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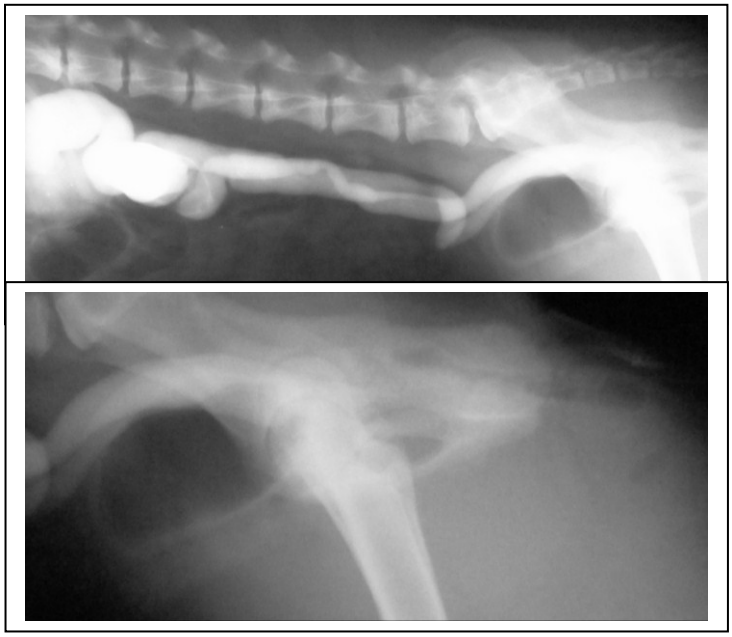
Diagnostics and Treatment for Urinary Incontinence

Urinary incontinence can be a big problem for dogs and their owners. It can occur either as a congenital problem, after a spay/neuter, or later in life when the animal ages. Differential diagnoses include ectopic ureter (please see our educational library to learn more about urinary surgery and this condition on the educational library of www.vsoak.com) psychogenic incontinence, metabolic disorder (diabetes insipidus), urachal diverticulum, internal sphincter hypotonus, and neurogenic incontinence. Medical therapy and basic diagnostics at the regular veterinarian are done first during the initial work-up. Diagnostic work up for these cases consists of urinalysis, ultrasound, bloodwork, a contrast study (pyelogram – see step I of diagnostics below), and cystourethroscopy (evaluation of the bladder and urethra using a small camera – see step II). If the diagnosis of bilateral ectopic ureters is made, staged re-implantation is recommended (surgery on one side is performed first, followed by surgery on the other side once healing has occurred at the site of first surgery, usually several weeks after the first surgery). If not successful, placement of an artificial urethral sphincter may have to be considered – see step III). The images below, obtained from several patients, provide some insight on diagnostics and treatment available in our clinic.

Diagnostics - Step 1: intravenous pyelogram:



Intravenous pyelogram (contrast study) showing severe bilateral hydroureter and mild hydronephrosis as well as bilateral ectopic ureter. These radiographs were taken 35min after intravenous administration of contrast agent. In a normal dog, the urinary bladder would be filled with contrast material. In this dog, the urinary bladder is filled with air. This pneumocystoram was created prior to administration of contrast agent to increase the contrast between ureters and urinary bladder.

Diagnostics- Step II: fluoroscopically guided cystourethroscopy: See next page

Cystourethroscopy. Dr. Dirsko J.F. von Pfeil, Veterinary Specialists of Alaska, P.C.

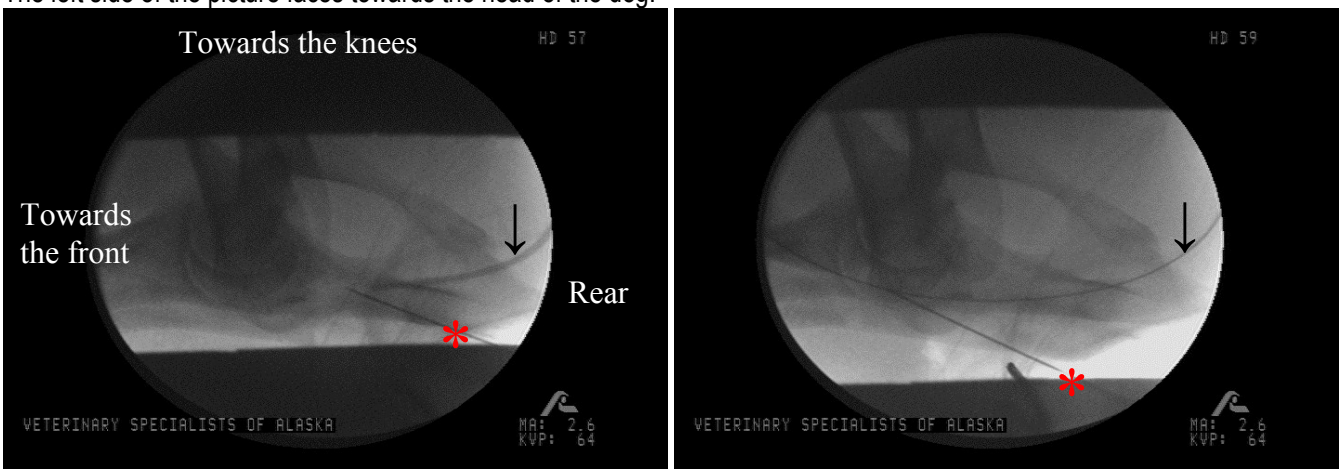
Diagnostics- Step II: fluoroscopically guided cystourethroscopy:

Patient positioning.

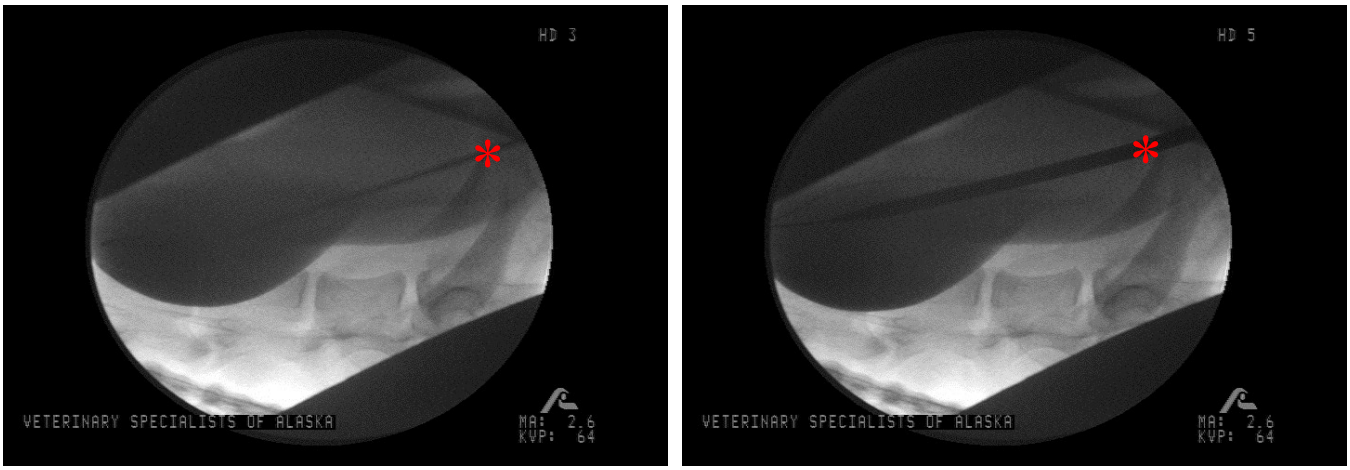
Initial approach – overview.

Fluoroscopy images:

Note: Patient is positioned in his back. The legs are facing up. The right side of the picture is equal to the rear end of the dog. The left side of the picture faces towards the head of the dog.



Percutaneous approach: the curved black line (arrow) is contrast within urethral lumen (left) and wire (right). Approach needle arrives from the left lower corner of the image (asterix).



Small (left) and large (right) vessel dilators (asterix), used to increase urethral lumen size (8-16 French). The dark round structure is the urinary bladder, filled with contrast medium for better visualization.

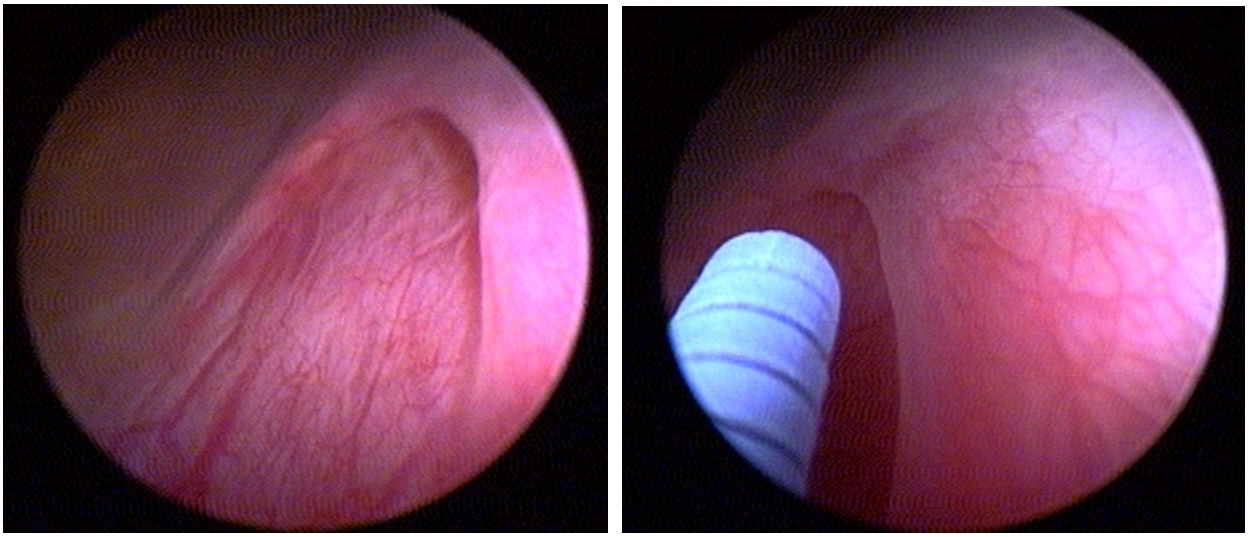
Probing of the left ureter (small wire extending from the cystoscope).

Cystoscope within the pelvic urethra at the level of the prostate.

Intraoperative images:

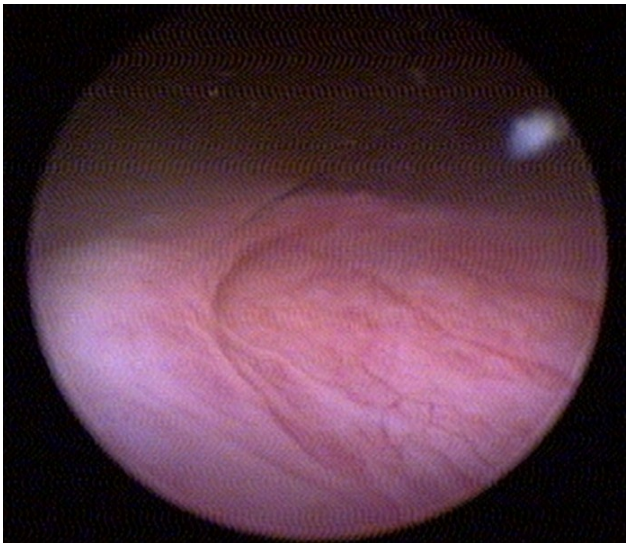
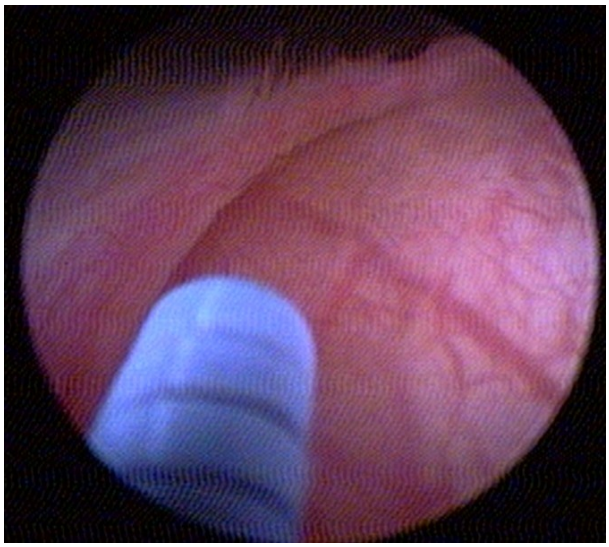
Initial percutaneous approach.

Placement of the cystoscope through a specific sheath.

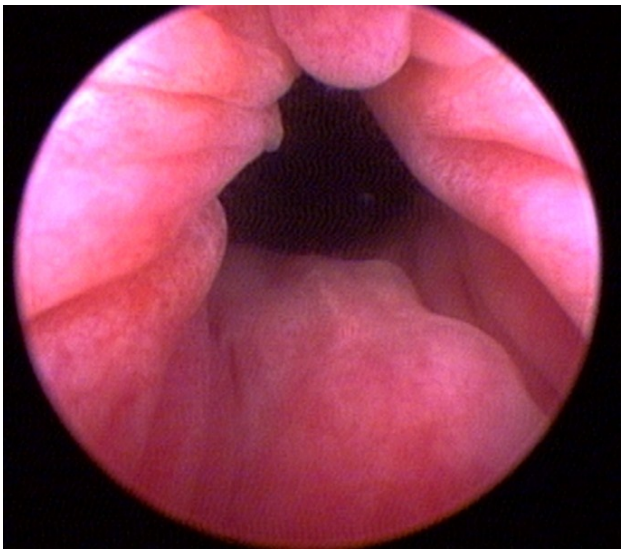


Left ureteral opening in normal location within the urinary bladder. The lumen was probed using a thin wire (blue pointed tip in left picture). The wire was followed under fluoroscopic guidance to ensure correct anatomy of the ureter.

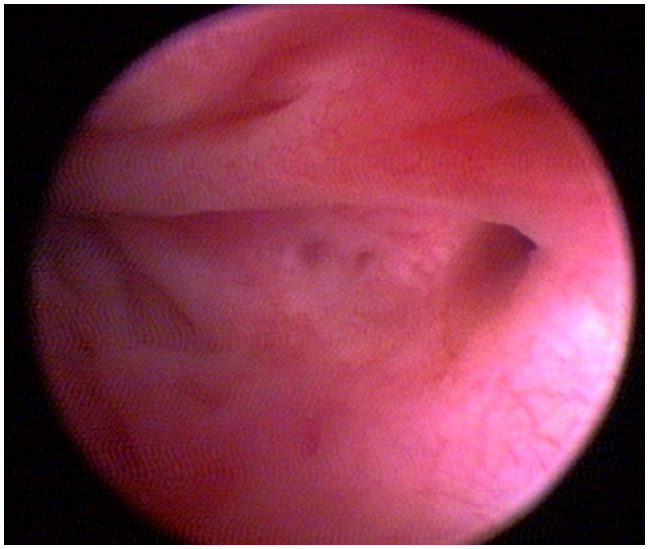
Cystourethroscopy. Dr. Dirsko J.F. von Pfeil, Veterinary Specialists of Alaska, P.C.

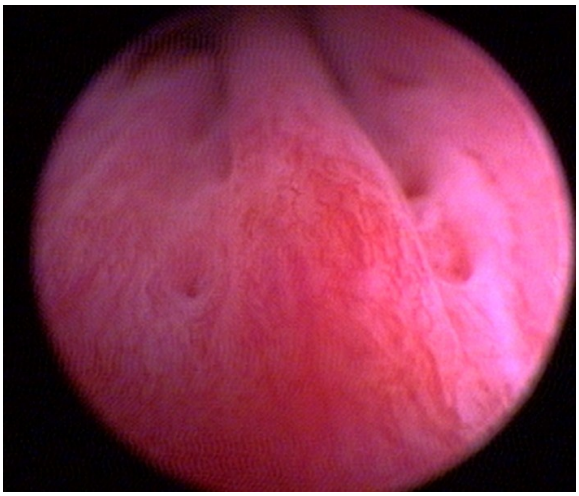
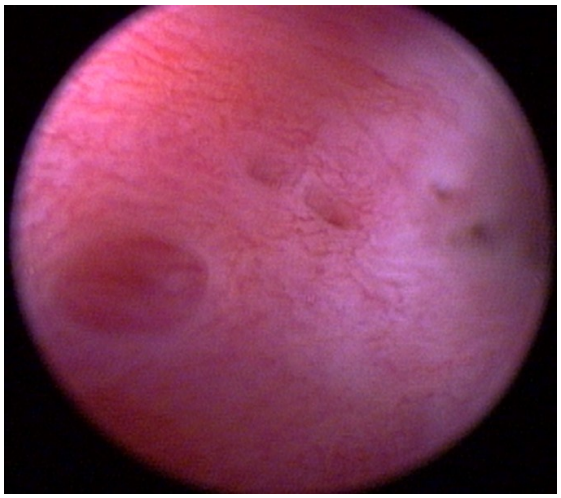
Right ureter opening. Same as on the left (see above).



Urinary bladder sphincter/opening towards bladder.



Multiple openings around the entire pelvic urethra

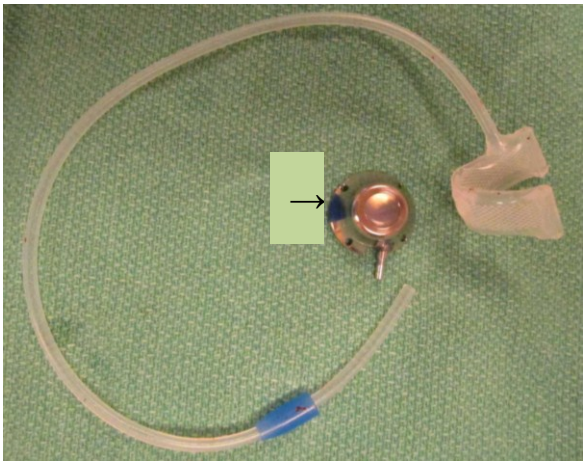
consistent with openings from the prostatic gland (last three pictures of this series).

Also view the movie on this procedure.

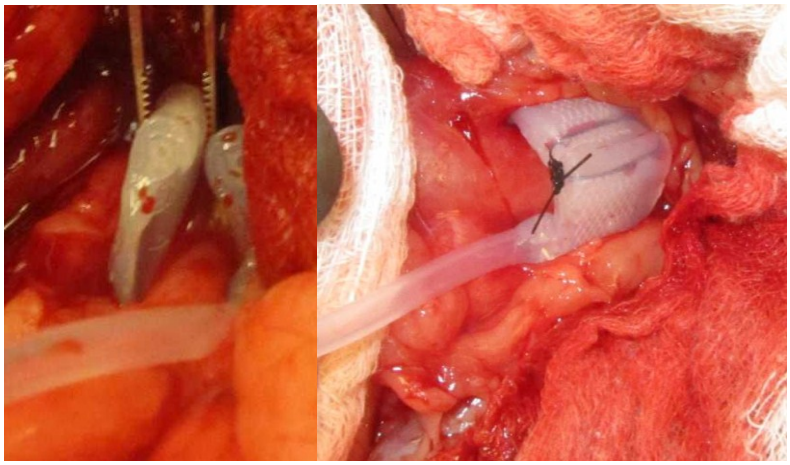
Artificial urethral sphincter (AUS) placement. Dr. Dirsko J.F. von Pfeil, Veterinary Specialists of Alaska, P.C.

Treatment: artificial urethral sphincter (AUS) placement:

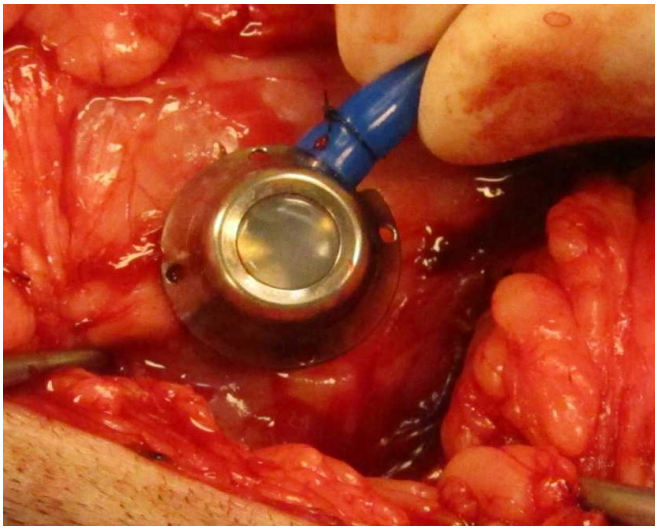
The value of cystourethroscopy becomes apparent if there is no evidence of an ectopic ureter and there is no need for re-implantation of the ureters. Instead, the next recommended step is placement of an artificial urethral sphincter (AUS). AUS placement is currently it is the gold-standard to treat among other conditions urinary sphincter mechanism incontinence (USMI). In the most recent study on outcome of AUS surgery (Reeves et al. VetSurg 2013), causes of incontinence included urethral sphincter mechanism incompetence (n = 18), continued incontinence after ectopic ureter repair (6), and pelvic bladder (3). Surgery was performed without major complications in 25 dogs; 2 developed partial urethral obstruction after 5 and 9 months. At a follow-up of 12.5 (6–19) months, continence scores were significantly improved ($P < .0001$) between the preoperative period and last follow-up (from 2-9, [scale 0-10]). AUS implantation was successful in restoring continence in male and female dogs with both congenital and acquired urinary incontinence. In addition to these reported cases, several hundreds have been implanted in numerous institutions and provided good outcome.

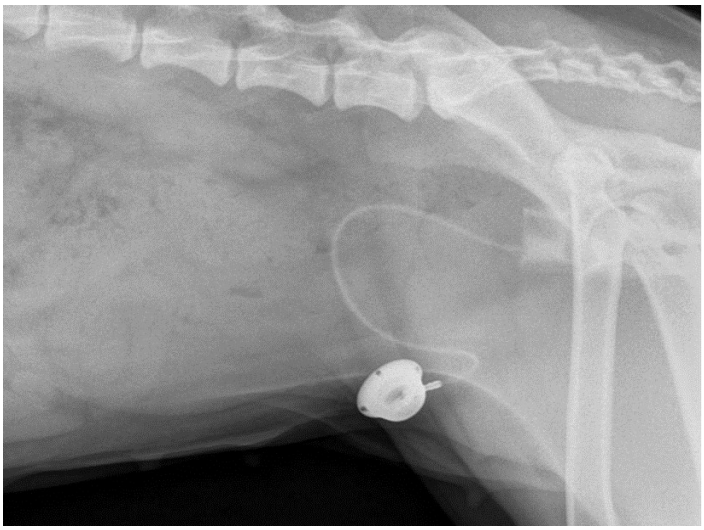


AUS details: cuff on tubing. Injection portal (arrow).



Placement of AUS around the urethra.





Placement of injection port (left) and AUS contrast picture (right; courtesy Tom Coletti)

Note: with any case presenting with urinary incontinence, diagnostics and treatment can be time consuming, expensive and a 100% guarantee for successful outcome with medical treatment or surgery cannot be provided.

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