There are three methods available for placement of a gastrostomy tube: percutaneous nonendoscopic, percutaneous endoscopic, and surgical. Percutaneous placement methods rely on some device to carry a piece of suture from the lateral body wall out through the mouth. The two most widely used devices for percutaneous nonendoscopic placement are the Eld gastrostomy tube applicator and the Cook insertion device. These instruments have made the use of gastrostomy feeding tubes feasible in almost any practice. An overview of placement using the Eld device is given here.

**Indications**

Gastrostomy tubes are used in patients that require a feeding method that bypasses the pharynx and esophagus. They may also be used instead of an esophagostomy tube if long-term feeding (weeks to months) is anticipated; operator experience may decide which tube placement site is selected. Anesthesia is required for gastrostomy tube placement; selection of type of anesthesia is based on the patient’s underlying disease. It is strongly recommended to protect the airway by endotracheal intubation even if not required for anesthetic delivery.

**Contraindications**

A specific contraindication to the nonendoscopic percutaneous placement of a gastrostomy tube is existing esophageal damage, or stricture, that may predispose to esophageal perforation during passage of the placement applicator. Animals with megaesophagus should be fed below the pylorus to lessen the risk of aspiration pneumonia. In some patients with esophageal motility disorders, however, this risk is accepted over the risks and costs involved in surgical placement of an enterostomy tube. Gastrostomy tubes are not recommended for animals that have frequent vomiting due to causes such as primary gastric disease, gastric outflow obstruction, or gastric paresis. Two other relative contraindications to gastrostomy tube placement are immunosuppression and clinically evident ascites. Problems with dehiscence at the tube exit site and subsequent peritonitis have been encountered in FeLV positive cats.

**Materials needed for placement**

1. An Eld gastrostomy applicator (45 cm length for cats and dogs < 15 kg; 80 cm length for larger dogs)
2. 16-20 French Pezzer-type, mushroom tip catheter (Bard Urological Catheter)
3. 2 80-cm lengths of 17-pound test fishing line (or large-diameter suture material)
4. One 200 uL MLA disposable pipette tip
5. Surgical scrub, one non-sterile hemostat and one pair of scissors

**Tube assembly**

Several minutes can be saved during tube insertion by preparing the tube and connecting it to the Eld applicator prior to anesthetizing the dog or cat. Cut off the flared end of the tube and discard. Cut two 2-cm pieces of tubing off the tube at the cut end; these will serve as internal and external flanges. Using a No. 11 scalpel blade, make a stab incision through the center of each flange. Connect one to the tube by sliding it down onto the tube until it rests up against the mushroom tip (this forms the inner flange). The “button” end of the mushroom tip may be cut off to facilitate food delivery. Using an indelible marker, make 1-cm markings on the tube, starting at the internal flange. The tube is now assembled and ready to connect to the Eld applicator.

Tie the end of one piece of fishing line to the hole in the trocar of the Eld applicator and cut the end short. Thread the pipette tip, narrow end first, onto the free end of the fishing line. Next, attach the free end of the fishing line to the proximal end of the mushroom-tip tube, using a 20 gauge needle to pass the line through the tube. Pull the pipette tip firmly down onto the tube so that it will act as a guide for the end of the tube.

Loop the second length of fishing line through the eyelets of the mushroom tip and clamp the two ends together with a hemostat. If any difficulty is encountered during tube placement, traction on this safety loop will extract the tube.

**Tube placement**

To begin placement, position the anesthetized patient in right lateral recumbency. Clip and perform a surgical scrub on the left flank extending about 10 cm behind the last rib. This step can be performed before anesthesia in some animals to further shorten the anesthesia time. With the patient’s neck extended, measure the distance from the nose to the last rib and mark this distance on the Eld applicator with a piece of tape or by holding the applicator at this site. Note the orientation of the curved applicator tip.
Hold the fishing line parallel to the applicator, lubricate the applicator tip, introduce it into the mouth and pass it through the esophagus into the stomach, keeping the animal’s head and neck extended. During passage, wrap several fingers around the spring on the handle of the device to prevent inadvertent advancement. The most difficult step in gastrostomy tube placement is traversing the lower esophageal sphincter, especially in dogs. Gentle manipulation (rotation and side-to-side movement) rather than force must be used to overcome any resistance.

Position the curved tip of the applicator so that it can be palpated in the stomach through the lateral body wall behind the last rib and, preferably, in the dorsal two-thirds of the flank. Clear identification of the tip is usually facilitated by bringing the animal’s head to the edge of the table, allowing the applicator handle to be lowered, thereby raising the applicator tip. The placement procedure must be aborted if the applicator tip cannot be clearly and unequivocally palpated through the lateral body wall with only minimal soft tissue (body wall, stomach wall, +/- omentum) between the operator’s fingers and the applicator tip.

With a gloved hand, apply digital pressure to the skin around the isolated applicator tip. Advance the plunger in the handle of the applicator, which will cause the trocar to advance from inside the stomach out through the body wall.

Use a hemostat to grasp the fishing line that is tied through the hole in the trocar; cut the line close to the trocar. Relax pressure on the plunger, allowing the trocar to retract into the stomach and slowly withdraw the applicator out the mouth. Set the applicator aside. One end of the fishing line is now exiting the body wall and the other end is exiting the mouth, attached to the tube.

Using steady traction, pull on the end of the line exiting the body wall, so that the tube advances into the mouth and out through the stomach and body wall. Guide the mushroom tip so that obstructions in the mouth are avoided. The pipette tip will exit the skin in advance of the tube and should be firmly grasped with a hemostat to continue pulling. It is usually unnecessary to nick the exit site with a scalpel to enlarge it unless a large-diameter tube was selected.

Remove the safety loop by releasing the hemostat and pulling on one end of the line.

Bring the stomach and body wall into loose contact as the mushroom tip reaches the body wall. Leaving the pipette tip temporarily in place, cut the fishing line at the pipette tip and slide the remaining flange down the tube until it contacts the skin. Avoid extensive tension at the skin surface but ensure correct placement by noting that the inner flange is resting at about the 2-3 cm mark on the tube. Attach a piece of tape to the tube about 2 cm above the skin (or use superglue) to prevent tube slippage. Cut the tube at the free end; discard the cut end and the pipette tip. Cap the tube with an intravenous catheter cap +/- Christmas tree adaptor. Note that the tube is not sutured to the skin.

**Tube use and maintenance**

Antimicrobial ointment on a gauze square is fitted between the external flange and the skin. Bandage material may be used to cover the tube and bring the end to a convenient location for feeding. A “sweater” made out of 4-inch stockinette makes a convenient and, apparently, comfortable alternative to an abdominal bandage for cats and small dogs. Some dogs require an Elizabethan collar to protect the tube.

Feeding may begin 8 hours after tube placement. Tube location can be verified immediately prior to each feeding by aspiration of a small quantity of gastric juice. If further confirmation of tube location is required at any time, such as if the animal interferes with the tube, an abdominal radiograph can be made after introducing a small amount of water-soluble contrast agent into the tube. Commercially available, syringeable, recovery-formula diets or blenderized foods can be fed. The tube should always be flushed after feeding with about 5 ml of water before recapping.

**Tube removal**

Gastrostomy tubes are generally left in place for 5-7 days before removal. This ensures that the tube will no longer be needed for nutritional support and may allow adhesions to form at the exit site. Withhold food and water for 8 hours prior to, and after, tube removal. Sedation or anesthesia is not needed in most patients. To remove the tube, gently restrain the animal in right lateral recumbency, exert firm counterpressure against the skin around the tube exit site, apply firm, steady upward traction to the tube. The mushroom tip will collapse as it pulls through the inner flange, and the flange will drop back into the stomach and pass in the feces. The small fistula that results from tube removal closes within 24 hours and no special care is required. If desired for cosmetic reasons, a light abdominal bandage can be left in place over this time.