Esophagostomy Tubes: Placement and Pitfalls
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Indications
An esophagostomy tube (E-tube) is indicated for long term (> 1 week) in-hospital or home feeding of a dog or cat with an intact gag reflex. It is especially suitable for animals with orofacial trauma, when an NE tube is contraindicated, or for animals with gastric lesions that make a gastrostomy tube a less desirable option. As with gastrostomy tubes, esophagostomy tubes are often selected to provide durable enteral access even when the esophagus and oral cavity are normal. Often it is operator experience that dictates whether an esophagostomy or gastrostomy tube is placed for long-term nutritional support. As with nasoesophageal tubes, the tip of the tube is placed in the caudal esophagus. A short period of general anesthesia is required for placement.

Materials required
- Clippers and surgical prep supplies including sterile fenestrated skin drape
- Esophagostomy catheter* or red rubber catheter
  - 10-14 Fr, 23+ cm tube for cats or toy breed dogs
  - 14-20 Fr, 40+ cm tube for dogs
- Curved carmault or other long curved forceps
- #11 or #15 scalpel blade
- 3-0 non-absorbable suture material, needle and needle-holders
- Cap for tube (Christmas tree converter and IV cap) if red rubber catheter used
- Sterile dressing to cover tube site (e.g. 2”x2” gauze pad)
- Antibacterial ointment
- Bandage materials for a light neck bandage
  - 2” or 3” gauze
  - 2” or 3” VetWrap

* Mila International, Inc. (New York, NY) makes a 14 Fr polyurethane esophagostomy tube adjustable to 32.5 cm for cats and a canine version of the same diameter adjustable to 75 cm. Both have a removable Y-port adaptor for syringe or infusion feeding.

Surgivet (Cook Veterinary, Waukesha, WI) has available a closed-ended silicone esophagostomy tube with multiple side ports in 2 sizes: 14 Fr 23-cm (for cats and small- to medium-sized dogs) and 19 Fr 38-cm (for larger dogs). Both have a removable proximal fitting that accepts Luer-lock syringes.

Cook Veterinary also markets an Esophagostomy tube set. This is a 12 Fr open-ended, 60-cm silicone catheter with multiple side ports that comes supplied with an 8 g 7-cm Peel-off sheath needle for percutaneous puncture of the upper esophagus. Accurate positioning of the Peel-off sheath is facilitated by use of the available introduction tube.

Procedure
1. Position the anesthetized animal in right lateral recumbency. Position a mouth gag in the patient’s mouth. Note: The patient is usually intubated to protect the airway,
2. Clip an area in the left cervical region from the wing of the atlas (Figure 2) and the jugular vein and extending caudally from the angle of the jaw for about 8 cm.
3. Measure and mark the length of tube needed to reach the mid to distal esophagus by measuring from the wing of the atlas to the 8th to 10th rib. It is undesirable to have the tip of the tube traverse the lower esophageal sphincter due to the risk of reflux esophagitis and esophageal stricture.
4. Perform a surgical scrub on the clipped area.
5. Pass the curved carmault through the mouth until it reaches the cranial esophagus. Slight downward pressure on the handle of the instrument will result in the skin and underlying esophagus bulging dorsally in the cranial cervical region. This site is marked with a circle in the illustration. The tip of the carmault MUST be caudal to the wing of the atlas or the tip is within the caudal pharynx rather than the cervical esophagus.
6. At the site where the carmault is bulging upwards (shown as a black circle), make a stab incision with a #11 or #15 scalpel blade.
7. Advance the carmault so that the jaws are externalized sufficiently to open them slightly.
8. Grasp the smooth (closed) end of the esophagostomy tube in the jaws of the carmault and withdraw the instrument, drawing the tube into the mouth and leaving the open end of the tube protruding from the skin in the cervical esophagus.
9. Grasp the smooth end of the tube with the fingers or by repositioning the carmault, and redirect the tube down the esophagus, pushing it so that the entire tube is in the esophagus distal to the esophagostomy opening. This step can be difficult to accomplish in some animals but it is essential. Visually inspect the oropharynx to ensure that the tube is no longer visiable. When the tube is positioned correctly, the open end of the tube will exit the esophagostomy site pointing towards the ear and the tube will lie in close contact with the skin.

10. Verify that the marked position on the tube is at the level of the skin.

11. Make a purse-string suture around the tube exit site and tie it with light tension. A Chinese finger trap knot may be used, in addition, to the purse-string, to help ensure that the tube position does not slip.

12. At the level of the wing of the atlas, place a single simple interrupted skin suture. To this suture, attach a second suture that incorporates a tape tab placed on the tube to hold it in close proximity to the skin. When placing the first anchor suture, some clinicians prefer to take a deep bite down towards the wing of the atlas.

13. Cover the tube exit with a 2”x2” gauge to which has been applied a small amount of antibacterial ointment.

14. Bandage the tube comfortably in place using several layers of gauze and Vetwrap. An Elizabethan collar is not required.

15. A survey lateral radiograph of the neck and proximal thorax is recommended to verify tube position before using the tube for feeding.

**Care and use of E-tubes**

Feeding can begin as soon as the patient has recovered from general anesthesia. The daily caloric requirement should be divided into multiple (4-6) feedings per 24-hours (more frequent feedings of a smaller volume if the animal has been anorectic for any length of time prior to tube placement). Feeding frequency can be reduced to about 3 meals/day as volume tolerance increases. Before and after each feeding, the tube should be flushed with 5-10 mL of lukewarm tap water. Infusion feeding, as described for feeding via NE tube, can be used with E-tubes, but is rarely needed.

Because of the large diameter of E-tubes, either a commercial recovery-formula diet (undiluted or slightly diluted to make the consistency more easily syringeable) or a blenderized canned food can be fed. The latter option allows selection of various therapeutic diets as appropriate for the patient’s underlying condition, an energy dense growth diet if no special food is required, or (especially for long term feeding) even the canned form of the pet’s usual diet. When prepared in advance, the food should be kept under refrigeration and warmed to body temperature before feeding. The food volume should be injected slowly over several minutes. If the animal shows gulping, regurgitation or evidence of discomfort during feeding, temporarily reduce the volume fed at each meal and ensure the food fed is warm. If these signs continue, confirm tube placement radiographically.

Once a day the neck wrap and sterile dressing should be removed and the stoma inspected and cleaned with cotton balls or gauze swabs soaked in 4% chlorhexidine or 10% povidone-iodine solution. If oozing of purulent material suggests bacterial infection, an antibiotic ointment can be applied before replacing the neck wrap. Rarely are systemic antibiotics needed to control infection at the stoma site.

**Tube removal**

The E-tube can be removed whenever the patient’s appetite returns and the tube is no longer needed. There is no minimum time that the tube must remain in place. Removal does not require anesthesia or sedation, and the patient need not be fasted prior to removal. To remove the tube, remove the neck wrap and dressing, remove the purse string suture, and pull the tube gently out. The stoma site will close rapidly (usually within 24 hours) after tube removal. A neck wrap may be re-applied during this time. A skin suture may be placed if preferred by the owner, but is not necessary.

**Selected readings**


