Down the Hatch: A Comprehensive Guide to Feeding Tubes

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Discussion Overview

- Negative Outcomes of Malnutrition
- Positive Outcomes of Early Nutritional Support
- Feeding tube options: Advantages, Disadvantages & Complications
  - Nasal tubes
  - Pharyngostomy tubes
  - Esophagostomy tubes (E-tubes)
  - Gastric tubes
  - Jejunostomy tube (J-tubes)

Malnutrition

- Associated with ....
- Predictable vs. Non-predictable
  - Hit by car cat with jaw fracture
  - Acute kidney insult dog with leptospirosis
- Species cats vs. dogs
- Body reserves
- Underlying conditions
  - i.e. Diabetes, low albumin, edema, etc.
- Clients issues
Negative Outcomes of Malnutrition

• Direct Relationships
  – ↓ Albumin, calcium, red blood cells*
  – ↑ BUN (?), thrombocytosis*
  – ↑ The metabolic rate^
  – Ineffective wound and fracture healing^
  – Inadequate immune responses^
  – ↓ Tolerance to cancer therapy^
  – Muscle weakness^
  – Organ dysfunctions (heart and liver)^

* JAAHA. 2013 Mar-Apr;49(2):101-7

Negative Outcomes of Malnutrition

• Indirect (possible) Relationships
  – Less than optimal responses to therapies
  – Higher costs?
    Longer hospitalization, ↑ complications
  – Perception failure to respond
  – Perception of suffering

Positive Outcomes of Early Nutritional Support

• What is Early Nutrition Support?
  – Consistent caloric intake 24 hours postop
  – ‘3, 5, 7’ rule?

• Direct Relationships
  – Significant ↓ hospitalization by 1.6 days*
  – Return to voluntary food intake^
  – Maintenance of body weight^

Positive Outcomes of Early Nutritional Support

- Indirect (possible) Relationships
  - Better support for the animal*
  - Avoid serious complications*
  - Avoid hepatic lipidosis?
  - Better healing? Immune response?
  - Happier clients? Patients? DVMs

*JAVMA. 1992 Aug 15;201(4):619-22

Nasal tubes (Nasoesophageal, Nasogastric)

Nasojejunal

- Advantages
  - Sedation is usually not necessary
  - No adverse effect if removed by patient
  - Easy to place (nasoesophageal, nasogastric)
  - Cheap $

- Disadvantages
  - Facial irritation and sneezing (frequent*)
  - Easily dislodged (not ideal for long term use)
  - Easily clog, need to feed liquid diet
  - Limits use with advanced nasal disease


Nasal tubes (Nasoesophageal, Nasogastric)

- Complications – No difference^ between NE = NG
  - Fractured facial sutures
  - Crimping of feeding tube
  - Clogging of the feeding tube
  - Oral migration
  - Epistaxis (avoid with thrombocytopenia)
  - Vomiting, diarrhea, regurgitation?
  - Placement of tube in the lungs - pneumonia

### Nasal tubes (Nasoesophageal, Nasogastric)

**Types of Tubes**
- Red rubber, Polyurethane or Silicone tubes
  - with or without weighted tip
- 3.5 French (F) or 5 F red rubbers work well for cats
- 5 F or 8 F infant feeding tubes work well for dogs

**Supplies Needed**
- Topical anesthetic
- Lubrication jelly
- Feeding tube
- Scissors
- White tape
- Suture or Staple
- Elizabethan collar

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### Nasal tubes (Nasoesophageal, Nasogastric) Placement
Nasal tubes (Nasoesophageal, Nasogastric)
Placement

Advantages
- Rapidly placed
- Can be used with blenderized diets
- Low risk of adverse effects from placement*
- Limited adverse effects if removed by patient
- Comfortable
- Can be used for weeks to many months
- Fairly cheap $$

Contraindications
- Primary or secondary esophageal diseases

Pharyngostomy* & Esophagostomy Tubes (E-tubes)

Advantages
- Rapidly placed
- Can be used with blenderized diets
- Low risk of adverse effects from placement*
- Limited adverse effects if removed by patient
- Comfortable
- Can be used for weeks to many months
- Fairly cheap $$

Contraindications
- Primary or secondary esophageal diseases

Disadvantages
- Requires short-term general anesthesia
- Can clog if diet is not blended well
- Can dislodged if not secured well
- Can be vomited / regurgitated up

Complications
- Peri-stoma infections (frequent)
- Sutures fractured (frequent) or tube crimping
- Hemorrhage during placement (rare)
- Esophagitis, esophageal stricture (rare)
Esophagostomy Tube Complications

Esophagostomy tubes (E-tubes)

**Types of Tubes**
- 10 F-16 F red rubber or silicone tubes
- Silicone better long-term?
- Attached lid or male injection plugs
- 12 F (small cats) 14 F (cats and small dogs) or 16 F to 20 F (dogs > 15 kg / 33lbs)

**Supplies Needed**
- Short-term anesthesia
- Clippers, surgical scrub
- Surgical gloves & blades
- Right angle forceps (sterile)
- Esophagostomy tube
- Polypropylene cath. stylet
- Suture & scissors
- Antibiotic ointment
- Gauze, white tape, Vetrap
- Endoscope or radiographs

Esophagostomy tubes (E-tubes) Placement
Esophagostomy tubes (E-tubes) Placement

- Percutaneous endoscopic gastrostomy (PEG)
- Blind percutaneous gastrostomy (BPG) tube
- Surgical placement of gastrostomy tube
- Low profile gastrostomy device (LPGD)

Gastric tubes

- Advantages
  - Rapidly placed (depends highly on which tube used)
  - Comfortable, large diameter tube (easy to use)
  - Can be used for weeks, months to years
  - Ideal for esophageal disease or severe vomiting
  - Can convert / start with Low profile tube
  - Rarely clogs

- Contraindications
  - Non-ambulatory, large dogs?*
  - Gastric disease (cancer?); Ascites?

*Exception is surgical placed Gastrostomy Tubes
Disadvantages
- Requires short-term to full general anesthesia
- Moderate risk of adverse effects with placement
- High risk* of peritonitis if prematurely removed?
- Moderate to high cost $$-$$$ 

Complications
- During placement- pneumothorax, visceral puncture or visceral entrapment
- Gastric perforation, peritonitis & possibly death
- Stoma Infections

* Tube must be maintained in place for at least 10-14 days before it can be safely removed

Types of Tubes
- Latex or silicone Foley (balloon) catheters
- Mushroom tipped (Pezzar) 18F-24 F latex tubes
- Mila PEG tubes 16 F, 20 F*
- Surgivet PEG tubes 16 F, 20 F, 24 F*
- Low Profile Gastrostomy Devices (LPGD) tubes 18 F, 20 F, 24 F*

Supplies Needed
- Short or full anesthesia
- Clippers, surgical scrub
- Surgical gloves & blades
- Gastric tube
- ± ELD or percutaneous gastrostomy device
- ± Endoscope or surgery
- Antibiotic ointment, gauze

* Tubes used at CUVS
Jejunostomy tube (Nasojejunal, Gastrojejunostomy, Surgically placed)

- **Advantages**
  - Ability to bypass the stomach and duodenum
  - Ideal for advanced gastric, pancreatic disease
  - Minimal stimulation of the pancreas
- **Disadvantages**
  - Only liquid, enteral diets can be fed
  - Often diets need to be given as CRI
  - Requires short-term to full general anesthesia
  - Technically challenging - endoscopy, surgery, fluoroscopy and costly $$-$$$-

Jejunostomy tube (Nasojejunal, Gastrojejunostomy, Surgically placed)

- **Complications**
  - Only liquid, enteral diets can be fed = diarrhea
  - Retrograde migration of distal tip of the tube
  - Stoma infections

Types of Tubes
- 5 F – 8 F Jejunostomy tubes, often 36 inches
- Silicone nasal tubes with weighted tip
- ‘J through G’ tubes

Supplies Needed
- Short or full anesthesia
- Clippers, surgical scrub
- Surgical gloves & blades
- Jejunostomy tube
- ± Endoscope or surgery or Fluoroscopy
- Antibiotic ointment, gauze
Jejunostomy tube (Nasojejunal, Gastrojejunalostomy, Surgically placed)

Questions / Comments

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