MINNESOTA TUBES FOR UPPER GI BLEEDS by Nick Mark MD

ONE
onepagericu.com
@nickmmark
Link to the most current version →

PURPOSE:

- **Minnesota tubes** (MT) are typically placed in intubated patients with life-threatening GI hemorrhage (particular esophageal varices) when **interventional approaches to control hemorrhage have been unsuccessful or are unavailable**.
- The **MT** is a four-lumen gastric tube that permits tamponade of gastric and esophageal bleeding as well as continuous aspiration of gastric & esophageal contents. It is an improvement over the older Sengstaken–Blakemore tube (SBT), which only permitted gastric contents to be aspirated.
- Endotracheal intubation with HOB >45° is recommended prior to MT placement.

GENERAL RULES:

- Always INFLATE the GASTRIC balloon first
- Always DEFLATE the ESOPHAGEAL balloon first
- If there's a doubt about placement, repeat CXR
- Never exceed **15 mmHg** with the GASTRIC balloon or **45 mmHg** with the ESOPHAGEAL balloon
- Never irrigate the ESOPHAGEAL suction port

PLACEMENT: (excellent step by step videos are also available)

1. Test the balloons by inflating and submerging underwater to ensure no leaks. Attach the sphygmomanometer/syringe GASTRIC balloon port and inflate to 100, 200, and 500 cc (note the pressure at each volume). Completely deflate the balloons after testing. Lubricate the distal 15 cm of the MT prior to insertion.
2. Measure from the mouth to ear to xiphoid process and insert the tube through the mouth to that depth. Use a **video laryngoscope** to help guide MT insertion into the esophagus.
3. Insert MT to the measured distance + 10 cm (typically about 50-60 cm) & verify placement:
   - Instill 50-100 cc of air into the GASTRIC port & obtain CXR
   - POCUS can also be used to confirm the presence of MT in the stomach.
   - If imaging confirms gastric placement of MT, continue to inflate to 300-500 mL
   - If pressure rises above 15 mmHg **STOP**
4. Once placement is confirmed, connect gastric aspiration to intermittent suction (negative 60-120 mmHg). Clamp the gastric balloon port. Assess for ongoing bleeding.
5. In the majority of cases the gastric balloon is able to control hemorrhage. However, if bleeding continues, inflate the ESOPHAGEAL balloon to tamponade varices further.
   - Instill 50cc of air at time and measure pressure.
   - Goal is 25-40 mmHg of ESOPHAGEAL pressure (higher can cause esophageal erosion).
   - Clamp the ESOPHAGEAL balloon. Obtain CXR.
   - Connect the ESOPHAGEAL port to continuous wall suction at negative 120-200 mmHg.
6. Mark the tube at the lips & record depth. Secure the tube w/ a 1 kg weight for traction. A catcher's mask can also be used.

REMOVAL:

1. If bleeding resolves, DEFLATE the ESOPHAGEAL balloon by 5 mmHg every 3 hours until completely deflated.
2. If no bleeding recurs for 24 hours, release traction & deflate the GASTRIC balloon.
3. If no bleeding for another 24 hours, remove the MT.