Tubes, Tubes & More Tubes!

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Feeding Tubes

- Nasoesophageal tubes
- Nasogastric tubes
- Esophagostomy tubes
- PEG tube
- G-J tube

NE & NG

- Placed through nasal cavity with mild sedation
- Short term enteral nutrition
- Contraindications:
  - Nasopharyngeal trauma
  - Recumbent patients and/or lack of gag reflex
  - Esophageal disease (megaesophagus, stricture, foreign body)
  (+/- regurgitation/vomiting)
- Complication
  - Dacryocystitis (clear eye discharge) may occur
  - Pneumonia
  - Pneumothorax

NE vs NG

- Nasoesophageal tubes terminate in the esophagus between the base of the heart and the cardiac sphincter
  - Can increase risk of regurgitation
- Nasogastric tubes are passed through the cardiac sphincter and terminate in the stomach
  - Can allow for some gastric reflux
  - Allows for suctioning air/liquid from stomach in patients with significant illus
Placement Pearls

- Create a checklist, gather all supplies needed, be ready to troubleshoot.
- Consider placing tube in radiology, on x-ray table
- Direct the tube in a caudoventral and medial direction to place the tube in the ventral meatus
  - use "pig nose" technique in dogs
  - hold head at a normal angle of articulation to allow swallowing
- Check tube before placing! Remove and lubricate stylet.
- Use a lidocaine jelly, proparicaine
- Retract and re-advance with gentle pressure and a “Swirl” technique when you meet resistance.

E-tube Pearls

- Clean insertion site daily and apply fresh triple antibiotic ointment
- Radiograph if patient begins to vomit or regurgitate
  - Use barium or other contrast to visualize end of tube if needed
- Try low profile bandages
  - X-SPAN tubular dressing

Esophagastomy Tubes

- Placed through the skin, directly into the esophagus, at the mid-cervical region.
- For long-term enteral nutrition (maxillofacial trauma, pneumonia, dental disease
- Contraindications: esophageal disease, unprotected airway (altered level of consciousness), severe cough,
  (+/- regurgitation/vomiting)
- Surgical, requires anesthesia

Other Tubes

- PEG tube (percutaneous endoscopic gastrostomy)
- G-J tube (gastrojejunal)
  - bypass the stomach and duodenum
- Feeding Tubes

- Tubes for oxygen support

### Why supplement O2?

- **Treat hypoxemia:** inadequate oxygenation of arterial blood
  - PaO₂ < 70 mmHg
  - SpO₂ < 93% on room air

- Increase inspired FiO₂
  - **Room Air:** FiO₂ 21%
  - **Intubated:** FiO₂ 100%
  - **Flow by:** FiO₂ 25-40%
  - **Nasal oxygen:** FiO₂ 40-80%

- **O₂ Flow rates**
  - 50-150mL/kg/min for nasal administration

### Nasal O₂

- **Nasal Prongs**
  - Well tolerated
  - Quick and easy placement
  - Easy to dislodge
  - **FiO₂ 25-40%**

- **Nasal/nasopharyngeal**
  - Requires mild sedation
  - Minimal equipment needed
  - Increased FiO₂ within seconds
  - **FiO₂ 30-70%**

- Always humidify oxygen that is being supplied directly to your patient

### Nasal oxygen tube

- Measure to medial canthus

### Nasopharyngeal tube

- Measure to ramus

### O₂ Pearls

- Create a checklist, gather all supplies needed, set up O₂ supply lines and connections before placement.
- Use topical proparocaine or lidocaine jelly on nostril and place stay suture(s) before placing nasal catheters.
- Use lidocaine jelly to lubricate tube
- Consider instilling dilute lidocaine into the nostril(s) q4 hours for patient comfort.
- Measure for both nasal and nasopharyngeal.
Feeding Tubes
- Tubes for oxygen support

**IV tubes (aka catheters!)**
- Peripheral venous catheter
- Peripherally inserted central venous catheter
- Intraosseous catheter
- Arterial catheter
- Central venous catheter

**Peripheral IVC**
- Over the needle
- Through the needle
- Winged/butterfly
- Multilumen (twincath)
- Use aseptic technique
- Check insertion site daily
- Multiple insertion sites
  - Cephalic
  - Pedal
  - Saphenous
  - Auricular

**Peripherally inserted central venous catheter (PICC)**
- Allows for easy aspiration of samples
- Allow for administration of hypertonic/hyperosmolar fluids
- Well tolerated with little to no sedation needed.

**Intraosseous**
- Humerus, Femur most common sites
- EZ-IO (human) into tibia or humerus
- Can use hypodermic needle, spinal needle or bone marrow needle
- Anything that can go IV can go IO

**Central Lines**
- Administer hyperosmolar solutions (>600mOsm/L)
- Administer CRI’s of drugs that are know to cause phlebitis
- Measure CVP
- Frequent blood sampling
- Administer TPN/PPN
- Maintain venous access for long periods of time
**Central Venous Catheter**

**Drawbacks**
- Requires sedation
- Intimidating
- More advanced technique than peripheral IVC
- Expense of stocking multiple sizes

**Contraindications**
- Coagulopathy
- Increased intracranial pressure (do not use jugular vein)
- Venous thrombosis

**Central Line Pearls**
- Create a checklist, gather all supplies needed.
- Measure with tape measure before placing
- Consider placing in radiology on x-ray table.
- FULL ASEPTIC TECHNIQUE: glove & drape!
- Use a large drape — those wires like to fly around...
- Be ready for it to bleed, clean up blood before bandaging.
- Tegaderm and tubular dressing for bandage.
- Remember to breath, it is just a long IV catheter!

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**Arterial Catheter**

**Use**
- Direct blood pressure
- Arterial Blood gas sampling
- NO DRUGS

**Placement**
- Dorsal pedal artery most common
- Aseptic technique

**Maintenance**
- Hep lock q1-4 hours
- Problematic, frequently occlude/dislodge

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**Feeding Tubes**
- Tubes for oxygen support
- IV tubes (aka catheters)

**Urinary tubes (more catheters)**
- What
  - Tom cat, slippery Sam
  - Polypropylene
  - Red rubber
  - Foley
- Why
  - Recumbent patient
  - Perfusion and renal function (ins & outs)
  - Urinary obstruction, lower urinary tract disease
  - Post cystotomy, urethrotomy, urethral tear or prolapse
U-cath Pearls

- Attach sterile collection system for indwelling catheters
- Do not place collection bags directly on the floor
- Clamp off the bag when moving patient to avoid retrograde movement of urine
- Clean daily and check patency frequently

Feeding Tubes
- Tubes for oxygen support
- IV tubes
- Urinary tubes
- Drain Tubes

Chest Tube/Thoracostomy tube

- Multifenestrated tube placed into the pleural cavity
  - Low profile, Seldinger chest tubes available
- Used for chylothorax, pyothorax, pneumothorax (tension/persistent), post thoracic surgery, penetrating chest injury, pleurodesis
- Intimidating – go slow, think before you disconnect anything....
  - Is it OFF to the patient?
- Passive draining (intrathoracic pressure) Using heimlich valve or one bottle water seal
- Active suction
  - intermittent or continuous

Chest tubes (cont.)

- DVM placement: more ventral for fluid, dorsal for air
- Enter skin then tunnel under the skin cranially and penetrate thoracic wall usually at the 7th – 9th intercostal space.
- Complications:
  - Iatrogenic pneumothorax: air outside the lung parenchyma in the pleural space
  - Hemorrhage
  - Infection
- Painful – consider sedation and local blocks

Abdominal Drainage Catheters

Used to manage
- uroabdomen
- peritonitis
- peritoneal dialysis

Most common is the Jackson Pratt Drain

Abdominal Drains
Jackson Pratt

- Closed suction bulb connected to an internal drain (surgical placement)
- Use sterile technique to empty collection bulb
- Empty bulb, squeeze out air and reattach.
- Can evaluate and culture fluid from JP drain PRN
  - PCV, sediment, total solids, blood glucose, lactate

Other Fun tubes

- Pericardial drainage catheters
- Fecal management kit - the Butt Foley
- Tracheostomy tubes
- Diffusion Catheter
- Wound catheter
- Intrathecal Catheters
- Nasolacrimal duct

References


Questions??

https://www.atdove.org/articles/an-unusual-cause-of-intestinal-perforations-in-a-dog