

PROCEDURE

TITLE: BLAKEMORE/MINNESOTA TUBE PROCEDURES

PURPOSE: To outline the nursing methodology in the procedures associated with a Sengstaken-Blakemore Tube.

SUPPORTIVE DATA: This procedure is performed by a physician and an assisting nurse. A double balloon tamponade exerts pressure on the cardiac portion of the stomach and against the bleeding varices.

This procedure is done frequently on patients with portal Hypertension. It prevents reflux of gastric contents and reduces the flow of blood into the portal system.

This procedure is done in the ER or in critical care and the patient would be transported to a critical care unit after emergency insertion. The patient is on bed rest with the head of the bed elevated, or in the left lateral position. It is imperative to watch the patient closely for possible balloon rupture or leakage of air. This can cause perforation of the esophagus. Respiratory distress can occur if the balloon moves into the nasopharynx and causes an airway obstruction. Sudden abdominal pain, back pain and change in hemodynamic status may suggest perforation. It is recommended patient be intubated and sedated.

EQUIPMENT:

1. Minnesota 4-lumen esophagogastric tamponade tube or Sengstaken-Blakemore (S-B) with #18 nasogastric tube (NGT). Located in ICU.
2. Football helmet with a face guard or balanced suspension traction apparatus with a 1-2 lb weight. Located in ICU.
3. Three suction regulators and canisters, with connecting tubing
4. Syringe - 60-mL, catheter-tip
5. Syringe - 60-mL Luer-tip
6. Topical anesthetic spray
7. Water-soluble lubricant
8. Four rubber-tipped hemostats or 4 regular Hemostats
9. 1-in Adhesive tape (if using football helmet) if available
10. Nonsterile gloves
11. Goggles
12. Yankauer suction tip
13. Stethoscope
14. Oropharyngeal airway
15. Sedatives as ordered
16. Scissors - to be taped to head of bed
17. Cardiac arrest cart
18. Manual resuscitation bag with mask connected to reservoir, tubing, and flowmeter

The Steps for insertion and dilation of particular tubes are defined in:

- A. Sengstaken-Blakemore Tube with an NG Tube.
- B. Sengstaken-Blakemore and Minnesota Tube.
- C. Inflating and maintaining the Sengstaken-Blakemore Tube
- D. Discontinuance of Sengstaken-Blakemore Tube

A. SALEM SUMP (NGT)/SENGSTAKEN-BLAKEMORE TUBE

If using Sengstaken-Blakemore tube which has 3 lumens you need to incorporate #18 nasogastric tube. The below steps should be taken. The MD is only to suture the NGT to the Blakemore tube - use when Minnesota not available. Follow steps below:

CONTENT:

PROCEDURE STEPS:

KEY POINTS:

1. Obtain consent.
2. Obtain a #18 nasogastric tube (NGT) and black 4-0 suture.
3. Place the tip of the NGT just above the proximal end of the esophageal balloon on the S-B tube.
4. Press a piece of suture through the wall of the NGT; wrap it around the S-B tube and tie it. Repeat this process four to five times proximally at about 6-cm intervals on the S-B tube. This will maintain the position of the NGT during insertion.
5. The NGT will be in the esophagus after insertion to serve as an esophageal aspiration post. Clearly label the NGT "For esophageal aspiration only" to avoid instillation of fluids or medications.
6. Minnesota tube has an esophageal suction port - NGT not needed. See procedure below.

Review diagram.

B. INSERTION OF SENGSTAKEN-BLAKEMORE/MINNESOTA TUBE

CONTENT:

PROCEDURE STEPS

KEY POINTS

1. Explain the procedure to the patient and/or family.
2. Gather the equipment.
3. Position the cardiac arrest cart at the bedside.
4. Make sure the patient has a patent IV line for administration of sedatives and/or emergency drugs.
5. Check to be sure that three suction apparatuses and a resuscitation bag are set up and functioning.
6. Attach the Yankauer suction tip to the connecting tubing of one suction canister.
7. If the patient is not intubated, assist MD with endotracheal intubation.

Anesthesia standby or available to do procedure.

1. Aspiration is a documented complication of the esophagogastric tube.

2. A patient with encephalopathy has an

increased risk for this complication
during insertion.

8. Inflate the gastric balloon to 400-500 mL of air and the esophageal balloon to 40 mL of air; then place them under water and observe for air bubbles to detect leaks. Always inflate balloons prior to insertion to check for faulty balloons.
9. Deflate the balloons and insert the white plugs (packaged with the tube) into the inflation lumina for the esophageal and gastric balloons.
10. Use rubber-tipped hemostats to clamp the inflation ports of the esophageal and gastric balloons. This ensures that the balloons will remain deflated during the insertion procedure, and the rubber tips prevent damage to the ports.
11. Don nonsterile gloves, goggles, and protective gown.
12. Assist with the application of topical anesthetic spray to the posterior pharynx; apply to the nasal mucosa for nasal insertion. (Oral insertion is highly recommended for the simultaneous insertion of the S-B tube and NGT.)
13. Administer sedation.
14. Insert a bit block if the esophagogastric tube will be orally inserted.
15. Hand the physician nonsterile gloves, goggles, and protective gown.
16. Coat the tube and balloons with water-soluble lubricant and hand them to the physician.
17. While the physician inserts the tube, monitor the patient's respiratory status and vital signs, observe for vomiting, and provide support.
18. Suction the oropharynx with the Yankauer suction tip if secretions accumulate during oral insertion or if the patient vomits.
19. Once the tube is inserted to the 50-cm mark, remove the white plugs from the gastric balloon inflation lumina and the rubber-tipped hemostats from the inflation port.
20. Check gastric placement by two methods:
 - a. Using a 60-mL catheter-tip syringe, inject air into the gastric aspirating port and auscultate the left upper quadrant of the abdomen for an air bubble.

- b. Check for gastric contents by aspirating with a 60-mL catheter-tip syringe from the gastric aspirating port.
21. Apply intermittent suction (60-120 mm Hg) to the gastric aspirating port to avoid aspiration of gastric contents. Suction should be intermittent because there is not a sump port.
22. Apply continuous suction (120-200 mm Hg) to the esophageal aspiration port on the Minnesota tube
Never irrigate the NGT on the Sengstaken-Blakemore tube or on the esophageal aspiration port of the Minnesota tube.
23. With a catheter-tip syringe, the physician will inflate the gastric balloon with 50-mL of air, clamp the inflation port with rubber-tipped hemostats, and remove the syringe.
24. Place the white plugs into the gastric inflation lumina.
25. Order a kidney, ureter, and bladder (KUB) x-ray to confirm that the esophagogastric tube has been placed in the stomach below the diaphragm.
Verification by x-ray is imperative to avoid inflation of gastric tube in esophagus. This could precipitate respiratory distress, tissue necroses, cardiac arrhythmias. Insufficient air could cause balloon to slip up into naso pharynx and cause airway obstruction.
26. When placement is confirmed, the physician will inflate the gastric balloon with a total of 450-500 mL of air. If S-B tube was used, apply continuous suction (120-200 mm Hg) to the NGT at this time.
27. Once the gastric balloon is inflated, plug the gastric inflation lumina and clamp the gastric balloon inflation port with rubber-tipped hemostats.
28. The physician will position the gastric balloon against the gastroesophageal junction by pulling gently on the tube until resistance is felt.
29. Apply tension to maintain the position of the esophagogastric tube in one of the following ways:
 - a. Place a football helmet equipped with a face guard on the patient's head. With tension on the tube, tape the tube to the face guard.
 - b. Secure the tube to a balanced suspension traction apparatus and apply a 1-2 lb weight.If football helmet tx not available, use kling gauze tied to the end of the S-B tube, drape over IV pole at the end of bed and tie a 500 cc of IV fluid bag to apply tension to the mobile IV pole.
30. Obtain a KUB film to verify placement of the gastric balloon at the esophagogastric junction. If an S-B tube was placed, verify placement of the NGT at the proximal edge of the esophageal balloon.
X-rays must be done before fully inflating balloons to prevent rupturing of esophagus.

C. INFLATING AND MAINTAINING AN ESOPHAGEAL BALLOON (USING A HAND-HELD SPHYGMOMANOMETER)

EQUIPMENT:

1. Syringe - 60 mL catheter-tip
2. Hand-held sphygmomanometer

CONTENT:

PROCEDURE STEPS:

KEY POINTS:

1. Verify placement of the inflated gastric balloon at the esophagogastric junction by KUB films. Inflation of the esophageal balloon should be done when gastric balloon inflation does not control hemorrhage.
2. Check that the esophageal aspiration port (Minnesota) or the NGT (S-B) is connected to a functioning suction apparatus.
3. Remove the white plugs from the esophageal balloon inflation lumina.
4. Aspirate 40 mL of air into a 60 mL catheter-tip syringe and connect one inflation lumen. Attach the sphygmomanometer to the second inflation lumen. This will record pressure continuously as the balloon is inflated.
5. Remove the rubber-tipped hemostats from the esophageal balloon port.
6. Monitor the pressure level on the sphygmomanometer as the physician inflates the esophageal balloon. The physician will determine the amount of air to inject. The pressure on the sphygmomanometer should not exceed 45 mm Hg. The physician will order the amount of pressure to be maintained.
7. Assess the patient for signs of respiratory distress.
 - a. Use scissors at head of bed to cut across tubing to deflate both balloons and remove tubing in case of respiratory distress and deflation of esophageal balloon to prevent necroses and evaluate if bleeding has ceased.
8. Clamp the esophageal balloon port.
9. Remove the syringe and manometer and replace the white plugs in the inflation lumina.
10. Check the esophageal balloon pressure every 2 hours as follows:
 - a. Aspirate approximately 20 mL of air into a 60-mL catheter-tip syringe.
 - b. Remove the white plugs from the esophageal balloon inflation lumina.
 - c. Connect the catheter-tip syringe to one inflation lumen and the sphygmomanometer to the second inflation lumen.

- d. Remove the rubber-tipped hemostats from the esophageal balloon port.
- e. Check the pressure measurement on the sphygmomanometer.
- f. If the pressure level is less than prescribed, inject air to reestablish the prescribed pressure.
- g. Clamp the esophageal balloon port.
- h. Remove the syringe and sphygmomanometer, and replace the white plugs.

DOCUMENTATION: For Nursing Notes:

1. Date, time, and route (oral or nasal) of insertion.
2. Name of the physician performing the procedure.
3. Patient's tolerance of procedure.
4. Assessment of tube placement and verification by KUB film.
5. Presence and type of traction.
6. Provision of suction for gastric and esophageal secretions.
7. Inflation of the gastric balloon (mL of air)
8. Inflation of the esophageal balloon and pressure level (mm Hg).
9. Verification of the prescribed level every 2 hours.
10. Amount and characteristics of drainage from gastric and esophageal aspiration ports.

D. DISCONTINUING TAMPONADE THERAPY

CONTENT:

PROCEDURE STEPS:

KEY POINTS:

DOCUMENTATION:

1. Is only performed by MD
2. In nursing notes as follows:
 - a. Date and time of each balloon deflation.
 - b. Presence and characteristics of aspirate after each balloon deflation.
 - c. Date and time of esophagogastric tube removal.
 - d. Name of physician performing the procedure.
 - e. Patient's tolerance of procedure.

- CONTRAINDICATIONS
1. Presence of an esophageal stricture.
 2. Recent esophageal surgery.

Reference: Critical Care Skills Clinical Handbook, Barbara Clarke Mimms, RN, MSN, CCRN; Kathleen Toto, RN, MSN, CCRN.
Gastroenterology Nursing Core Curriculum 3rd Edition - 2003