Nursing Considerations for Enteral Tubes

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Objectives

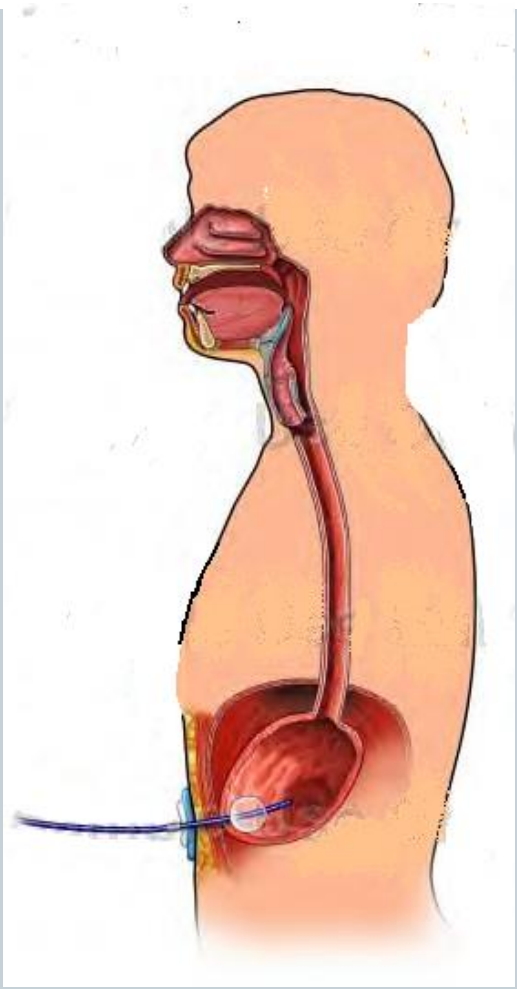
- 1. Discuss the indications and uses of a gastrostomy.
- 2. Describe the different types of gastrostomy tubes.
- 3. Identify complications of g tubes.
- 4. Describe Nursing assessment of pre and post-op care.
- 5. Discuss feeding types.
- 6. Identify teaching points for staff and parents.
- 7. Identify Nursing Considerations for feedings.

Disclosures

I have no disclosures at this time.

Why a Feeding Tube?

Placed when oral intake is not adequate to meet Nutritional Goals



Pediatric Nutrition Goals

- Provide nutrients for normal organ function
- Proper growth and development
- Protection from disease
- Part of a daily routine

Feeding Tube Indications

- Unable to swallow normally
- Inadequate oral nutrition
- Can be Permanent or Temporary

Common Diagnosis

- Congential Anamolies
  - Esophageal fistula/Tracheoesophageal fistula
  - Cleft lip/palate
  - Intestinal Atresia's
  - Gastroschisis
- Genetic/Chronic illness
  - Down's Syndrome
  - Failure to Thrive
  - GERD
  - Cystic fibrosis
  - Cancer
  - Congenital heart disease
  - Recurrent aspiration pneumonia
  - Oral aversion
  - Transplant

Common Diagnosis

- Neurologic dysfunction - Temporary or Permanent
  - Closed Head Injury
  - Cerebral Palsy
  - Encephalopathy
- Feeding time >1 hour

Types of Tubes

- Nasogastric/Nasojejunal
- Gastrostomy
- Transgastric-jejunal
- Jejunal

Gastrostomy Definition

- “Gastro” meaning stomach
- “Ostomy” meaning opening
- Gastro+ostomy= simply an opening into the stomach

Placement Methods

- Manual
  - To ensure proper measurement tube should be measured from the tip of nose to the ear lobe to 1 inch below the xiphoid process. The tube should be marked at this place. Tube is then inserted through the nose into the stomach until the mark reaches the nostril. Tube is then secured in place. Proper placement should be checked prior to use per institutional protocol.
  - NJ placement should always be checked with x-ray.
- Surgical
  - Stomach is brought up to the abdominal wall and sutured in place. Then an opening is made and tube is placed.
- Percutaneous Endoscopic Gastrostomy
  - Endoscopy is performed and a guidewire is passed through the abdominal wall incision into the stomach. The guidewire is attached to the g tube with a mushroom device pulled down through the mouth into the stomach and through the abdominal wall incision. Must wait 1-3 months for stomach wall to adhere to the abdominal wall before changing.
- Radiologically Guided
  - Using Ultrasound the liver and spleen are identified and marked
  - Under fluoroscopy a needle is passed through the abdominal wall into the stomach. A guidewire is placed and then dilators are passed over the guidewire to create the tract. When the tract is adequately sized the G tube is threaded over the guidewire and into the stomach. Must wait 1-3 months for healing before changing but can be converted to a G-J if needed.

History of Surgical Gastrostomy

- Watson 1844, Sellidot 1849, Egebert 1849
  - First attempts at surgical placement
  - None lived
- 1874 Syndey Jones London and Jacobi New York
  - Reported 27.46% mortality rate
- 1894 Stamm
  - Performed the surgical Stamm gastrostomy
- 1939 William Ladd (Father of Pediatric Surgery) Boston
  - First TEF repair with gastrostomy
- 1941 Leven
  - popularized the surgical Stamm procedure

History of Percutaneous Endoscopic Gastrostomy (PEG)

- 1979 Gauderer and Ponsky
  - First placement of PEG in a 10 week infant at the University of Cleveland Hospital
- 1980's Gauderer, Ponsky, Izant
  - Perfected the procedure
- Current standard for gastrostomy placement
- Over a million have been placed
- Annually over 100,000 are performed

Surgical Gastrostomy or PEG

- Anatomy
- Previous abdominal surgeries
- Significant reflux
- Size of the child
- Complications
- Cost

Parental vs. Enteral Feedings

- Parental
  - Cholestatic liver disease
  - Metabolic disturbances
  - Line sepsis
  - Bacterial translocation
- Enteral
  - Prevents gut atrophy
  - Encourages villi growth
  - Increases bowel motility
  - Prevents bacterial overgrowth

Feeding Tubes Components

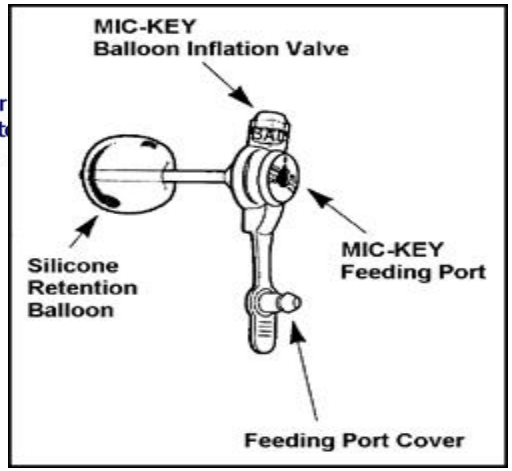
- Three components present
  - Internal portion
    - Mushroom
    - Balloon
    - Dome
    - Cross
    - Collapsible ring
  - External portion
  - Feeding connector
- Tubes can differ at all three places
- Catheter Tube/Low profile button

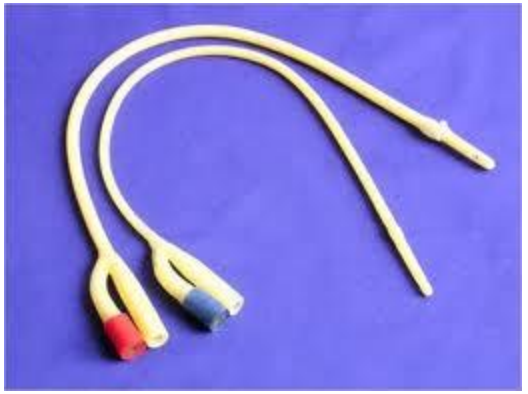
Mushroom Devices

- Buttons
  - American Medical Technology (AMT)
  - Wilson Cook Device
- Catheter
  - Malecot

Balloon Devices

- Button
  - AMT balloon button
  - Mickey balloon button
- Catheter tubes
  - Mic Tube
  - Foley Tubes





Mickey Button

Dome Devices

- Button
  - Bard Button
  - Genie button
- Catheters
  - Bard-Ponsky
  - Genie Peg

Bard Button

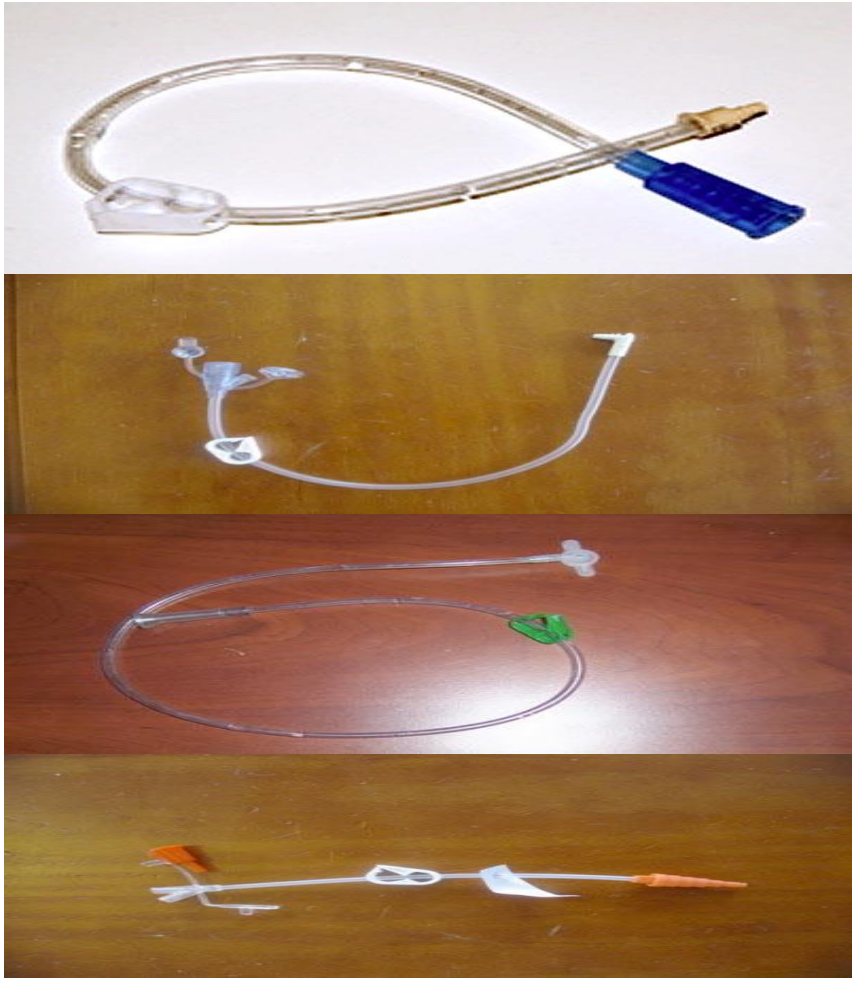
Genie (Peg) Tube

Cross Devices

- Nutriport
- Entristar

Feeding Connectors

- Straight Adapter
- Right Angle Adapter
- Genie Adapter
- Corpak



Current Use in Our Practice

- Mickey Buttons
- AMT mini one
- Genie (Peg tube)
- Bard buttons
- Nutri-port balloon device

When is the right time?

When nutritional support will be needed beyond 4-12 weeks dependent on author

Decisions

- Family acceptance
  - Innate need to feed children
  - Another loss of normalcy for this child
- Nurse's role
  - Support
  - Help family formulate their questions
  - Answer questions
  - Emphasize the importance of family's role in recovery
  - Allow family time to grieve

Pre Op Care

- Offer anesthesia consult especially for children with complicated history
- Vital signs
- Signed consent
- Maintain NPO status
- History
- Allergies
- Medications

Post Op Care Assessment

- Vital signs including pain
- Normal Surgical assessment
  - Head to Toe assessment
  - Hydration status
  - Accurate Intake and Output
- Pain Management

Post Op Care and Assessment

- Abdominal assessment
  - Look, Listen, Feel
  - Check the G tube site
  - Bowel sounds
  - Palpate abdomen

Care of The Site

- Assess the site daily for signs and symptoms of infection redness, swelling, pain, drainage, strong odor.

- Small amounts of serosanguinous drainage and redness is normal.

Care of the Site

- Site should be cleaned twice daily with saline for the first week and then soap and water
- Tube should be rotated with each cleaning
- Split non-adherent dressing should be changed with cleanings
- Tub baths/swimming allowed after 1 week
- Only use ointment if there is swelling

Care of the Tube

- Protect the tube and site
- Prevent excessive movement of the tube
- Prevent the tube from being pulled out or becoming tangled
- Stabilize the tube with bar/disc
  - ¼ inch away from skin
  - Can tape down

Complications

- Hemorrhage
- Bowel Perforation
- Liver laceration
- Peritonitis
- Wound separation
- Infection
- Tube migration
- Aspiration
- Necrotizing Fasciitis
- Bowel obstruction
- Death

Complications

- Skin infections
- Tube migration/Bumper Buried
- Leakage
- Ulcerations
- GERD
- Bacterial Overgrowth
- Dumping Syndrome
- Granuloma
- Tube clogged

Granulomas

- Prevention
- Stabilizing the tube
- Use soap and water to clean frequently
- Turn frequently
- Antibiotic ointment
- No Gauze

When To Start Feeding

- 1 – 3 hours post surgery check for bowel sounds prior to starting
- Pedialyte starting with ½ maintenance continuous feedings
- Advance slowly to full strength feeds within 72 hours

Feedings

- Bolus
- Continuous
- Combination
- Pump
- Gravity
- Prescriptions should be obtained
  - Formula
  - Total amount/day
  - Bolus/continuous/combination/pump/gravity
  - Oral feedings

Feedings

- Bolus Vs. Continuous
  - Type of tube
  - Placement of the tube
  - Diagnosis of the patient
- Bolus feedings should never be given through a Jejunal port

Feeding equipment

Gather all supplies that are necessary

- Bolus-Large 60ml cath tip syringe
- Pump-Pump and feeding bags
- Pole for gravity or pump feedings
- Feeding extensions/adapters
- Formula
- Paper drape/towel
- Gloves

Feeding Procedure

- Mix formula and pour total amount to be given into a graduate/if using a pump use a feeding bag.
- Put on your gloves.
- Drape the towel over the patient's abdomen next to the gastrostomy.
- Clamp the tube prior to pouring it in the bag if giving pump feeding. Prime the tubing (sometimes done by the pump itself).
- If using a pump, hang bag on the pole and thread the tubing through the pump.
- Patient should be upright at least 30 degrees.

Feeding Procedure

- Prime the feeding adapter with formula or water
- Close the clamp
- Attach the Feeding extension/adapter to button/g-tube
- Open the clamp
- Tube should be flushed with warm water prior to beginning feedings (Usually 30 to 60ml) using a syringe

Feeding Procedure

- Connect the syringe to the extension/adapter for bolus or the feeding bag tubing for continous/gravity feedings.
- Open clamp and allow to flow either turning on the pump or pouring formula into the syringe.
- If using gravity formula should not go in faster than over hour dependant on amount to be infused.
- When formula complete then flush with warm water to clear the tubing.
- Close the clamp and disconnect the tubing.
- Close the the gastrostomy.

Cleaning the tubing

- Flushing should be done before and after medication administration, and feedings. This will keep the tube from becoming clogged
- Wash out rinse or wash out your tubing with each feeding
- Some doctors recommend keeping the tubing in the refrigerate to prevent bacterial growth
- If tubing becomes cloudy can use a 3:1 water/vinegar solution to clean tubing
- Tubing should be changed every week

Medication Administration

- If the gastrostomy has a side port for medication administration, this port should be used
- Check with pharmacist on which medications can be crushed to put down the tube (Be careful with capsules - the beads can get stuck in the tube)
- Check with pharmacist or physician on how much water to mix with medications
- Be sure to flush before and after each medication
- Check with pharmacist before mixing medications together

Other Nursing Considerations

- Mouth care is extremely important in patients not taking in oral nutrition.
  - Brush teeth twice daily as you normally would
  - Keep mouth moist with swabs
  - Can use mouthwash to swish and spit
  - Use lip balm to avoid chapped lips
- Nose may become sore with a naso tube.
  - Wash nostrils when they become crusty and at least once daily
  - Clean and re-tape daily using adhesive remover
  - Use a lip balm around the nostril edges to moisturize

Problems Associated with Tube Feedings

- Constipation
- Diarrhea
- Nausea
- Dehydration
- Fluid overload
- Aspiration
- Clogged tube
- Leaking at the site
- Site is red/itchy with raised rash.
- Site is irritated/draining
- Granuloma
- Tube is accidentally removed
- Bleeding/Hematochezia
- Potential developmental delay

Constipation

Causes

- Not enough water is being given with feedings
- Not enough or no fiber
- Lack of physical activity
- Medications

Treatments

- Check with dietician/physician to make sure you are getting enough water and fiber in their diet
- Try to increase physical activity
- Review medication list with physician to see if any medication changes may help

Diarrhea

Causes

- Medications
- Formula being fed too fast
- Tube migration into the small intestine/dumping syndrome
- Formula is too cold
- Formula may be spoiled/contaminated by bacteria
- Not enough or no fiber in diet
- Emotional disturbances
- Formula intolerance

Treatments

- Review medication list with the physician
- Check with the physician to see if rate can be slowed
- Check that the tube has not migrated away from the stomach wall/stabilize the tube
- Remove formula from refrigerator 30min before giving. Warm to room temperature
- Check with physician/dietician to see if formula should be changed
- Relax during feedings

Nausea

Causes

- Tube mushroom/balloon has migrated causing a blockage at the stomach
- Feeding is too fast
- Feeding volume too much
- Positioning
- Delayed gastric emptying
- Gastritis
- Constipation
- Exercising right after a feeding
- Formula intolerance

Treatments

- Ensure proper positioning of the tube
- Decrease the feeding rate
- Decrease the volume by increasing the frequency to keep the total volume the same for the day
- Feed over a longer period-may need to go to continuous feedings
- Vent the tube frequently
- Monitor stool output for frequency and consistency
- Clean equipment well

Dehydration

Causes

- Formula too concentrated
- Frequent diarrhea
- Prolonged fever
- Not enough water
- Perspiring heavily
- Wound is draining large amounts of fluid

Treatments

- Check with your physician regarding formula type and water intake
- Call physician for direction with a child with fever/diarrhea

Fluid Overload

Causes

- Too much water before or after the feedings
- Feeding rate is too high
- Fluid volume is too high due to diluted formula

Treatments

- Check with your physician/dietician about the amount of water you should be taking each day
- Do not dilute formula with more than prescribed amount of water

Aspiration

Causes

- Tube migration
- Lying flat during feeding
- Formula back up
- Constipation

Treatments

- Check the position of the tube
- Be sure to sit up at least 30 degrees with every feeding and 30-60 minutes after
- Monitor bowel movements for frequency and consistency

Clogged Tube

Causes

- Clamped tube
- Kink in the tubing or the tube
- Dried formula/medication blocking the tube

Treatments

- Check the clamps to make sure all are open
- Use the syringe plunger to give to give a brief pulsing type method
- Instill a small amount of carbonated drink or seltzer water. Clamp the tube for 30 minutes and then flush using the pulsing method
- Flush with water followed by air after each feeding

Leaking at the Site

Causes

- Balloon/mushroom has moved away from the stomach wall
- Balloon has lost water
- Stoma has become larger (usually from excessive movement of the tube)
- Increased pressure in the stomach from air, delayed gastric emptying, coughing, constipation
- Tube diameter is too small
- Perpendicular positioning of the tube is not maintained
- Valve is defective

Treatments

- Gently pull back on the tube to ensure that the balloon/mushroom is up against the stomach wall
- Check the amount of water in balloon at least weekly. It should be 5 ml for most of the balloons
- Stabilize the tube with tape, barrier
- Vent the tube before and after feedings
- Monitor stools
- Maintain the tube in the upright position using tape to secure if necessary
- Change the tube

Site itchy with raised rash

Causes

- Candida skin infection

Treatments

- Keep skin clean and dry
- Apply antifungal cream or powder three times daily until clear

Site with drainage and irritation

Causes

- Leakage of gastric juices from the stoma site/dampness around the tube
- Infection of the site
- Stitches/stay sutures irritated
- Stabilization bar too tight or too loose
- All g tube sites leak

Treatments

- Keep clean and dry - apply a non adherent dressing around the site
- Can use stoma adhesive powder to the site
- Zinc oxide cream applied to area around the site
- Topical antibiotic ointment
- Antibiotic therapy if needed (very rare)
- Stiches can be removed according to physician recomendation
- Proper adjustment of the stabilization bar - ¼ inch space between the bar and the skin

Granuloma

Causes

- Normal response of the body
- Excessive movement of the tube
- May be associate with a small amount of bleeding or a thick yellow-green drainage may occur

Treatments

- Cauterization with silver nitrate to the area. Excessive use of the silver nitrate can be irritating to the healthy skin. Can develop into scar tissue and require surgical removal
- Stabilize the tube

Stoma Closure

- Accidental removal of the tube

- Prevent accidental removal of the tube by taping and make sure tube is secure.
- Children can place under clothing or use onesies
- Needs to be replaced ASAP usually within 30minutes to 1 hour before closure of the site
- DO NOT FORCE THE TUBE IN IF IT HAS BEEN OUT
- Send to the ER/call Peds GI

Bleeding/Hematochezia

Causes

- Mucosal irritation
- Gastric Ulcers
- Tube changes

Treatments

- Prevent excessive tension on the tube.
- Acid inhibition usually with H2 blockers or PPI
- Lubricate the tube well before insertion

Potential Developmental Delay

Causes

- Enteral feedings and tubes may affect development of feeding skills and normal development including speech

Treatments

- Age appropriate activities should be encouraged
- Use a low profile device as soon as possible so it does not get in the way of crawling/lying on belly
- Feeding schedule should be set up to encourage an oral activity be associated with feelings of hunger
- Oral aversion - consult occupational/speech therapy
- Encourage use of Early Intervention

Teaching for Parents

- Know what type and size of tube patient has
- Understand feeding schedules/oral feedings
- Understand how to use equipment
- What and Who to call for problems
- Know name and phone numbers of homecare company, pharmacy, and physicians
- How to mix formula and measure formula
- Signs and symptoms of dehydration
- Teach oral care and dental care
- Skin care
- Tube care
- Teach parents how to include child in family dinner time
- Emotional support