



Standard Operating Procedure: Upper GI Endoscopy in Dogs

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. Visualization and biopsy of the upper gastrointestinal (GI) tract is useful in the diagnosis of various GI diseases.
- b. Gaining the skills necessary for performing endoscopy will help the practitioner in diagnosing and/or treating gastrointestinal issues in their patients without performing abdominal surgery.
- c. Goal
 - i. To teach veterinary students or veterinarians how to properly perform upper GI endoscopy, and to recognize the normal endoscopic anatomy of the esophagus, stomach, and duodenum.
- d. In some laboratories experience in removing gastric foreign bodies will be provided.

II. Personal Protective Equipment & Hygiene

- a. Hands should be washed thoroughly or sanitized before and after the procedure.
- b. Personal protective equipment appropriate to the setting should be used.
- c. Exam gloves
- d. Lab or clinical coat or smock

III. Supply List

- a. UGI Endoscope/ processor / monitor
- b. Flexible biopsy forceps
- c. Multiple types of foreign body retrieval forceps
- d. Biopsy foam cassette
- e. Polyethylene tubing
- f. See referenced SOPs for additional required supplies

IV. Detailed Procedure

- a. Pre-Procedural Instructions
 - i. Fast the dogs for 12-24 hours prior to the procedure.
- b. Position
 - i. Left lateral recumbency
 - ii. Place the dogs on a cage pad with a warm water blanket beneath, and a Bair Hugger warmer on the top throughout the procedure.
- c. Endoscopy
 - i. Four to six students will have 10-15 minutes each to perform the endoscopy in one 2-hour lab.

1. Four to six additional students will each have 10-15 minutes to perform endoscopy in the next 2-hour lab.
 2. There will be one instructor per 1-2 dogs.
- ii. Sedate and anesthetize animals according to the Sedation and Anesthesia SOP on the day of the procedure.
- d. Pass the endoscope into the animal's mouth, down the esophagus, into the stomach, and finally into the duodenum.
 - i. To insure proper passage of the endoscope without traumatizing the mucosal tissue, use the directional controls of the endoscope to centralize it before advancing further.
 - ii. In order to pass the endoscope, the esophagus, stomach, and duodenum must be insufflated with air.
 - iii. If the stomach becomes too distended, the suction tool on the endoscope may be utilized to prevent an excess buildup of gastric pressure.
 - iv. Anatomic structures that may be visualized during Upper GI Endoscopy include the angularis incisura, the pylorus, and the cardia of the stomach.
 - e. Retroflexion
 - i. In order to visualize the cardia of the stomach, the endoscope must be "retroflexed" by turning the tip in a 180o direction using the proper directional control.
 - f. Post-Procedural Instructions
 - i. Evacuate the air from the stomach using the suction button.
 - ii. Straighten the endoscope and gently remove it from the animal.
 - iii. Routinely recover the animals from anesthesia according to the Sedation and Anesthesia SOP with heating pads as described above.
 - iv. Return the dogs to their runs when they can walk.
 - v. Feed the dogs 50% of their daily ration 4 hours post-recovery if they are judged to be awake and capable of safely eating.
 - vi. Feed as normal the day following the procedure.

V. Potential Adverse Effects, Mitigation, or Treatment

- a. Gastrointestinal perforation
 - i. This is a rare complication that is usually diagnosed during the procedure by distention of the abdomen after air has been removed from the stomach.
 - ii. Animals should be taken to the Veterinary Teaching Hospital for treatment or for euthanasia by pentobarbital overdose intravenously (IV) depending on the policies of the Multidisciplinary Laboratory (MDL), the Teaching and Research Animal Care Support Service (TRACSS) and the Institutional Animal Care and Use Committee (IACUC).

- b. Avoidance Measures
 - i. Only advance the endoscope when the lumen can be visualized.
 - ii. Seek guidance from laboratory instructors when in doubt.

VI. Variations

- a. Tissue Samples
 - i. Biopsy samples may be collected using flexible forceps.
 - 1. One or two samples may be taken by each student from the descending duodenum, pylorus, angularis incisura, greater curvature, and cardia.
 - ii. A duodenal aspiration sample may be collected by each student, by passing tubing through the endoscope's operating channel while the tip of the endoscope is within the duodenum.
 - iii. A gastric cytology specimen may be collected by each student by passing a sheathed cytology brush through the endoscope's operating channel while the endoscope's tip is in the gastric body.
 - iv. Foreign objects (cloth, metal or rubber washers, fish hooks without barbs, plastic wall anchors, etc.) may be placed into the stomach using the endoscope and then removed using various endoscopic forceps (rat tooth, Roth net, wire snare, 4-wire basket).
 - 1. After removal of all foreign bodies, they may be replaced within the stomach if time allows.

VII. Links to Multimedia Aids and References

- a. <http://www.youtube.com/watch?v=o4uInK5mK-A>
- b. <http://www.bearscampnewfs.com/health/Waltham%20Center/Atlas%20of%20Gastrointestinal%20Endoscopy%20in%20Dogs%20and%20Cats.pdf>