Troubleshooting PEG feeding tubes in the community setting

Rosie Thompson

The number of patients in a community setting with percutaneous endoscopic gastrostomy (PEG) tubes is increasing year-on-year. PEGs provide a secure route of delivering artificial nutrition, hydration, and medication in patients who are unable to swallow safely, however, there are complications associated with their insertion and ongoing use. Common problems include infection, leakage, tube blockages, development of granulomas at the insertion site, and so-called ‘buried bumper syndrome’. Community nurses are ideally placed to identify these complications, and this article provides a quick reference guide to troubleshooting and managing these issues.

KEYWORDS:
Nutrition ■ Enteral nutrition ■ PEG feeding ■ ‘Buried bumper’

PEG TUBES

The acronym PEG comprises the following elements:
- Percutaneous: procedure where access to the inner organs or tissue is performed via needle-puncture of the skin
- Endoscopic: the use of a camera to examine the interior of a bodily cavity
- Gastrostomy: a surgical opening in the stomach through the abdominal wall.

PEG tubes deliver enteral nutrition and hydration directly into the stomach via a small incision in the abdominal wall (NICE, 2006). The procedure should be considered in cases where enteral feeding is required for longer than 2–3 weeks (Loser et al, 2005). Table 1 outlines conditions and situations where PEG feeding is indicated.

Placement

The majority of PEG tubes are inserted in the endoscopy department under light sedation, which takes approximately 15–20 minutes. The endoscope is passed down through the mouth and into the stomach where the light located on the end of the camera is directed towards the abdominal wall so that it can be seen externally, thereby identifying the location of the stomach. A local anaesthetic is administered and a hollow needle passed into the stomach. Following this, a wire is threaded through the needle where it can be picked-up by the forceps and lead to the stomach cavity. A guide-wire is then passed through the needle, which is then removed and the guide-wire is left in place to assist the placement of the PEG tube. The tube is then advanced through the needle and into the stomach. The needle is then removed and the PEG tube is secured in place with suture or adhesive tape.

Table 1: Indications for PEG feeding

<table>
<thead>
<tr>
<th>Neurological</th>
<th>Stroke and resultant dysphagia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neurodegenerative</td>
<td>Multiple sclerosis</td>
</tr>
<tr>
<td></td>
<td>Motor neurone disease</td>
</tr>
<tr>
<td></td>
<td>Parkinson's disease</td>
</tr>
<tr>
<td></td>
<td>Huntington's chorea</td>
</tr>
<tr>
<td>Oncology</td>
<td>Tumours of the mouth and throat</td>
</tr>
<tr>
<td></td>
<td>Tumours of the oesophagus</td>
</tr>
<tr>
<td></td>
<td>Patients receiving radiotherapy to the above areas</td>
</tr>
<tr>
<td>Other</td>
<td>Trauma and head injuries resulting in difficulty swallowing due to decreased consciousness or facial fractures</td>
</tr>
<tr>
<td></td>
<td>Idiopathic swallowing disorders</td>
</tr>
</tbody>
</table>

The aims of enteral feeding are as follows (Loser et al, 2005):
- Maintain nutrition and hydration
- Avoid further weight loss
- Correct nutritional deficiencies
- Prevent deterioration in quality of life.

Enteral feeding should always be prescribed by a dietician as part of a multidisciplinary approach, as recommended by the National Institute for Health and Care Excellence (NICE, 2006).

Enteral feeding can be a short or long-term measure. It is used for patients who have a functioning gastrointestinal tract but are unable to meet their nutritional needs orally (Kurien et al, 2010).
on the endoscope and pulled back out of the mouth. The PEG tube is then attached to this wire and pulled back into the mouth, down into the stomach and out through the incision in the abdominal wall. The PEG tube’s internal disc anchors it in place and an external fixation plate/flange, clamp, and connector are all added afterwards, securing the tube without the need for sutures (Figure 1).

PEG tubes can also be inserted in theatre, either endoscopically or as an open procedure. An open procedure is when the tube is placed by making a cut or an ‘opening’ in the skin, avoiding the need to use the endoscope, as the tube is placed directly into the stomach. An open procedure requires a general anaesthetic, and the recovery time is longer than for endoscopic insertions as there is a larger incision to heal.

Tubes can also be inserted using x-ray guidance — these are called radiologically inserted gastrostomies. This method requires the placement of a nasogastric tube (a tube inserted through the nose and into the stomach), which is used to inflate the stomach with air so a tube can be inserted through the skin and the abdominal wall. A dye is then injected into the tube, which can be seen entering the stomach on x-ray. Once the position is confirmed, the balloon on the end of the tube can be inflated with water to hold the tube in place. The water in the balloon needs replacing every week, and the tube itself should be changed every three months by someone who has been specially trained.

The method of insertion depends on the patient and their condition; those unable to open their mouths sufficiently to receive the endoscope may benefit from radiological insertion, which does not require significant mouth opening. Patients with neurodegenerative disorders are at greater risk of breathing difficulties and therefore may be safer in theatre where there is an anaesthetist to monitor their breathing.

Discussion regarding the placement of a feeding tube should involve the patient, their family, and the wider multidisciplinary team, and should address any benefits and potential issues for the individual concerned. One small study of patients undergoing feeding via gastrostomy found that although the majority felt the procedure had been life-saving, enteral feeding had gradually begun to dominate their lives and was in fact a significant burden (Jordan et al, 2006). Similarly, in patients with dementia for example, refusing food can be a feature of the condition’s progression and can be very distressing for those involved. In these cases, families will need support and understanding from the nursing team.

SAFETY

In 2010, the National Patient Safety Agency (NPSA) issued a rapid response alert following reports of 11 deaths and 11 incidences of serious harm following PEG placement over a seven-year period. The report identified that ‘red flag symptoms’ such as pain on feeding, leakage of gastric contents and bleeding were not being recognised. Although these symptoms are considered normal after PEG insertion, it is their severity that dictates whether or not medical intervention is needed. Table 2 outlines the immediate complications that can occur following PEG insertion. If they do have concerns, community nurses should seek prompt medical advice to allow investigations to take place.

The NPSA strongly recommends the use of an early warning sticker to ensure patients, carers and clinicians are aware of the adverse symptoms and the appropriate action to take. This label should be placed on the

<table>
<thead>
<tr>
<th>Red Flag</th>
<th>Pain</th>
</tr>
</thead>
<tbody>
<tr>
<td>If there is pain on feeding, prolonged or severe pain post-procedure, fresh bleeding, or external leakage of gastric contents, stop feed/medication delivery immediately. Obtain expert advice urgently and consider a computed tomography (CT) scan, contrast study or surgical review.</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1.
The PEG tube in situ.
When your patients need more but want less.

**MINI MEALS EXTRA**

A range of nutritious smaller meals created to support those with reduced appetites who may be at risk of malnutrition.

For more information contact us to arrange a **FREE** tasting session

0800 066 3164

wiltshirefarmfoods.com/mmx

Also available in hospitals & care homes from apetito
endoscopy report as well as the discharge documentation (particularly important for patients discharged from hospital less than 72 hours after PEG insertion, as this is the period when serious complications are most likely to occur). Patients must also be provided with appropriate telephone numbers for out-of-hours services they can contact for urgent advice (NPSA, 2010).

MANAGING THE PEG TUBE

NICE (2006) recommended that patients be taught to care for their tubes themselves, thus promoting independence and independence from clinicians. Training is carried out in hospital, or once the patient has arrived home, and is usually provided by a nurse from the company supplying the feed and equipment. In a residential setting, care staff will be trained on how to manage the tube (see below).

Post-placement

The patient should not receive any feed via the tube for the first four hours immediately following the PEG placement. A flush of 30–50mls sterile water or freshly drawn tap water should then be administered, and if there is no pain, feeding can commence (Best et al, 2008). If there is any pain, leakage, or bleeding at this point, nothing further should be administered via the tube and medical advice should be sought.

Flushing

Flushing prevents build-up of residue on the inside of the tube and reduces the risk of blockage. Flushes of 30–50mls should be administered before and after feeding, and before, between, and after the delivery of any medication (Loser et al, 2005). Sterile or freshly drawn tap water can be used, according to local policies (BAPEN/British Pharmaceutical Nutrition Group, 2003).

Cleaning

The stoma should be cleaned daily using water and a disposable cloth and inspected for signs of infection (redness, discharge, inflammation). Community nurses should ensure the patient’s skin is dried thoroughly to prevent it becoming damp and at risk of breakdown and maceration (Warriner, 2013).

A dressing is only necessary if there is discharge or leakage from the site, or if the patient prefers to have one. In this case, gauze and tape should be sufficient to absorb any leakage while allowing the site to breathe, whereas film dressings should be avoided as they can cause the site to become clammy and present an infection risk (National Nurses Nutrition Group [NNNG], 2013).

Positioning

To promote the formation of an established passage between the stomach and skin through the abdominal wall (commonly called the stoma tract), the external flange needs to be positioned 0.5–1cm away from the skin (Remington and Simons, 2013). This allows enough space for the patient to be able to sit and stand comfortably, while preventing excess movement and leakage (NICE, 2006). If the external flange is too tight, it will be uncomfortable and can lead to the development of ‘buried bumper syndrome’ (Remington and Simons, 2013; Cyrany et al, 2016), a rare but serious complication where the internal flange or bumper is pulled so hard against the stomach wall that it becomes embedded. To prevent this, the tube should be advanced and rotated at least once a week, but no more often than once a day (NICE, 2006; Warriner, 2013). To advance the tube, the community nurse should unclip the external flange and gently push the tube about a thumb’s length into the stomach, before turning the tube 360 degrees and returning it to its original position, then clipping the flange back into place. Community nurses can begin advancing the patient’s tube 7–10 days post placement (NICE, 2006).

MANAGING COMPLICATIONS

Patients receiving gastrostomy feeding are often active and likely to be living in their own homes (BAPEN, 2011), therefore community nurses will often be the first port of call for patients experiencing problems with their PEG tubes.

Infection

Infection is the most common complication, occurring in approximately 30% of people with a PEG tube (McClave and Neff, 2006). Infection can be identified by discharge, redness and pain around the entry site and/or pyrexia, and results from bacterial contamination at insertion or poor hygiene when handling the tube or cleaning the site. If infection is suspected, a swab should be taken and sent for culture testing, and antibiotics considered, according to local policy (Remington and Simons, 2013). Patients and carers should be educated on the importance of cleaning the site daily to reduce the chance of reinfection.
Leakage
Leakage of gastric contents is also a common problem, however, community nurses can often easily rectify this by checking the position of the external flange. If the flange is too loose, gastric contents can leak around the outside of the tube causing skin irritation and increasing the chance of infection. Leakage can also be due to the stoma tract not being fully healed. A dry dressing placed under the external flange and secured with tape will absorb leakage while allowing the site to ‘breathe’, although any dressing should be changed regularly to avoid bacterial growth (Remington and Simons, 2013).

Blockages
A blockage renders the tube unusable and can have serious consequences, such as dehydration, unstable blood sugars if the patient is diabetic, and an inability to receive medications. This is particularly concerning if the patient is unable to take anything orally at all. Blockages are caused by inadequate flushing or poorly dissolved medications. BAPEN (2003) recommended attempting to flush the tube with warm water using a ‘push-pull’ action when using the syringe, similar to trying to unblock a sink. However excess force should not be used as this risks fracturing the tube. Rolling the tube between thumb and forefinger can help to break down blockages (Remington and Simons, 2013). If these techniques prove unsuccessful, the community nurse should seek expert advice.

Patients and carers should be educated on the importance of regular flushing and medications should also be reviewed; soluble tablets and liquids are the preferred formulations, but community nurses should be aware that suspensions still contain granules suspended within a solution, and can therefore block tubes.

Reflux/vomiting
Reflux and vomiting can occur if the patient is incorrectly positioned when feeding, or if they are constipated. Feed entering the stomach via the tube can flow back up through the oesophagus and into the mouth, putting the patient at risk of developing aspiration pneumonia should the feed pass into the lungs. Community nurses should ensure that patients are sitting at an angle of at least 30 degrees to prevent any feed flowing back up through the oesophagus.

In some cases, the feed is delivered overnight, giving patients more freedom in the day as they are not attached to a pump; similarly, in patients who can take some food orally, overnight feeding does not interfere with mealtimes. For overnight feeding, community nurses should consider using pillows to elevate the patient’s head. Alternatively, nurses may want to discuss a daytime feed with the patient, i.e. when they are more likely to be sitting upright, if it is felt that this may be more appropriate. Although the PEG feed is a liquid, patients are still at risk of constipation if they have reduced mobility, or are taking medications such as opiates, which can slow the digestive tract. If the patient is constipated, the community nurse should discuss the use of laxatives with their GP or pharmacist.

Broken parts
Gastrostomy tubes are designed so that all the external parts except for the tubing can be replaced. If the tube splits or develops a hole, providing the tube itself is long enough, the damaged part can be cut away and the ends reapplied. However, if the damage is very close to the skin, expert advice would need to be sought to arrange for the tube to be replaced. Spare parts can be obtained from the patient’s homecare company nurse, nutrition specialist nurses, or dieticians.

Granuloma
A granuloma is a collection of vascular granulation tissue that forms around the edges of the stoma, commonly caused by friction where the PEG tube’s external flange is too loose. Granulomas are relatively common (Warriner, 2013), but are uncomfortable and prone to bleeding (Remington and Simons, 2013). There is a limited evidence base for the management of granulomas (Warriner, 2013), however, the NNNG has published practice guidelines recommending the use of an antimicrobial dressing, with healing progress to be reviewed weekly or according to local policy (NNNG, 2013). There is also advice on how treatment should progress should the initial management of a granuloma be unsuccessful, for example the use of a topical corticosteroid, or in some cases, complete resiting of the tube. Full guidelines are available on the NNNG website (www.nnng.org.uk).

Buried bumper syndrome
Buried bumper syndrome is a rare complication where the external flange is too tight, causing the internal flange to migrate along the stoma tract until it exits the stomach (Cyrany et al, 2016). Symptoms include an inability to advance the tube, leakage when feeding, and, in severe cases, inability to use the tube at all (Cyrany et al, 2016). Buried bumper syndrome usually develops as a result of poor aftercare, where clinicians have not taken time to regularly advance and rotate the tube, and typically occurs at least three months following insertion (Malhi and Thompson, 2014). In some cases, however, and despite appropriate aftercare, buried bumper syndrome can develop much sooner (Malhi and Thompson, 2014; Cyrany et al, 2016). While the tube can be used for feeding if it is only partially occluded, as soon as buried bumper syndrome...
is suspected, expert advice should be sought as removal of the tube can be complicated and may require surgical intervention (Cyrany et al, 2016).

CONCLUSION

PEG feeding is a safe and effective way of delivering long-term nutrition for those patients unable to swallow. The procedure is considered safe and low risk, and the tube simple to manage. However, complications can occur, either immediately or months later. Community nurses are ideally placed to support patients with their feeding tubes, and being aware of common problems and their management allows them to provide the most appropriate care.

REFERENCES


Welcome to JCN’s learning zone...

JCN’s online resource, which, together with the learning zone in the Journal of Community Nursing, helps you to develop your knowledge in vital areas of care, to keep up-to-date with clinical practice.

› Read the article
› Reflect on what you have learnt
› Review your knowledge with the online test

...Then, download your certificate to show that you have completed this e-learning unit and gained competency in this area of clinical practice.

JCN’s learning zone — an essential educational resource for all busy nurses working in the community.