PEG feeding tube placement and aftercare

In this article...

- Why patients must be carefully selected for tube insertion
- Observations to be done after insertion
- The nurse’s role in preventing serious complications

A number of conditions can compromise patients’ ability to swallow, or take in sufficient food and drink orally. A proportion of these will require an enteral feeding tube to meet their nutrition requirements. Percutaneous endoscopic gastrostomy (PEG) tubes are long-term, artificial enteral feeding tubes that require endoscopic placement and allow direct access to the stomach from outside the abdominal wall. This route is generally used for supplementation of nutrition, fluids and medication administration.

The PEG tube
PEG tubes are usually made from flexible polyurethane and approximately 35cm in length, with a hollow lumen that allows for the passage of liquids. The external diameter is measured in French gauge, with each unit representing 0.33mm. In the UK, 8-16 French-gauge tubes are commonly used – the exact gauge used is determined by the patient group and intended use.

Fig 1 shows the PEG tube in the fistula tract between the anterior gastric wall and abdominal wall. The tube is held within the stomach by a retention bumper that lies against the anterior gastric wall. The bumper is commonly a button of soft malleable silicone or an air-filled foam sac (Best, 2004).

The external part of the tube has an adjustable fixation plate commonly made from soft silicone. There is no consensus in the literature or manufacturers’ guidance on exactly how far from the abdominal wall this should be positioned. The

<table>
<thead>
<tr>
<th>Complication</th>
<th>Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulmonary aspiration</td>
<td>Oversedation compromising airway protection or overinsufflation of air into the stomach</td>
</tr>
<tr>
<td>Bleeding, haemorrhage from puncture site</td>
<td>Abnormal coagulation or retention bumper held too tight, causing the anterior gastric wall to bleed</td>
</tr>
<tr>
<td>Peritonitis</td>
<td>Separation of stomach muscles allowing gastric contents to leak into the peritoneal space</td>
</tr>
<tr>
<td>Pneumoperitoneum</td>
<td>Air leaking into the peritoneum causing pain</td>
</tr>
<tr>
<td>Intra-abdominal leakage of bowel content</td>
<td>Colonic perforation (commonly transverse colon)</td>
</tr>
<tr>
<td>Internal haemorrhaging and biliary leak</td>
<td>Liver puncture</td>
</tr>
<tr>
<td>Retention bumper misplaced in colon</td>
<td>Colon puncture</td>
</tr>
<tr>
<td>Site infection</td>
<td>Contamination of equipment during insertion and/or poor oral hygiene</td>
</tr>
</tbody>
</table>
**Indications**
PEG tubes can be placed in patients of all ages. The general indicators are symptoms of dysphagia or an inability to eat or drink enough to meet nutritional requirements (Westaby et al., 2010). This is usually caused by neurological or anatomical disorders that affect swallowing, for example, motor neurone disease or an oesophageal tumour (Kurien et al., 2010; Löser et al., 2005).

For endoscopic tube placement, patients should:

- Be able to open their mouth to at least 3cm to allow mouthguard placement;
- Be able to lie flat for approximately 20 minutes for the duration of the procedure;
- Be on no more than minimal oxygen therapy;
- Have blood coagulation within the normal range.

**Risks and potential complications**
The patient’s medical history should be thoroughly reviewed for outstanding risk factors or diagnoses that could make the procedure difficult, impossible or futile. For example, an intestinal obstruction beyond the duodenum could prevent ideal is that the tube cannot move freely in the fistula tract nor fit too tightly (Westaby et al., 2010). In my experience, 1cm from the abdominal wall usually meets these requirements but local policies may differ.

There is an adaptor at the external end of the tube to fit specific enteral syringes and feed-giving sets. The majority of tubes have a clamp to prevent backflow of fluid when the adaptor end is open. When the PEG tube is not in use, the adaptor end should be closed and the clamp left open to prevent damage to the tubing (Löser et al., 2005).

**Severe pain that is not relieved by simple analgesia, or is made worse by using the tube**

**Fresh bleeding* or gastric fluid or feed leaking from wound site**

**Sudden change in clinical observations**

**Change in level of responsiveness or behaviour**

*A small amount of bleeding from the site is expected and may need a small dressing. Large, thick dressings should be avoided as they prevent thorough observation of the site.

For example, an intestinal obstruction beyond the duodenum could prevent the procedure difficult, impossible or futile. The majority of tubes have a clamp to prevent backflow of fluid when the adaptor end is open. When the PEG tube is not in use, the adaptor end should be closed and the clamp left open to prevent damage to the tubing (Löser et al., 2005).

If a patient does not have any risk factors, PEG tube placement still has a risk of complications. Table 1 details the most commonly reported complications at the time of insertion (Fletcher, 2011; National Patient Safety Agency, 2010; Westaby et al., 2010).

In the UK, procedure-related morbidity is thought to be 9–17% and mortality 0.5% (NPSA, 2010); 30 days post-procedure mortality rates are 4–26% (Tanswell et al., 2007). The NPSA reported 22 incidents of serious complications after gastrostomy insertion (five of these in children) from October 2003 until January 2010; these included endoscopically, radiologically and surgically placed tubes (NPSA, 2010). Of these, there were 11 deaths and 11 incidences of severe harm resulting in emergency surgery or high dependency unit/intensive therapy unit admission. Patients should therefore be carefully selected for PEG tube placement. There should be thorough multidisciplinary team discussion, and patients and/or their next of kin should be included in the decision-making process.

If the decision is made to proceed with PEG tube placement, prior to the procedure the patient’s bloods must be closely monitored for signs of abnormal coagulation and infection, and clinical observations monitored. PEG tube placement in patients with an infection is not advised and should be discussed by the multidisciplinary team.

Due to the invasive nature of the procedure and high risk of site infection (the PEG tube is sited via the patient’s mouth, which can be highly loaded with bacteria), a prophylactic antibiotic such as intravenous co-amoxiclav or teicoplanin is recommended before the procedure (Kurien and Sanders, 2010; Westaby et al., 2010). Patients should be fasted of food for at least six hours and of water two hours before the procedure to ensure the stomach is empty; this may vary according to local policy and patient.

**The procedure**
Just before the procedure patients are given mild sedation, usually midazolam, intravenously. A mouthguard is put in their mouth to prevent them biting the endoscope and to protect their teeth.

**Box 1. “RED-FLAG” ALERTS**

- Severe pain that is not relieved by simple analgesia, or is made worse by using the tube
- Fresh bleeding* or gastric fluid or feed leaking from wound site
- Sudden change in clinical observations
- Change in level of responsiveness or behaviour

*A small amount of bleeding from the site is expected and may need a small dressing. Large, thick dressings should be avoided as they prevent thorough observation of the site.

For more articles on nutritional care, go to nursingtimes.net/nutrition

---

**Fig 1. Siting of the PEG tube**

**Fig 2. Anaesthetising the abdominal wall**

**Fig 3. Removal of the trocar needle**

**Fig 4. Removal of the trocar sheath. Guide wire in position**

**Figs 5 and 6. Bringing the PEG tube out through the fistula using the guide wire**

**Fig 7. Fixing the tube**
There are many advantages to PEG tube placement for long-term access to the gastrointestinal tract that bypasses the mouth and oesophagus. However, patients must be carefully selected for PEG tube placement. With good nursing care many of the associated complications can be avoided or highlighted promptly for investigation and management.

**References**