anatomy of the urogenital tract of horses and the techniques used in its evaluation. A second purpose is to emphasize the ease of use of these methods. Author’s address: Idaho Equine Hospital, 16080 Equine Dr., Nampa, ID 83687. © 1998 AAEP.

1. Introduction
Urinary tract endoscopy is useful in the identification of morphologic changes associated with urinary tract dysfunction. The purpose of this study is to demonstrate the normal endoscopic anatomy of the urogenital tract, techniques in its evaluation, and clinical casematerial. In addition, the study emphasizes the ease of use of these methods, the minimal equipment required, and the utility of the procedures. A videotape and slide format are used. Case examples of pertinent disease conditions are presented to demonstrate morphologic abnormalities and to illustrate methods. Cases illustrate the use of these techniques in the evaluation of dysuria, pyuria, and hematuria. Techniques presented include catheterization and sampling of the urethra and seminal vesicles.

2. Methods
A. Equipment and Preparation
Any flexible fiber-optic or videoendoscope that is of a diameter that can pass into the urethra and is 100 cm long can be used for a complete examination. Equipment with alternative specifications can be used but may limit the examination. The endoscope and the objective water-flushing system should be cleaned with a bacteriocidal method, and sterile water should be used as a flushing medium.

B. Restraint and Patient Preparation
In most cases this procedure can be accomplished in a standing, sedated horse. Stocks are helpful, but they are not necessary. I recommend that at least three people be present to accomplish this procedure. If stocks are not available, then more sedation, or individuals, may be necessary for safe restraint. One person should handle the horse’s head and twitch (if necessary), a second should handle the penis and insert the endoscope, and the third would be the observer. The observer is often in a precarious position when this procedure is performed, but he or she must also concentrate on the endoscopic examination. The other two individuals should be aware of, and act on, unsafe situations, such as the observer moving into a dangerous position, a dangerous change in the attitude of the horse, and so on. Tranquilization to effect with intravenous xylazine (0.2 mg/kg) or detomidine (20 µg/kg) is often sufficient. In males, the addition of acetylpromazine (0.06 mg/kg) may be necessary for extension of the penis. The vulva and penis should be cleaned with a sanitizing soap and completely rinsed with sterile water.
water or saline to reduce bacterial or chemical contamination.

C. Endoscope Insertion
Protectant gloves should be worn. I use sterile surgical gloves for this procedure. The endoscope should be gently inserted into the urethra. The penis can be held with a clean gauze inserted between the hand and the penis.

3. Endoscopic Anatomy and Evaluation
A. Male Urethra
The urethral mucosa is pale and contains numerous longitudinal folds. Its appearance and the technique for its evaluation are similar to those of the esophagus. However, a complete examination of the urethra should be performed early, since irritation associated with the endoscope position soon causes hyperemia. With air distention, the underlying cavernous tissue becomes evident and appears as multiple linear dark plaques.

B. Urinary Bladder
When the bladder is first entered, the scope tip is often emersed in urine. Air distention is often necessary for a complete examination. The bladder mucosa is pale, beige to pink in color, rough, and has prominent vasculature. Lack of prominent vasculature is considered abnormal. A urachal remnant is present as a small diverticulum at the cranial extent of the bladder wall. The ureteral orifices should be observed, for several seconds, for evidence of pulsatile urine flow. These orifices can be found in the caudodorsal aspect.

4. Clinical Case Presentation and Discussion
Information regarding eight clinical cases is given as follows.

1. Chief complaint: There is mild abdominal pain, frequent and painful urination, and the urine is dark red.
   Signalment: Adult mare
   Cystoscopy: Deep dorsal linear hemorrhage, blood colored urine
   Diagnosis: Cystitis

2. Chief complaint: There is mild abdominal pain, frequent and painful urination, and the urine is dark red.
   Signalment: Adult mare
   Cystoscopy: 15-cm cystic calculus, extensive erosions and ulceration
   Diagnosis: Cystic calculus and cystitis

3. Chief complaint: There is poor growth, mild abdominal pain, and the urine is dark red. Bilateral linear concretions are found dorsal to the bladder on rectal palpation.
   Signalment: 8-month-old colt
   Cystoscopy: Rectal palpation and attempted extraction of concretions failed

4. Chief complaint: There is chronic urine dribbling.
   Signalment: 14-year-old broodmare
   Cystoscopy: Small scarred bladder
   Diagnosis: Chronic cystitis

5. Chief complaint: There is chronic weight loss.
   Signalment: 8-year-old mare
   Cystoscopy: Sampling of left and right ureter
   Diagnosis: Unilateral pyelonephritis

6. Chief complaint: There is chronic, intermittent hematuria.
   Signalment: 7-year-old gelding
   Cystoscopy: Proximal erosion
   Diagnosis: Focal urethritis

7. The endoscope retroflexed on itself.

8. Chief complaint: There is mild abdominal pain and distention.
   Signalment: 12-year-old gelding
   Cystoscopy: Urethral calculus
   Diagnosis: Urethral calculus and ruptured bladder

Additional Reading