Percutaneous Endoscopic Gastrostomy and Open Gastrostomy

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KEYWORDS

• PEG • Gastrostomy • Feeding tube

KEY POINTS

- Percutaneous endoscopic gastrostomy (PEG) is a safe and minimally invasive technique that can be conducted in most patients to attain feeding access.
- The operating room is not required for most PEG placement, and the procedure can be done in the intensive care unit or endoscopy suite (wherever moderate sedation is allowed).
- Complication rates occur approximately 10% of the time and are usually minor in nature.

Introduction

Many patients with head and neck cancers have impaired swallowing, leading to either the inability to take nutrition and hydration orally or they have an unacceptable risk for aspiration. Without nutrition, most postoperative patients would fail to heal. When a feeding tube is required, early gastric feeding is the method of choice. In patients with a short-term situation where the inability to take adequate oral nutrition is likely to resolve in less than a week, nasogastric tubes are an acceptable solution. However, given the risks of complication (sinusitis, nasal septal necrosis, and so forth) and patient discomfort, they are not a viable long-term solution. In these cases, percutaneous endoscopic gastrostomy (PEG) tube insertion is a safe, reliable method with minimal major morbidity to attain feeding access in most patients. PEG tubes have been used since 1980 when the procedure was first introduced by Dr Ponsky and colleagues. Currently, the procedure stands as the method of choice to attain long-term gastric feeding access. In situations where a PEG tube is not safe or feasible, an open gastrostomy may be conducted with minimal incision.

Surgical technique

Preoperative planning

1. Patients should be hemodynamically stable.
2. Coagulopathy, if present, should be corrected.
3. Organ failure should be corrected or stabilized as much as possible.
4. Sources of sepsis should be addressed.
5. Massive ascites is a contraindication to PEG placement because tract formation is compromised and gastric contamination or leakage may happen.
6. In patients with a prior history of gastric bypass or sleeve, PEG is not a viable procedure and an open gastrostomy tube of the remnant or jejunostomy tube in the case of a sleeve may be necessary.
7. Although not a strict contraindication, patients with a history of major nongastric upper abdominal surgery may benefit from a preoperative noncontrast computed tomography scan of the abdomen to evaluate for potentially adhesed colon or small bowel overlying the stomach.

Preparation and patient positioning

1. Tube feedings should be held for 8 hours before the procedure, and the patient should be nothing-by-mouth to reduce the risk of aspiration and allow the stomach to empty.
2. The patient should be placed in the supine position in slight reverse Trendelenburg position.
3. Ceftriaxone, 1 g/v, should be given for skin infection prophylaxis.
4. Moderate sedation should be induced by a qualified practitioner with their agents of choice.

Surgical procedure (PULL technique)

1. With the patient under moderate sedation, the endoscope is advanced into the stomach as shown in Fig. 1.
2. The stomach is insufflated and digital pressure applied with the endoscope looking at the anterior wall of the stomach for the clearest point of sharp indentation in the left upper quadrant (LUQ) (Fig. 2).
3. This area should also be transluminated. This is key in helping to minimize the chance of visceral injury.
4. The LUQ is then prepared with chlorhexidine preparation and the PEG kit opened.

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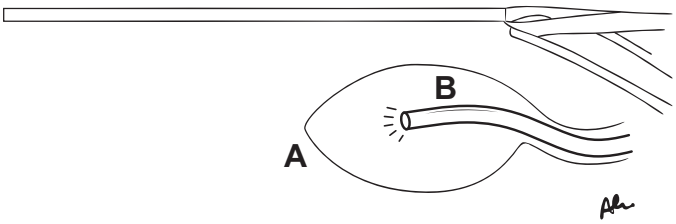

Fig. 1 Insufflating stomach. (*Courtesy of* S. Fahd Ali, MD, FACS.)

5. The area with clear indentation and translumination is selected (Fig. 3). Approximately 3 to 5 mL of local anesthetic is instilled into the area, and a 3- to 5-mm stab incision made in the skin.
6. A needle cannula is passed through the incision and into the stomach under visualization from the endoscope.
7. The needle is withdrawn leaving only the cannula and 3 to 5 cm of wire. The wire is positioned in an open snare and passed into the stomach via the endoscope.
8. The cannula should be backed out of the abdominal wall once the snare is closed around the wire.
9. With the snare closed, the endoscope, snare, and wire are all withdrawn out the mouth, with care not to pull the entire wire through the abdominal wall (Fig. 4).
10. The wire coming out the mouth is locked around the tip of the PEG tube so that the two are connected. The wire is pulled out at the abdominal wall, bringing the PEG tube with it (Fig. 5).
11. The PEG tube is pulled until its head is snug up against the abdominal wall, with just enough tension to allow the PEG tube to turn when rotated without resistance when inspected with the endoscope.
12. The marked skin to the end of the tube distance varies with the thickness of the abdominal wall, but is usually 3 to 6 cm.
13. A bolster is lowered down the PEG tube until it is 2 to 4 mm above the skin, securing the tube.
14. The plastic clamp is fitted over the tube, and the tip of the PEG tube is cut and a feeding nozzle inserted (Fig. 6).
15. The procedure is complete, and the author has the patient use an abdominal binder whenever possible for the next 2 weeks to prevent accidental dislodgment.

Immediate postoperative care

1. No gauze is placed in between the bolster and the skin because of risk of dislodgement, infection, and increased tension at the site.
2. Medications with flush may be started 6 to 8 hours after placement
3. Tube feedings may start 24 hours after insertion.

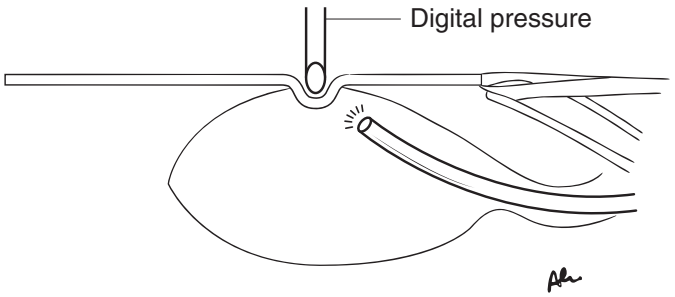

Fig. 2 Digital pressure with sharp indentation and translumination. (*Courtesy of* S. Fahd Ali, MD, FACS.)

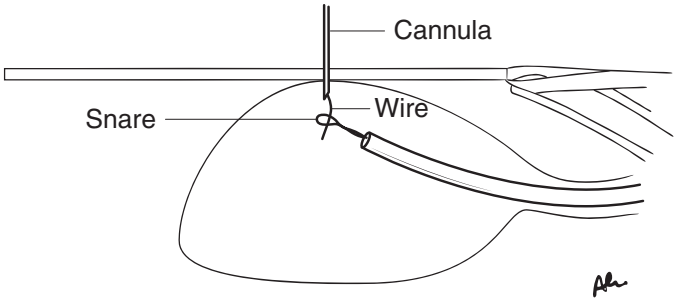

Fig. 3 Wire snared. (*Courtesy of* S. Fahd Ali, MD, FACS.)

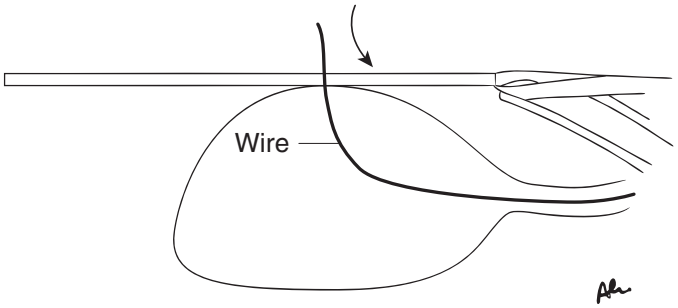

Fig. 4 Wire withdrawn along with scope via mouth. (*Courtesy of* S. Fahd Ali, MD, FACS.)

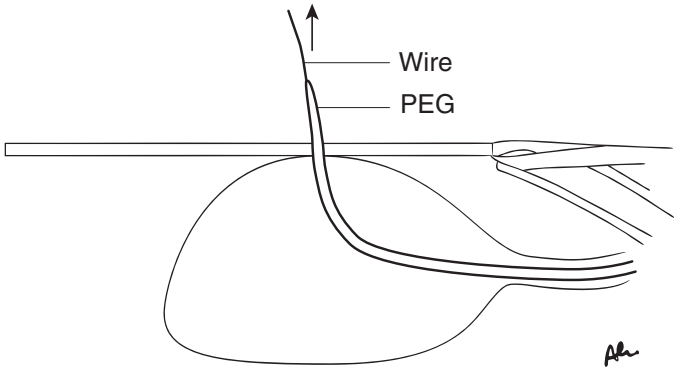

Fig. 5 PEG pulled out of abdominal wall. (*Courtesy of* S. Fahd Ali, MD, FACS.)

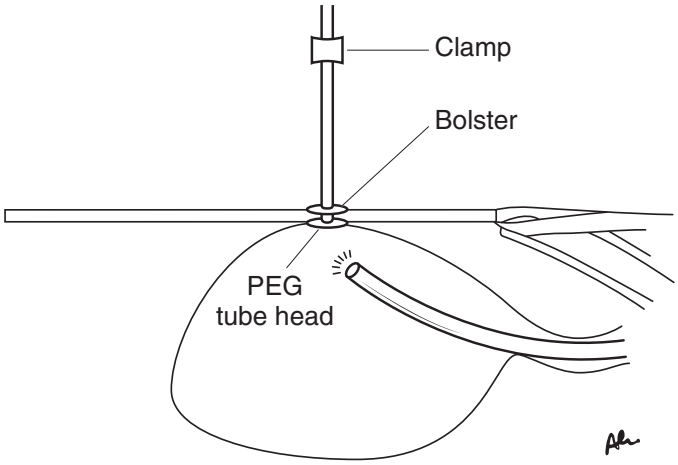

Fig. 6 Proper positioning. (*Courtesy of* S. Fahd Ali, MD, FACS.)