

## **SOP: Cystocentesis in Dogs and Cats**

These SOPs were developed by the Office of the University Veterinarian and reviewed by Virginia Tech IACUC to provide a reference and guidance to investigators during protocol preparation and IACUC reviewers during protocol review. They can be used as referenced descriptions for procedures on IACUC protocols. However, it is the sole responsibility of the Principal Investigator to ensure that the referenced SOPs adequately cover and accurately represent procedures to be undertaken in any research project. Any modification to procedure as described in the SOP must be outlined in each IACUC protocol application (e.g. if the Principal Investigator plans to use a needle size that is not referenced in the SOP, simply state that alteration in the IACUC protocol itself).

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**I. Procedure Summary & Goal**

- a. Performing cystocentesis with correct technique is an essential skill for the veterinary practitioner.
- b. Cystocentesis is widely used in small animals for:
  - i. Diagnosis
    - 1. Aseptic collection of urinary samples suitable for
      - a. Urinalysis
      - b. Culture
  - ii. Therapy
    - 1. Reduce volume in the urinary bladder to eliminate tension on the bladder wall and prevent over-distention injury from lower urinary tract obstructions.

**II. Personal Protective Equipment & Hygiene**

- a. Hands should be washed thoroughly or sanitized before and after cystocentesis.
- b. Personal protective equipment appropriate to the setting should be used.

**III. Supply List**

- a. Syringe(s), 3-12 mL
- b. Sterile hypodermic needle, 20-25 gauge, 5/8 to 1½ inch length

**IV. Detailed Procedure**

- a. *Position*
  - i. Choose optimal position based on the temperament and size of the patient
    - 1. *Standing*
      - a. Landmarks
        - i. Female
          - 1. Ventral midline between the caudal mammary glands or just lateral to the glands
        - ii. Male
          - 1. Reflect prepuce laterally away from ventral midline or insert needle lateral to midline,
      - b. Palpate the abdomen to identify, localize and immobilize the urinary bladder
    - 2. *Dorsal recumbency*
      - a. Landmarks
        - i. Female
          - 1. Ventral midline between the caudal two mammary glands
          - 2. Spray alcohol on ventral abdomen and where it “pools” is the location for needle entry
        - ii. Male
          - 1. Reflect prepuce laterally away from ventral midline,
      - b. Localize the bladder then immobilize it against the pelvic brim by pushing the bladder caudally
    - 3. *Lateral recumbency*
      - a. Landmarks

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- i. Female – ventral midline between the caudal two mammary glands or just lateral to the glands
- ii. Male – reflect prepuce laterally away from ventral midline or insert needle lateral to midline
- b. Localize the bladder then immobilize it with the non-dominant hand by lifting upwards with four fingers and using the thumb in front of the bladder to trap the bladder against the abdominal wall or to gently push the bladder caudally.

### b. *Sample Collection*

- i. Insert the sterile needle in a slightly caudal direction to maintain the needle in the bladder lumen as the bladder begins deflating from urine removal
  - ii. Aspirate urine gently from the lumen of the bladder while maintaining steady positioning of the needle
  - iii. Release any pressure on syringe barrel once adequate sample has been collected in the syringe, then withdraw the needle in the same path it was inserted, release immobilized bladder
  - iv. Twist needle off of the syringe, replace with a sterile needle and transfer urine aseptically to a sterile transport tube
  - v. Dispose of needles in a sharps container
- c. *Potential Complications* Perforation of other abdominal structures. Urinary tract infections which may require urine cultures and antibiotic therapy.
- i. Laceration or rupture of urinary bladder by faulty techniques may require diagnostic imaging to identify. Placement of a retention catheter or surgical correction may be required. Animals should be taken to the Veterinary Teaching Hospital for treatment

## V. **Potential Adverse Effects, Mitigation, or Treatment**

- a. Perforation of other abdominal structures, hemorrhage
- b. Urinary tract infections which may require urine cultures and antibiotic therapy.
- c. Placement of a retention catheter or surgical correction may be required.
- d. Animals should be taken to the Veterinary Teaching Hospital for treatment
- e. Avoidance Measures:
  - i. Instruction of technique indicates if there is insufficient urine palpated in bladder or the urinary bladder can not be palpated the procedure should be avoided; penetration of needle into bladder should always be in only one plane (deep or shallow) once penetration of abdomen occurs; presence of blood should result in cancellation of procedure

## VI. **Variations**

- a. Other small mammals (e.g., cats, ferrets)
  - i. Similar to dogs.
  - ii. Determine appropriate needle length from size of animal.
- b. Ultrasound-guided
  - i. If equipment available
  - ii. Animals with small bladders or intra-abdominal disease may require sample acquired using ultrasound guidance

**VII. Links to Multimedia Aids and References**

- a. Dog cystocentesis in dorsal recumbency:  
<http://www.youtube.com/watch?v=mrmEQxUh4YA>
- b. Cat cystocentesis in standing position: <http://www.youtube.com/watch?v=RVwFi4bKgFY>