

SOP: Fine Needle Aspiration 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. Collecting tissue samples for cytological analysis is a commonly performed diagnostic procedure in veterinary medicine.
- b. The procedure is simple, accurate, fast, and economical.
 - i. It is minimally invasive and does not typically require general anesthesia or sedation.
- c. Proper skill in collection and handling of tissue samples gathered via fine needle aspiration (FNA) is essential for all veterinary practitioners.

II. Personal Protective Equipment & Hygiene

- a. Wash hands thoroughly or sanitize prior to and after FNA
- b. Personal protective equipment appropriate to the setting should be used but is optional (sterile gloves, mask, drapes, etc. if in the operating room. Gloves outside of operating room).

III. Supply List

- a. Sterile hypodermic needle, 22-25 gauge, ¾ to 1½ inch length
- b. Syringe(s), 3-12ml
- c. Glass microscope slides

IV. Detailed Procedure

- a. Position
 - i. To collect cells from a lymph node or superficial mass via FNA, restrain the animal in an appropriate position allowing for adequate access to the sampling site.
 - ii. Isolate the desired lymph node in the non-dominant hand.
- b. Preparation of the site
 - i. No preparation is necessary in most cases but in immunocompromised animals, clip and prepare the site with chlorhexidine scrub or betadine scrub according to the Sterile Scrub SOP or wipe with alcohol.
- c. Sampling methods:
 - i. *Needle-on method for sample collection*
 1. Carefully introduce the needle with attached syringe into the lymph node.
 2. Apply negative pressure by withdrawing the syringe plunger.
 - a. This step may need to be repeated in a brisk fashion to gather a sufficient amount of sampling material.
 3. Partially withdraw the needle and redirect it into the lymph node, repeating the aspiration process.
 4. Release the negative pressure by allowing the syringe plunger to retract on its own.
 5. Withdraw the needle and syringe from the lymph node. Separate the needle from the syringe.
 - ii. *Needle-off method for sample collection*
 1. Introduce a hypodermic needle into the desired lymph node without a syringe attached.
 2. Partially withdraw needle and redirect into target in multiple directions (manipulate in a cutting motion radially throughout the lesion to ensure adequate sampling).
 3. Remove the needle from lymph node.
 - iii. *Both*

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1. Draw air into a syringe, attach the needle used for sampling, and expel the contents of the needle in one swift motion onto a ready microscope slide or slides.
2. Oppose the slides deposited tissue with another glass slide and with a smooth, gentle motion, guide the new slide across the sample, creating even distribution of cells on the slide.
3. Allow slides to air dry or first fix the slides with alcohol or another fixative and allow to air dry.
4. Stain slides (Diff-Quik or other) or submit to pathology unstained.
5. Dispose of the needle in a sharps container.

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

- a. Pain
 - i. Pain secondary to fine needle aspirates is typically tolerable.
 1. Most patients do not require pain medications for this procedure.
- b. Bleeding
 - i. Bleeding and bruising are the most common complications of FNA.
 1. Bleeding should decrease over time.
 2. Continue to monitor site until bleeding subsides.
- c. Infection
 - i. Infection is rare as sterility is maintained throughout the procedure.
- d. Avoidance measures:
 - i. Clean site if dirty
 - ii. Withdraw needle out of the mass but not out of the skin before re-directing
 - iii. Use small gauge needles
 - iv. Apply direct pressure to the site if bleeding occurs

VI. **Variations**

- a. Large samples can be embedded and used for histopathology or culture and sensitivity.
- b. Other small mammals (e.g., cats, ferrets)
 - i. Similar to dogs
 - ii. Determine appropriate needle length with regard to size of animal.
- c. Ultrasound guided FNA.
 - i. If equipment is available
 - ii. Cavitated lesions, multifocal lesions, very large or small lesions

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

- a. <http://veterinarymedicine.dvm360.com/vetmed/Medicine/Skills-Laboratory-How-to-make-a-high-quality-slide/ArticleStandard/Article/detail/773852?contextCategoryId=49858>