Guidelines for routine gastrostomy tube replacement in children

Sarah Cunningham and Carolyn Best outline advice for the care of children with feeding difficulties

Abstract

Endoscopic placement of a gastrostomy is the safest method of inserting a gastrostomy in children who are going to require full or supplemental enteral feeding for more than six weeks. Once a stoma tract has formed successfully following initial placement of a gastrostomy tube, the device can be changed to a balloon, button or non-balloon type. Community nursing teams often support a number of children with gastrostomies and their families, replacing the devices as necessary. Guidance for the safe insertion and replacement of balloon and button gastrostomies has been produced by the National Nurses Nutrition Group, the Patient Safety Agency and manufacturers, but standardised national guidelines are required.

Keywords

Child nutrition, enteral feeding, gastrostomy tube replacement, percutaneous endoscopic gastrostomy, paediatrics

THE PROCESS for inserting a percutaneous endoscopic gastrostomy (PEG) was first introduced in 1980 by Michael Gauderer, a paediatric surgeon in Ohio in the US (Gauderer et al 1980). The idea emanated from an earlier endoscopic procedure he undertook in a small baby with a progressive neurological condition (Ponsky 2011), where Gauderer had noted a clear translumination through the infant’s abdomen. Before this, children had to undergo a laparotomy to receive a feeding tube. Endoscopic placement of a gastrostomy is now firmly established as the safest method of inserting a gastrostomy in children (Puntis et al 2000, Nah et al 2010) and is usually undertaken using general anaesthesia.

Gastrostomy tube feeding in children is indicated for those who require long-term supplemental or full enteral feeding. Some examples of the many indications for a child requiring such nutrition support are listed in Box 1 (Srinivasan et al 2009). Gastrostomy feeding is an alternative to the use of a nasogastric tube and is appropriate for children of any age.

Offering nutritional support

Many children experience some level of feeding difficulty, but in most cases this can be managed by supplementing an oral diet. For these children, high-energy drinks or medication may be sufficient to manage their condition and meet their nutritional needs. Other children may experience more complicated feeding difficulties, meaning they are unable to eat or drink all they need for their growth and development. It is these children who may need to be considered for an enteral feeding tube insertion so that additional liquid nutrition can be administered directly into their gastrointestinal tract, bypassing the oral route. For example, persisting with oral nutrition in children with vomiting or enteral dysmotility may not be feasible and may lead to loss of body weight. In such cases, nasogastric tube feeding is usually used in the short term (El-Matary 2011).

Box 1

Conditions in children where enteral tube feeding may be required

- Neurodisability
- Cystic fibrosis
- Neonatal pulmonary disease
- Congenital heart disease
- Crohn’s disease
- Oncological conditions
- Metabolic disease
- Genetic-chromosomal and degenerative disease

(Adapted from Srinivasan et al 2009)
There are, however, disadvantages to feeding via a nasogastric tube in children, including misplacement and the potential for spontaneous expulsion and increased stress due to the need for repeated insertions (Srinivasan et al. 2009). Consideration of placement of a gastrostomy tube in children is advisable, therefore, where it is clear that the child is going to require long-term full or supplemental enteral feeding for at least six weeks.

Assessment for insertion of enteral tube feeding must be on an individual basis, taking into consideration the child’s age, clinical status and the period of time for which nutrition support is likely to be required. It will also be necessary to consider whether gastric feeding can be tolerated, if not feeding into the small bowel may need to be considered. As gastrostomy tube feeding is the most common method of providing nutrition support in children, this article will focus on this aspect of nutrition support.

### Gastrostomy tube feeding

A gastrostomy is a surgical opening – made through the abdominal wall into the stomach – through which a feeding tube can be passed.

A percutaneous endoscopic gastrostomy (PEG) is the type of gastrostomy that is usually inserted in the first instance to safely establish a tract. If a child is unable to tolerate an endoscopic procedure, or endoscopic placement of a gastrostomy has proved unsuccessful, it may be necessary for the child to undergo a surgical or laparoscopically assisted gastrostomy procedure (Wragg et al. 2012). Both of these gastrostomies are inserted using general anaesthesia.

Successful placement of a gastrostomy tube does not imply the child has to be fed solely via their gastrostomy. If they can tolerate some oral diet, this should be encouraged and gastrostomy feeding used to supplement oral intake, with the volume and type of feed adapted according to oral intake. In addition, the method of feed administration via the gastrostomy will depend on the level of feed required and the child’s condition, lifestyle and level of acuity.

The feed may be administered as a continuous infusion (usually overnight) or as bolus feeding during the day.

The decision about which method of feeding is used should, where possible, be made in conjunction with parents. Reassurance should be provided to parents that if the child has to be fed solely via their gastrostomy tube, it has been shown to improve growth in height and weight among children with feeding difficulties (Dahlseng et al. 2012).

### Types of gastrostomy tubes

There are a number of different gastrostomy devices that can be used for initial placement and for long-term placement (Box 2). The choice of device is usually based on the preference of the NHS hospital trust, but the decision about which type of tube is suitable for the child concerned should be made in conjunction with the child and a parent or carer.

In many children, once a stoma tract has formed successfully following the initial placement of a PEG or surgically-inserted gastrostomy tube, their feeding tube is changed to a balloon, button or non-balloon type. The point at which this change takes places may differ from hospital to hospital, but can occur from as soon as six weeks after the initial feeding tube is inserted. The decision to change over to a balloon, button or non-balloon device needs to be undertaken in consultation with the parent or carer and child.

Hospitals may give families the choice of whether to replace the gastrostomy with a button device (Figure 1). A gastrostomy button is often used to replace the PEG tube for convenience (Durai and Ng 2011), and button tubes should be recommended for long-term enteral nutrition to improve the child’s quality of life (Buderus et al. 2009).

The PEG is removed under general anaesthetic and a button device is inserted at the same time. Surgically-inserted balloon gastrostomies (Figure 2) can be removed without the need for an anaesthetic and are often kept in longer than six weeks to ensure the tract is established.

### Box 2 Types of gastrostomy tubes

- Percutaneous endoscopic gastrostomy tube.
- Balloon gastrostomy tube (also called a replacement gastrostomy or G tube).
- Button or low-profile device.
- Non-balloon gastrostomy tube.

![Figure 1 Button gastrostomy tube](Science Photo Library)
Following initial placement of a gastrostomy, children will usually stay in hospital for at least 48 hours to observe for any complications after the procedure. This period also gives parents or carers sufficient opportunity to learn how to care for the gastrostomy tube, the feed and the various other pieces of equipment that accompany gastrostomy feeding.

Follow up and support thereafter are usually provided by community children’s nursing teams, with ongoing hospital support if needed. Larger tertiary centres and children’s hospitals often insert gastrostomies and then refer the child and family back to their local team for ongoing care and support. This can mean local community teams often look after and support a number of children with gastrostomies, each potentially with different types of gastrostomy devices, depending on the NHS trust at which the child was seen for gastrostomy insertion.

Children should only need to return to hospital to have their PEG or surgically-inserted gastrostomy swapped for a balloon or button gastrostomy device at the first change. Subsequent uncomplicated changes can be undertaken by the community nurse or a parent or carer at the child’s home or school.

Complications associated with gastrostomy feeding

There are few complications associated with enteral tube feeding. Those that do occur are usually minor. Common complications include the development of inflammation or overgranulation tissue around the base of the gastrostomy tube and leakage of feed or occasionally gastric contents. However, with good tube management, in most cases these issues are preventable or manageable. If issues do arise, advice should be sought from community children’s nursing teams or the referring hospital team.

National Patient Safety Agency guidance

Enteral tube feeding is generally considered to be safe and effective. In recent years, however, the National Patient Safety Agency (NPSA) has released two alerts relating to gastrostomy tubes, the first in March 2010 and the second in March 2012.

The first rapid response alert followed 11 reports of patient harm and 11 of death over a seven-year period. These resulted from a lack of recognition of post-procedural complications following gastrostomy insertion, and led to a tightening-up on the type and level of observations recommended following initial gastrostomy tube placement (NPSA 2010).

The second alert refers to patient safety issues, about replacement of balloon and button gastrostomy tubes at established stoma sites, in hospital and community settings (NPSA 2012). It warns against the use of force when replacing balloon or button gastrostomies, stating that where force is used to replace the device, particularly button devices, there is potential to penetrate the abdominal cavity. If this occurs and feeding is resumed, potentially fatal peritonitis can occur.

Providing standardised care

Hospitals will have localised care plans, protocols and information on the care of gastrostomies. Each child will have an individual care plan for their gastrostomy, but this can vary from client to client depending on where they had the gastrostomy inserted and what type of device they have. Although gastrostomies are widely used, there is little robust evidence on which to base best clinical practice in relation to balloon or button gastrostomy tube changes. There is also no current national guidance. There are increasing numbers of different devices available for healthcare professionals to use, and the information provided with company literature may vary from one product to another. Consequently, nurses are often guided by established practice and guidelines in hospitals for adults and children, by company literature or by their own and colleagues’ past experience. Nurses working in the community can face difficulties because they are expected to be aware of a wide range of gastrostomy devices and to make reference to a number of local policies and procedures. They may also need to seek advice and support from referring hospital teams, although for some this input is not always easily accessible or readily available, and the level of support offered can vary between centres.

In some instances this leaves healthcare practitioners with insufficient clinical information or with conflicting advice about care of balloon or button gastrostomies, including what actions are
necessary should problems arise when caring for patients at home or when replacing a balloon or button gastrostomy.

This lack of standardised evidence-based care can cause confusion for healthcare professionals and parents or carers, reducing the confidence of parents or carers in dealing with the devices and in the healthcare professionals supporting them. Having to follow a number of protocols for what is essentially a standard procedure can lead to mistakes and poor care. Essentially, despite there being variations in these products, the care of them, including routine replacements, is similar. In addition, as many parents or carers are taught how to change their child’s gastrostomy button in the community, it is extremely important that the information they receive about this procedure is standardised, evidence-based and safe.

There is an ongoing need for clear, non-jargonistic guidance for nurses caring for children with clinical nutritional needs. Such guidance would be a good source of reference for paediatric centres when developing policies and procedures for use in hospital and community environments, and for healthcare professionals and parents or carers. As there is an increasing number of enteral feeding devices on the market that can be placed without hospital intervention, gastrostomy feeding in children is becoming increasingly common.

However, without national guidelines or standards, practical advice about caring for and replacing these tubes is variable. The development of national guidance provides scope to improve the quality of care and information given by clinical teams, regardless of the type of gastrostomy device inserted or the clinical environment in which the procedure was undertaken.

Guidance for the insertion of balloon and button gastrostomies has been produced by the National Nurses Nutrition Group (NNNG). It is available free to NNNG members or may be downloaded for a fee by non-members. For further information, go to www.nnng.org.uk

### Points for practice

- **Endoscopic placement of a gastrostomy is safest.**
- **If enteral feeding is required for more than six weeks, the initial device should be changed to a balloon, button or non-balloon type.**
- **This device can be replaced as necessary in the home with the support of the community children’s nursing team.**
- **Varying guidance for safe replacement has been produced by the National Nurse Nutrition Group, the Patient Safety Agency and manufacturers.**
- **Standardised national guidelines are required.**

### Online archive

For related information, visit our online archive and search using the keywords.

### Conflict of interest

None declared

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**References**


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