List of enteral feeding tubes

Table 5.1. Enteral feeding tube passed trans-nasally: Naso-Gastric Tube (NGT).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Naso-gastric tube (Stroud *et al*. 2003; NPSA, 2005; NICE, 2006; NPSA, 2007; NPSA, 2011; BAPEN, 2012a; NPSA, 2012; NHS Improvement, 2016; National Nutrition Nurses Group, 2016a; CORTRAK, 2017; NICE, 2016; Small, 2014).	Enteral feeding tube is passed trans-nasally into stomach. NGT insertion is generally a bedside procedure and tube placement confirmed with pH ≤5.5. However more difficult placements may require to be sited endoscopically or radiologically. Following placement position of tube must be confirmed by pH or X-ray prior to administration of any water, feed or medications via NGT. CORTRAK 2 Enteral Access System (EAS) is an electromagnetic bedside device used for the placement and confirmation of NGT feeding tubes. It is noteworthy that the NGTs can be expensive and operators require training.	Gentle traction. If nasal retention device in situ, see guidance for nasal retention removal (**Table 5.4**).	Contraindications (refer to local policy): • Basal skull fractures • Maxillo facial disorders • Unstable cervical spinal injuries • Nasal / pharyngeal / oesophageal obstruction or ulceration • Choanal atresia • Trachea-oesophageal fistula • Oesophageal / pharyngeal pouch • Oesophageal stricture or other abnormalities of the oesophagus • Oesophageal / Oropharyngeal tumours or undergone oesophageal / oropharyngeal surgery • Post laryngectomy • Actively bleeding oesophageal or gastric varices • Gastric outflow obstruction • Intestinal obstruction

Considerations:

- Short-term NGTs (7-10 days) are usually made of polyvinyl chloride (PVC) or low grade polyurethane tubes.
- Long-term NGTs (6-12 weeks) are usually made of polyurethane or silicone with a guide wire to aid insertion.

Strategies if difficulty obtaining aspirate to confirm pH:

- Check all ports are tightly sealed.
- Attach 20ml syringe to gently withdraw plunger.
- Insufflate 10-20ml with air to blow outlet off the gastric wall.
- Change the patient's position, preferably onto their left side and attempt to aspirate.
- If the patient has a safe swallow and is permitted to drink, offer some water.
- Insert the nasogastric tube a further 3-5cm and attempt to aspirate.
- If no success, try again to obtain aspirate 30 minutes later and ensure all staff are aware not to use tube in the interim.

Strategies if pH of aspirate >5.5:

- Some medicines elevate the gastric pH e.g. proton pump inhibitors (PPI) such as lanzoprazole and omeprazole.
- Discuss with medical staff whether to adjust timings of medication.

NB. pH confirmation is not required prior to administration of any fluid or feed via NG tube for laryngectomy patients as due to new anatomy post-surgery it is not possible for it to migrate into lung.

An X-ray should be obtained if NGT position cannot be confirmed with pH.

- Gastrostomy insertion should be considered if artificial feeding deemed long term and it is clinically and ethically appropriate for patient to undergo this procedure (consider impact on body image).

- NGTs are more likely to block or displace compared with gastrostomies, therefore the management and care of these feeding tubes needs to be considered when discharging patients to primary care e.g. medical, dietetic or nursing competency available in the community to replace the NGT if it falls out or competence of out of hours services to deal with problems related to NGTs.

- Ideally when replaced should be placed in the other nostril to reduce risk of nasal erosion.

Table 5.2. Enteral feeding tube passed trans-nasally: Wide Bore NGT.

Access Route	**Insertion**	**Removal**	**Contraindications and/or precautions to note**
Wide bore NGT (e.g. Ryles).	Enteral tube passed trans-nasally into the stomach and gastric placement confirmed with X-ray or pH ≤5.5. Often sited at time of surgery but can also be placed at the bedside.	Gentle traction.	Difficulty obtaining nasal access. **Refer to contraindications outlined for NGT when placing at bedside.**

Considerations:

- This tube is designed to aspirate stomach contents and is most commonly used in critical care, theatres and surgical wards. It is not an enteral feeding tube and if it is used for this purpose a risk assessment requires to be done and ENFit compatibility ensured.
- Strategies if difficulty confirming tube position are outlined in the **NGT section**.

Table 5.3. Enteral feeding tube passed trans-nasally: Naso-Jejunal Tube (NJT).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Naso-jejunal (CORTRAK, 2017; NICE, 2016).	Enteral feeding tube passed trans-nasally. They are placed post-pylorically beyond the ligament of Treitz. Some tubes are designed to be self-propelling from stomach into small bowel. Prokinetic agents may be used to assist this process. Other tubes require to be endoscopically or radiologically guided beyond pyloric sphincter. CORTRAK 2 Enteral Access System (EAS) is an electromagnetic bedside device used for the placement and confirmation of NJTs. It is noteworthy that the NJTs can be expensive.	Gentle traction. If nasal retention device in situ, see guidance for nasal retention removal (**Table 5.4**).	Refer to contraindications outlined for NGT when placing at bedside.

Considerations:

- Confirmation of tube position is determined through X-ray or endoscopy on initial siting.
- Tube position can be monitored at the nose to see if the tube has migrated, together with any signs of reflux or vomiting.
- Tubes can be vulnerable to blocking and / or kinking due to their length and small bore size. Please refer to local policy as to whether sterile, cooled boiled or freshly drawn tap water is used.
- There are double and triple lumen tubes that are used to feed into the small bowel and simultaneously aspirate the stomach. In triple lumen tubes the third column is air to help prevent the tube collapsing during aspiration.

Table 5.4. Enteral feeding tube passed trans-nasally: Nasal Retention Devices.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Nasal retention devices (Brugnolli *et al*. 2014; National Nutrition Nurses Group, 2017).	Refer to manufacturer's guidance for insertion but generally insertion involves: • Insert each probe individually into each nostril. • Advance the probe to the measurement markers advised by the manufacturer. • Manipulate the probes until the magnets connect behind the vomer bone. • Release the cotton tape from the flexible probe. If a NGT/NJT is in place: • Check tube has not become displaced. • If tube is appropriately positioned secure the length of cotton tape around the tube and into the retention clip provided. • Secure retention clip approximately 1cm from the nostril giving sufficient space to minimise patient discomfort and tissue damage.	It is usually intended that the nasal retention device remains in situ until the nasogastric / nasojejunal tube is no longer required. To remove the nasal retention device: • Cut one side of the cotton tape. • With gentle traction, gently pull the clip, cotton tape and nasoenteric feeding tube out simultaneously.	Persistent vomiting or violent coughing Basal skull fracture Nasal airway obstruction **Caution should also be taken with patients who have:** Severe agitation Deranged clotting Any structural or mechanical deformity of the nose

Considerations:

The purpose of a nasal retention device is to reduce the risk of inadvertent displacement of NGT and NJT feeding tubes. It is placed to assist the patient to meet their nutritional support needs and should not be regarded as a form of restraint.

Table 5.5. Enteral feeding tube passed via laryngectomy stoma: Stomagastric.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Stomagastric (Small, 2014).	A stomagastric feeding tube is a term used to describe the insertion of a feeding tube (usually a NGT) through a laryngectomy stoma into stomach via oesophagus. A puncture is made (usually at the time of head and neck surgery) through the back wall of the trachea into the oesophagus. This is done in preparation for the fitting of a voice prosthesis.	Gentle traction.	This is only relevant to patients who have had a laryngectomy and have a tracheal – oesophageal stoma.

Considerations:

These tubes are for short term post-operative feeding and a patient would only be discharged into the community with a stomagastric tube for the following reasons:

- The patient has developed a fistula post–operatively requiring a lengthened period of nil by mouth therefore needing to continue with enteral feeding.
- The patient is eating and drinking orally but the stomagastric tube is maturing the fistula for fitting of their speaking valve.
- The stomagastric tube is kept in position by being taped to the chest wall, if the tube falls out, it is vital it is reinserted as soon as possible, as the fistula can close very quickly.

The amount of tube to be inserted can be determined by measuring the distance between the patient stoma and their stomach. If there is any doubt about inserting the tube, it is vital that a few centimetres are inserted into the puncture site to keep the site open. If the puncture closes it has to be opened under anaesthetic.

A pH confirmation is not required prior to administration of any fluid or feed via an NG tube for laryngectomy patients due to altered anatomy. With fistulae there is a negligible risk of aspiration for laryngectomy patients with a stomagastric tube in situ. However, it is important to review each individual case, liaise with the MDT, and refer to local policy.

Table 5.6. Enteral feeding tube passed placed via mouth: Orogastric.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Orogastric (Eilliott and Jones, 2003; Great Ormond Street Hospital for Children, 2017).	A nasogastric tube inserted via mouth rather than nose. **Follow instructions in the NGT section for checking position.**	Gentle traction.	Difficulty obtaining oral access especially if head injured patient is confused.

Considerations:

- Recommended for use with basal skull fractures where NGT is contraindicated.
- Can be easily dislodged as fixation of tubes can be problematic.
- Practical difficulties when a patient resumes oral diet.
- These tubes can be useful for those with inaccessible nasal passages and with babies they will normally be seen in neonatal units.

Table 5.7. Enteral feeding tube: Percutaneous Endoscopic Gastrostomy (PEG).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Percutaneous endoscopic gastrostomy (Ponsky and Ganderer, 1981; NICE, 2006; Schrag *et al*. 2007; NHS Quality Improvement Scotland, 2008; Westaby *et al*. 2010; NPSA, 2010; BAPEN, 2012b; Rahnemai-Azar *et al*. 2014).	A PEG is placed in endoscopy using a pull through technique. The "pull" technique for placement of PEG tube is considered to be the most common technique. A guidewire is inserted into the stomach and pulled through the mouth with the endoscope. The feeding tube is attached to the guidewire. The wire is then pulled through the stomach stoma and the tube follows through into the stomach and out the puncture site. A bumper on the end of the tube secures it in the stomach.	**Traction removable**: Y-port, clamp and external fixator device is removed allowing release of air from internal bumper and tube removed with traction. **Endoscopy**: PEG tube is pushed into the stomach so that the part of the tube is visible behind the bumper. An endoscopy snare is then passed through the endoscope and passed over the bumper so that the tube adjacent to the bumper is grasped. The external part of the tube is cut and withdrawn into the stomach and then pulled into the oesophagus and removed through the mouth. **Cut and push:** This technique for removal of PEGs can be used in some patients. However, refer to local policy. Some experts have reported serious and sometimes fatal complications such as small bowel perforation and obstruction.	Inability to pass endoscope There is some evidence to suggest the potential seeding of the PEG tract with oropharyngeal or oesophageal cancer History of total gastrectomy Marked peritoneal carcinomatosis Interposed organs Portal hypertension with gastric varices Severe ascites Gastric outlet obstruction Severe gastroparesis Systemic contraindications include recent myocardial infarction, hemodynamic instability coagulopathy and sepsis.

Considerations:

Enteral feeding is likely to be needed for more than 4-6 weeks.
An advantage of the PEG tube is the longevity which is approximately 2 years (refer to local policy).

Minor Complications of PEG:

- The external fixation device should be about ~3-4mm from the stoma site. If it is too loose, it can result in leakage of gastric contents, overgranulation and irritation of stoma site. If it is too tight, it can cause pressure damage to the stoma.
- Cleaning tube site daily is also important to prevent tube site infections.
- Ensure regular water flushes to maintain tube patency and avoid tube blockages. Follow local policy with regards to whether cooled boiled or freshly drawn tap water is used.

Major Complications of PEG:

- Some local polices advise rotating the tube daily 2 weeks after initial insertion and others advise rotating daily after insertion (refer to local policy).
- It is important to avoid excessive tension between internal and external fixator devices to prevent buried bumper syndrome. This is where the stomach mucosa can grow over the internal fixation device or 'bumper', causing it to become embedded.
- Following 2 weeks from initial gastrostomy insertion, the external fixator should be moved and the tube should be moved in and out by a maximum of 10mm weekly. This prevents buried bumper syndrome occurring.
- Aspiration pneumonia.
- Haemorrhage.
- Peritonitis.
- Potential of metastatic seeding.
- Necrotising fasciitis.
- It can be helpful to secure the gastrostomy tube to the patient's abdomen using surgical tape or fixator dressings to prevent the tube being pulled or displaced.

5.9a 5.9b

Table 5.8. Enteral feeding tube: Radiologically Inserted Gastrostomy (RIG).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Radiologically Inserted Gastrostomy (Wills and Oglesby, 1983; NPSA, 2010; NHS Quality Improvement Scotland, 2008; National Nutrition Nurses Group, 2016b).	A RIG is placed in intervention radiology using x-ray guidance to site the tube. A nasogastric tube is placed prior to the procedure to inflate the stomach, support the visualisation of the anatomy and administer medications if required. A gastropexy is carried out where sutures (2-3) are used to secure the stomach to the abdominal wall before the skin is punctured and the stoma is created using a dilator, to enable tube insertion. Refer to local policy regarding timeframe for suture removal after RIG insertion as this can vary. A balloon gastrostomy is usually the tube which is sited. It is secured in the stomach by a balloon that is inflated with a small volume of water (5-20ml). Low profile devices can be placed as primary tubes.	The water from the balloon gastrostomy is withdrawn and the tube is removed by gentle traction.	History of total gastrectomy Marked peritoneal carcinomatosis Interposed organs Portal hypertension with gastric varices Severe ascites Gastric outlet obstruction Severe gastroparesis Systemic contraindications include recent myocardial infarction, hemodynamic instability coagulopathy and sepsis.

Considerations:

- A RIG is considered in patients where access for an endoscope is difficult e.g. head and neck or oesophageal cancer.
- On initial tube insertion the water in the balloon gastrostomy is changed in 2 weeks and weekly thereafter. This involves removing all the water in the balloon and replacing with the correct volume.
- Due to evaporation, the water in the balloon reduces ~1ml per week, and therefore the tube would inevitably fall out if the water was not changed regularly.
- There may be concern regarding balloon integrity if a reduced volume of water is withdrawn, indicating >1ml per week. In this situation the tube may need to be replaced as soon as possible.
- Depending on manufacturer's guidance the lifespan of these tubes type can be up to 6 months but this can vary.

Table 5.9. Enteral feeding tube: Per-Oral Image Guided Gastrostomy (PIG).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Per-oral image-guided gastrostomy (O'Dowd *et al*. 2004).	This technique is a hybrid of PEG and RIG. A PIG is placed in intervention radiology using x-ray guidance to site the tube. A nasogastric tube is placed prior to the procedure to inflate the stomach, support the visualisation of the anatomy and administer medications if required. The stomach is punctured with a needle then a guide wire inside a sheath is inserted through the puncture site and radiologically guided through the oesophagus and exited via mouth. The gastrostomy is then attached to the wire and pulled back through the mouth, oesophagus and stomach to exit via the stoma and is internally secured by a bumper.	**See removal for PEG.**	See contraindications and/or precautions to note for PEG and RIG.

Considerations:

Refer to PEG and RIG considerations.

Table 5.10. Enteral feeding tube: Balloon Gastrostomy Tubes.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Balloon gastrostomy tubes (NPSA, 2010; NHS Quality Improvement Scotland, 2008; National Nutrition Nurses Group, 2016b).	This is usually the tube often used for replacing the primary gastrostomy tube. Subsequently, a patient centred decision should be made with regards to what tube to place for the longer term. A push technique is used when changing a balloon gastrostomy. The balloon gastrostomy is gently inserted through the existing stoma tract. The balloon is inflated with the required amount of water. The position of the replacement gastrostomy is confirmed with pH ≤5.5. These feeding tubes can be replaced in the primary care setting by a trained competent health practitioner.	The water from the balloon gastrostomy is withdrawn and the tube is removed by gentle traction.	Tube placement may be contraindicated if the patients clinical condition has changed since the last placement – **see PEG and RIG contraindications and / or precautions.** Lack of support to perform required care of tube such as balloon checking.

Considerations:

- Depending on the local protocol, the initial primary tube needs to be in situ at least 4-12 weeks (in order to allow stoma formation - see local policy). Medical advice is required if a replacement tube is required before this time.
- Following replacement gastrostomy, water continues to be changed weekly in the balloon gastrostomy.
- The patient may need to use extension sets to either provide additional tube access for medications or water and/or extend the length of tube to make it easier to access. Extension sets will need to be replaced as per the manufacturer's instructions.
- Due to evaporation, the water in the balloon reduces ~1ml per week, and therefore the tube would inevitably fall out if the water was not changed regularly.
- When checking balloon volume, ensure the balloon is not pulled into the stoma before being re-inflated.
- There may be concern regarding balloon integrity if >1ml per week is lost to evaporation.
- The fixation plate/device should be kept snug against the abdomen to prevent overgranulation or gastric leakage.
- The tube should routinely be replaced up to every 3-6 months, however again this is very much dependent on local policy.

Table 5.11. Enteral feeding tube: Low Profile Gastrostomy Devices – balloon retained.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Low profile gastrostomy devices – balloon retained (NHS Quality Improvement Scotland, 2008; NPSA, 2010; National Nutrition Nurses Group, 2016b).	This tube can be placed as a primary balloon gastrostomy if being placed as a RIG. It can also be used as a replacement tube. This is a feeding tube which has a removable extension set and therefore there is minimal protrusion of the tube from the stomach. It is a requirement to measure stoma depth to ensure the correct length between the balloon in the stomach and the flange on the skin. This is measured using a stoma measuring device. Stoma depth is measured in both a sitting and supine position so an average can be obtained, thus ensuring the tube is comfortable and not too loose or tight. Low profile tubes have a one way feeding valve in which an extension set that can be locked into to allow administration of feed, water and medications. These feeding tubes can be replaced in the primary care setting by a trained competent health practitioner.	Balloon devices should be deflated and apply gentle traction as outlined above.	If the patient's medical condition has changed which would contraindicate tube replacement – **see PEG and RIG contraindications and/or precautions.** Other relative contraindications may include: Poor hand dexterity. Patient requires fine motor skills to be able to attach extension set. Lack of support to perform required care of tube such as balloon checking.

Considerations:

- Indications: **see balloon gastrostomy** for replacing water in balloon weekly.
- If patient has been known to pull tubes out regularly.
- For body image purposes due to lower profile.

Table 5.12. Enteral feeding tube: Low Profile Gastrostomy Devices – non balloon retained.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Low profile gastrostomy devices – non balloon retained (NHS Quality Improvement Scotland, 2008; NPSA, 2010; National Nutrition Nurses Group, 2016b).	Non balloon retained low profile gastrostomy devices are sited through an existing stoma tract. It is also a requirement to measure stoma depth – **see low profile gastrostomy devices** – balloon retained. They are inserted using an obturator device. The obturator is designed to distend the button device for insertion through the stoma.	Obturator devices inserted with an obturator should be removed with an obturator.	Placement of this device is contraindicated in individuals with stoma tracts measured to be longer than 4.4cm.

Considerations:
This is a non balloon device therefore no regular balloon checks are required.

Table 5.13. Enteral feeding tube: Capsule non-balloon G-tube or low profile capsule non-balloon low profile gastrostomy.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Capsule non-balloon G-tube or low profile capsule non-balloon low profile gastrostomy (Enteral UK, 2017).	It is a pre-loaded replacement feeding device designed for ease of insertion into an established stoma tract. This is a gastrostomy tube that uses an internal retention disk that is opened inside the stomach after the tube is inserted. The internal securement device opens after the pull-away tether is released.	The G-tube is traction removable. The low profile gastrostomy requires a removal device to be inserted into the gastrostomy to stretch the internal capsule and allow removal.	If the patient's medical condition has changed which would contraindicate tube replacement.

Considerations:

- Anecdotally these tubes provide an alternative where other tubes have not been tolerated e.g. multiple tube site infections, leakage round the site or where the patient is unable to perform weekly balloon changes.
- These tubes can also be effective for jejunal feeding due to the small internal bumper.
- Daily cleaning and rotation of tube care is carried out.
- The external retention bar should be moved up the tube away from the skin 1-2cm and the G-Tube pushed into the stomach weekly to prevent buried bumper syndrome. The G-Tube should then be rotated 360º and gently pulled back until resistance is felt. The external retention bar should then be moved back to be in contact with, but not tight against the skin.
- This is a non-balloon device therefore no regular balloon checks are required.

Table 5.14. Enteral feeding tube: Surgically Inserted Gastrostomy (SIG).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Surgically inserted gastrostomy.	Open direct access procedure done under general anaesthetic. A balloon gastrostomy is usually the tube which is sited. It is secured in the stomach by a balloon that is inflated with a small volume of water.	Balloon devices should be deflated and apply gentle traction as outlined above. **See management of balloon gastrostomy tubes.**	**See contraindications listed for PEG, RIG and PIG.** Patient should be medically fit to undergo this procedure.

Considerations:

- General anaesthetic required.
- Open direct access gastrostomy is usually only performed when patients are unsuitable for percutaneous or radiological placement due to limited access for NGT or endoscope.

Table 5.15. Enteral feeding tube: Surgically Inserted Jejunostomy (JEJ).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Surgically inserted jejunostomy (Fresenius Kabi, 2015).	Open direct access between the jejunum and the surface of the abdominal wall. This is most frequently performed when a patient is already undergoing laparotomy for related or unrelated abdominal problems. A feeding tube is tunnelled along the jejunal wall and situated in the lumen of the proximal jejunum. A fine needle catheter (FNC) should be used to insert a jejunal feeding tube which can be secured with a dacron cuff or external sutures. Alternatively, a balloon or capsule non balloon gastrostomy of appropriate size may be used.	Removal technique will depend upon fixation device which may be a dacron cuff, stitches or internal bumper / balloon. Once fixation device is released / removed apply gentle traction.	Requires a general anaesthetic.

A JEJ is a feeding tube that is sited post-pylorically into the jejunum via a stoma. Post pyloric feeding directly into jejunum is indicated for use in patients who:

- cannot absorb adequate nutrition through the stomach.
- have intestinal motility problems such as gastroparesis, gastric outlet obstruction, severe gastroesophageal reflux, are at risk of aspiration and potential risk of increased frequency of chest infections.
- have had previous oesphagectomy or gastrectomy.

There are different methods of obtaining access post pylorically and several types of jejunal feeding tubes. Naso Jejunal (**Table 5.3**) may be considered initially especially if short term access is required. A percutaneous gastrostomy with jejunal extensions or transgastric jejunostomy may be considered technically easier to insert than a surgical jejunostomy, and these techniques should therefore be considered initially.

Considerations:

- Wound site infection.
- Leakage.
- A percutaneous gastrostomy with jejunal extensions or transgastric jejunostomy may be considered technically easier to insert than a surgical jejunostomy, and these techniques should therefore be considered initially.
- Tube migration and displacement because of inadequate tube fixation.
- Caution should be used with balloon tubes to ensure jejunum is not occluded.
- Do not rotate the tube.
- **See Balloon Gastrostomy** for replacing water in balloon weekly.
- Arrangement with radiology or endoscopy services to perform replacements.

Table 5.16. Enteral feeding tube: Radiological Percutaneous Jejunostomy.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Radiological percutaneous jejunostomy (Overhagen and Schipper, 2004).	Direct jejunostomy is performed under fluoroscopic guidance. Under ultrasound / radiological guidance, the jejunal loop is punctured using an anchor suture and a guidewire inserted. With the guide wire in place, the track is dilated and a feeding tube inserted into the proximal jejunum. Water-soluble contrast material is injected through the needle to document intralumenal position. A fine needle catheter (FNC) should be used to insert a feeding tube which can be secured with a dacron cuff or external sutures. Alternatively, a balloon or capsule non balloon gastrostomy of appropriate size may be used.	Removal technique will depend upon the fixation device which may be a dacron cuff, stitches or internal bumper / balloon. Once fixation device is released / removed apply gentle traction.	Contraindications to percutaneous jejunostomy are the same as for percutaneous gastrostomy, ascites and uncorrectable bleeding disorders being the two most common absolute contraindications. The problem of overlying colonic loops can sometimes be overcome by bowel decompression for 24 to 48 hours using a rectal cannula.

Considerations:

- Wound site infection.
- Leakage.
- Tube migration and displacement because of inadequate tube fixation.
- Caution should be used with balloon tubes to ensure the jejunum is not occluded.
- Do not rotate the tube.
- **See Balloon Gastrostomy for replacing water in balloon weekly.**
- Arrange with radiology or endoscopy services to perform replacements as required.

Table 5.17. Enteral feeding tube: Percutaneous Endoscopic Jejunostomy (PEJ).

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Percutaneous endoscopic jejunostomy (Overhagen and Schipper, 2004).	Under endoscopic direction the jejunum is transluminated and a direct puncture is made with a needle into the jejunum. A guide wire is inserted and with the guide wire in place, the track is dilated and a feeding tube inserted into the proximal jejunum. A fine needle catheter (FNC) should be used to insert a jejunal feeding tube which can be secured with a dacron cuff or external sutures. Alternatively, a balloon or capsule non balloon gastrostomy of appropriate size may be used.	Removal technique will depend upon the fixation device which may be a dacron cuff, stitches or internal bumper/ balloon. Once the fixation device is released removed apply gentle traction.	Limited to those patients in whom the pharynx, oesophagus, and stomach can be passed by an endoscope.

Considerations:

- Wound site infection.
- Leakage.
- Tube migration and displacement because of inadequate tube fixation.
- Caution should be used with balloon tubes to ensure the jejunum is not occluded.
- Do not rotate the tube.
- **See Balloon Gastrostomy for replacing water in balloon weekly.**
- Arrange with radiology or endoscopy services to perform replacements as required.

Table 5.18. Enteral feeding tube: Jejunal feeding tubes via gastrostomy stoma.

Access Route	Insertion	Removal	Contraindications and/or precautions to note
Jejunal feeding tubes via gastrostomy stoma (Enteral UK, 2016; Fresenius Kabi, 2015; Vygon, 2017).	Placed via established gastrostomy stoma site. The tube is then inserted by the push technique into stomach and then fed into jejunum by endoscopy or radiological guidance. There are several types of tubes and techniques used for this access route. There can also be varying terminology used for this type of feeding tube depending on the feeding tube manufacturer: **Jejunal extension to percutaneous endoscopic gastrostomy (PEG-j)** specifically designed jejunal extension tube that is placed through the feeding lumen of a gastrostomy tube that is already in situ. The two pieces of kit must be compatible and lock securely together. The extension is then guided by endoscopic or radiology past the pyloric sphincter into the jejunum to enable post pyloric feeding. **Transgastric jejunal feeding tubes (TJ)** are single lumen tubes which pass through the stomach into the jejunum. They are secured in stomach by a balloon that is inflated with a small volume of water (5-20ml) and external fixation device. They are also available as low profile devices. **Gastro-Jejunal (GJ)** feeding tubes are dual lumen tubes for feeding into jejunum whilst allowing simultaneously gastric decompression and administration of medication into the stomach. Also available as low profile devices.	Removal will vary depending upon type of device used to secure tube. Extension luer locked to PEGs can be unlocked and traction removed. Balloon devices should be deflated and apply gentle traction.	This tube is placed via an established gastrostomy stoma site therefore patients must initially have been suitable for gastrostomy placement.

Considerations:

- Transgastric: **do not** rotate tube.
- Jejunal extension can migrate back into the stomach increasing the risk of aspiration. It is therefore important to monitor for signs that jejunal extension has migrated into the stomach such as bloating; nausea; vomiting; increased frequency of chest infection.
- Importance of care pathways for when jejunal extension migration suspected or tube displacement to ensure efficient replacement of tube in hospital setting.
- **See Balloon Gastrostomy for replacing water in balloon weekly for balloon retained Transgastric Jejunostomies and Gasro-jejunal tubes.**
- Arrangement with radiology or endoscopy services to perform routine replacements.
- Due to the narrow lumen of the jejunal extension these tubes can be more prone to blockages therefore a regular water flushing regimen should be followed.
- Do not rotate tube as this will increase the risk of the jejunal extension migrating into the stomach.

5.20a

5.20b