

# Placement of an indwelling urinary catheter in female dogs

Bernie Hansen DVM MS  
North Carolina State University – College of Veterinary Medicine

## Materials Needed

2% lidocaine for injection in a 1-3 ml slip-Luer syringe, no needle  
Clippers  
Clean exam gloves  
Cotton balls on a paper tray  
    ½ soaked with antiseptic soap  
    ½ soaked with water  
2% lidocaine lubricant  
Diluted povidone-iodine solution in a 1-3 ml slip-Luer syringe, no needle  
1" waterproof white tape  
Speculum: Sterilized otoscope, anoscope, or other cone-shaped device  
Catheter: appropriate size Foley with stylet  
    Foley catheters come with a plastic stylet that may be too flimsy to allow placement in the dog. If desired, this stylet may be replaced with a length of orthopaedic wire that has been previously cut to an appropriate length and autoclaved.  
3-6 ml syringe filled with air  
Catheter adapter piece  
Collection system  
1-1.5" 22 gauge injection needle  
00 or 000 monofilament nylon suture  
Bandaging material to secure collection system

## Technique:

Clean exam gloves are worn throughout the procedure with a change of gloves when ready to insert the speculum

1. Gently advance the slip-Luer syringe (not a loc-Luer style) into the vestibule, pinch the labia around it to form a seal, and infuse a sufficient quantity of 2% lidocaine to fill the vestibule and vagina.

2. Clip the hair from the vulva and perineum. Use the antiseptic-soaked cotton balls to gently scrub the skin, labia, and vestibule; allow wet contact with the soap for 3 minutes.
3. Remove all soap with cotton balls soaked in water; use these cotton balls to remove all soap from the vestibule.



4. Using the same technique as used for the lidocaine, infuse the vagina with the povidone-iodine solution.



5. Generously lubricate the speculum with 2% lidocaine lubricant and open the sterile catheter. If using a separate stylet, lubricate it and insert it fully into the catheter.
6. The procedure is performed with the dog standing or in lateral recumbency, whichever she prefers. Do NOT drape the rear limbs over the edge of the exam table.

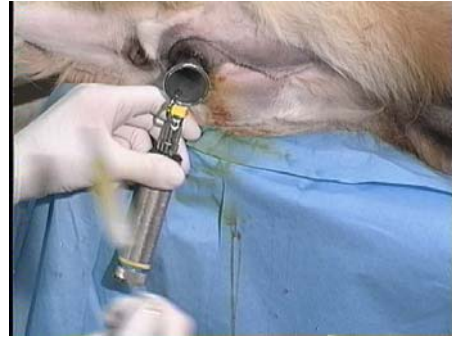


7. Grasp the ventral tip of the vulva and gently advance the speculum cone into the vestibule. Direct it dorsally toward the anus; once it reaches the brim of the pelvis (caudal aspect of the pubis), orient the speculum more horizontally and advance it as far cranial as practical and comfortable.



If the dog objects at any step, remove the speculum and wait 3-5 minutes while the 2% lidocaine lubricant provides extra anesthesia. If desired, infuse some additional lubricant into the vestibule while you wait.

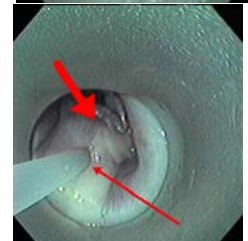
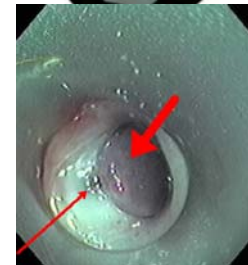
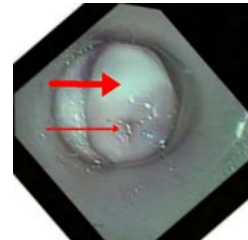
8. The goal with speculum placement is to advance it beyond the level of the urethral orifice and urethral papilla and then visualize these structures while slowly withdrawing the speculum. Once the speculum has been advanced into the pelvic canal, remove the stylet/obturator (if one is present) and turn on the light source.



9. Anatomy: THE ANATOMICAL LANDMARK TO ALWAYS KEEP IN MIND IS THE CAUDAL ASPECT OF THE PUBIS (BRIM OF THE PELVIS. The urethral papilla (thick arrows) and orifice (thin arrows) are found at or near the brim of the pelvis. Age, heat periods, and pregnancy all serve to

increase the size of the urethral papilla and to stretch the vaginal tissue so that the orifice is more caudal and, in some, ventral to the pubic bone. However, the orifice is almost always found within 1-2 cm of the caudal pubis. In dogs that have never had a heat period the papilla is small and flat and may be difficult to visualize, although it is generally easily palpated as a firm node of tissue. With heat periods and more especially with pregnancies the papilla becomes enlarged, in some dogs may be as large as your thumb and hang over the orifice, requiring you to push it laterally or cranially with the speculum in order to visualize the papilla. In dogs that have

never been bred, the hymen may be visible. This is a pleomorphic band (or bands) of tissue crossing the lumen of the vagina, usually just cranial to the urethra. It may appear as a single or multiple thin filaments of tissue, or a broad band that covers part or most of the lumen. If the speculum was advanced through the hymen and the hymen had covered most of the lumen, it will appear torn and bleeding. The urethral orifice should be plainly visible and will range in appearance from a vertical slit to a star-shape to a small round opening. It always resides caudal to the urethral papilla, and may be underneath it in a dog whose papilla is enlarged. It may appear flat, or may be slightly raised on a round or oval mound of tissue.



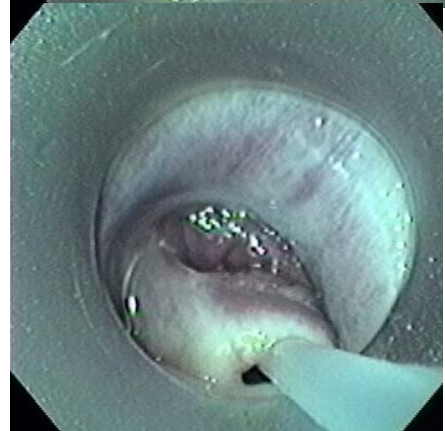
10. Using sterile technique, grasp the catheter near the connection end, preferably using the sterile plastic sleeve that Foley catheters are packaged inside. Advance the catheter into the speculum, taking care that it does not touch the nonsterile light source.



11. Advance the catheter into the urethral orifice (in these views I demonstrate with a male polypropylene catheter). Grasp it firmly so that enough pressure is put on the stylet that the catheter and stylet are advanced as a unit. NEVER advance the catheter by pushing on the stylet alone, as this may push it through the tip of the catheter and cause harm. In the normal dog the catheter should advance with little resistance. Once the tip is beyond the anterior edge of the pubic bone it is inside the neck of the bladder. In dogs with empty bladders it should be advanced no further.



12. The stylet is removed and urine flow is observed. If none is seen, one possible explanation is that you inadvertently missed the urethra and instead catheterized a fold of tissue within the vagina. To test this, try advancing the speculum cranially while observing the catheter within. If the catheter is in the urethra, the ventral aspect of the speculum cone will 'hang' on it and you can not advance the cone any further. If the catheter has not left the vaginal lumen, the cone can be advanced as far cranially as it will fit, and never 'hangs' on the catheter. In that case, you must attempt to catheterize the urethra again.





13. If urine flows, inflate the catheter balloon with air or sterile saline.



14. Remove the speculum. In large dogs the speculum should be large enough to allow the connection end of the Foley to pass through the lumen and allow complete removal of the speculum. If the speculum is small, the Foley will not pass through easily. When the speculum is just a little bit too small, one technique that allows removal is to fold the balloon valve forward, toward the tip of the catheter inside the dog, and force this into the speculum ahead of the catheter connection port. This reduces the diameter of the catheter material squeezed through the speculum at any one spot and may allow removal. If all attempts fail and the speculum cone can not be removed, leave it! Remove the light source (if one is attached) and plan on leaving the cone with the catheter, secured to the dog.



15. Attach the catheter adapter and collection system. For Foley catheters, the adapter is typically a flared adapter ('Christmas Tree' adapter) with a Luer fitting that will allow for connection to an IV administration set.



16. Make sure the Foley is inserted to the optimal depth by advancing or withdrawing it slightly. The balloon should be in the trigone area of the bladder. If inserted too far cranially you risk having it loop itself into a knot. If it is pulled too far caudally it may lodge in the neck of the bladder and cause pressure necrosis to the tissue there.

17. Dry the catheter where it exits the vulva and wrap a 1-2" piece of waterproof white tape in a 'butterfly' pattern around the shaft of the catheter.



18. If this tape gets wet or soiled it may lose its grip. Therefore, it is good practice to place another two strips of tape 2-6" long, longitudinally along the catheter shaft sandwiching it between the two strips. This tape 'sandwich' should begin at the cranial margin of the original tape butterfly, and be firmly pinched onto this tape and the catheter shaft.
19. Pass a 22 gauge, 1-1.5" injection needle through one wing of tape (and the overlying 'sandwich' tapes) through the perineal skin just dorsal to the vulva, then through the other wing of tape. Avoiding excess tension, complete a secure knot that snugs the tape against the vulva.
20. Secure the collection system tubing to the dog at either the tail or a rear leg, depending on anatomy and mobility. Make sure that a sufficient length of tubing is kept between this anchor site and the suture that it allows for full movement of the leg or tail without putting tension on the suture. NOT use white tape or other inelastic material to anchor directly to the tail or limb as this will form a tourniquet. Instead, use elastic tape (Elastikon™) or a heavily padded bandage with the catheter anchored to its surface with white tape.

