INTRODUCTION

While every attempt should be made to retain the child’s own oesophagus there are circumstances in which this aim cannot be achieved. These include:

- **Oesophageal atresia**: in particular very long gap pure atresia where delayed primary anastomosis has failed, and, in addition, complicated oesophageal atresia when the primary repair has disrupted and a cervical oesophagostomy established
- **Caustic oesophageal damage** that fails to respond to dilatation
- **Injuries to the oesophagus by prolonged foreign body impaction**
- **Tumours of the oesophagus**, e.g., diffuse leiomyosis, inflammatory pseudo-tumour
- **Motility disorders**

There are four recognized methods of oesophageal substitution, which include:

- Colon interposition
- Gastric tube oesophagoplasty
- Jejunal interposition
- Gastric transposition

Gastric transposition has been my procedure of choice for oesophageal replacement for over 20 years. It has the following advantages:

- The stomach has an excellent blood supply.
- Adequate length to reach the cervical region can usually be achieved.
- The procedure involves a single anastomosis.
- The leak and stricture rates are relatively low.
- The procedure itself is simple to perform.

It is recommended that bowel preparation is carried out to ensure an empty colon in the event that the stomach is unavailable for the transposition procedure. The surgeon should be capable of performing the various alternative methods of oesophageal replacement.
A midline upper abdominal incision is made. An elliptical incision around the cervical oesophagostomy or, alternatively, a right or left low transverse cervical incision is made to expose the cervical oesophagus. A lateral thoracotomy may be required if the surgeon encounters any difficulty in mobilizing the thoracic oesophagus, which may have been damaged by caustic oesophagitis or repeated attempts at retaining the child’s own oesophagus.

The stomach is exposed, the gastrostomy site is taken down and the defect in the stomach closed. The greater and lesser curvatures of the stomach are mobilized, preserving the integrity of the right gastroepiploic and right gastric arcades. The mobilization of the stomach continues proximally by dividing the short gastric vessels between the fundus of the stomach and the spleen and by ligating and dividing the left gastric artery and vein.
Figure 9.1

Figure 9.2
The stump of the distal oesophagus (in the case of long gap atresia) is mobilized from the posterior mediastinum by dividing the phreno-oesophageal membrane and dissecting out the oesophagus. The anterior and posterior vagal nerves are divided. The oesophagus is divided at the oesophago-gastric junction and the defect in the stomach repaired.

A pyloroplasty is performed. The sutured gastrostomy site and the closed-off gastro-oesophageal junction are shown. The highest point on the stomach and the place for the oesophago-gastric anastomosis is the top of the fundus. Two sutures of different materials are placed in the fundus. The orientation of these sutures is used to ensure that rotation of the stomach does not occur while it is being pulled up into the neck.
Figure 9.3

Figure 9.4
Via the cervical incision, full thickness of the oesophagus is mobilized. It is easy to enter into the submucosal plane during the dissection but this should be avoided as the vascularity of the oesophagus will be impaired. The recurrent laryngeal nerves must be preserved during the mobilization procedure.

The plane of dissection for the mediastinal tunnel is directly anterior to the prevertebral fascia. From above the dissection proceed immediately posterior to the trachea posteriorly and caudally into the posterior mediastinum. From below, through a widened hiatus, dissection is carried out under vision in the prevertebral space behind the heart. The tunnel is completed from above and from below by gentle digital dissection in the posterior mediastinum.

If any problems are encountered in creating the posterior mediastinum tunnel by blunt finger dissection, it is advisable to perform a lateral transpleural thoracotomy and complete the dissection under direct view. This approach is also essential to remove a scarred oesophagus or a tumour of the oesophagus.
Using the “stay-sutures” as guides, the stomach is pulled up through the hiatus in the diaphragm, through the posterior mediastinal tunnel until the fundus appears at the cervical incision. The transposition should be smooth and under no tension, and the stay-sutures should be correctly orientated to avoid twisting of the stomach in the posterior mediastinum.

The anastomosis between the end of the cervical oesophagus and the top of the fundus of the stomach is fashioned using a single layer of 5/0 or 6/0 sutures, taking the full thickness of the walls of the oesophagus and the stomach. Before completing the anterior wall of the anastomosis a size 10F–12F nasogastric tube is passed with the tip in the intrathoracic stomach. The wounds are closed with a soft rubber drain at the cervical incision. A feeding-tunelled jejunostomy is highly recommended for infants with oesophageal atresia who have not previously been established on oral feeding. In addition to the usual post-operative management following any major procedure, it has been our practice to electively paralyse and mechanically ventilate our patients for a minimum of 48–72 h post-operatively.
CONCLUSION

Mortality of this procedure is in the region of 5% while the morbidity is significant and includes:
- Anastomotic leak rate 12%
- Anastomotic stricture rate 19.6%
- Swallowing problems 30%
- Delayed gastric emptying 8.7%
- Complications with the jejunal feeding tube 4%
- Dumping syndrome 3%

Most of the children prefer to take small frequent meals, although in the older children a normal eating pattern is generally established. Many of the patients grow at a slower rate than normal and are in the lower half of the growth charts for both weight and height. This applies particularly to children who are born with oesophageal atresia.

SELECTED BIBLIOGRAPHY
