

Long-gap OA - oesophageal substitution

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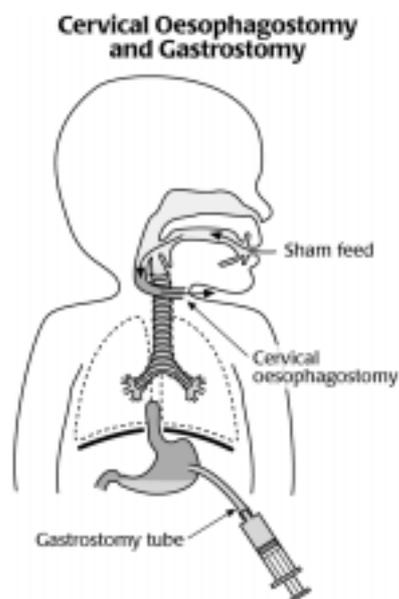
In the treatment of babies born with oesophageal atresia, there are occasions when a primary anastomosis (join) of the oesophagus may be an impossibility due to the gap being too wide.

The baby is encouraged to thrive until 6-9 months of age when an oesophageal substitution procedure can be performed. This is an operation in which an alternative part of the gastro-intestinal tract is used to bridge the gap between the two ends of the oesophagus, substituting for the normal oesophagus as a 'pipe' between mouth and stomach.

Before this can be carried out, the baby needs to gain the experience of food in his/her mouth, to learn to chew and swallow, and to associate that with the feeling of satisfaction at having been fed. Learning these actions and associations later on is very much harder.

The upper oesophagus is brought out at the neck as a cervical oesophagostomy (spit fistula) and the infant is given a gastrostomy tube to enable him/her to feed. Any associated tracheo-oesophageal fistula which may be present will also need to be closed off.

The baby is encouraged to suck and take small amounts of feed by mouth ('sham feeding,') even though this will not provide nourishment and soils the neck.



Failure to sham feed can lead to swallowing difficulties when an oesophageal substitution is carried out.

There are various options for oesophageal substitution surgery: colonic interposition, gastric tube oesophagoplasty and gastric transposition are the most widely used. Jejunal interposition is rarely used because of the precarious blood supply to the interposed jejunal segment. Gastric elongation by dividing the lesser curvature of the stomach has been proposed by Scharli but is not widely employed.

Colon interposition

A section of colon is taken from its normal position in the gut and transposed, with its blood supply intact, into the chest, where it is joined to the oesophagus above and the stomach below.

This is the most widely used procedure.

ADVANTAGES

- i) The length of the graft required is not a problem, unlike other options.
- ii) Provides a tube of a good diameter.

DISADVANTAGES

- i) Blood supply to the transplanted section of colon is precarious.
- ii) Poor peristalsis (the muscular action which transports food down the tube).
- iii) High incidence of leakage (30%).
- iv) Stricture (narrowing) can occur (20%).
- v) Redundancy (lack of any muscular activity) can develop long term.

Gastric tube oesophagoplasty

A longitudinal segment is taken from the stomach, which is then swung up into the chest and joined to the oesophagus.

ADVANTAGES

- i) Size of the graft is appropriate.
- ii) Good blood supply.

DISADVANTAGES

- i) Very long suture-line.
- ii) High incidence of leakage (70%).
- iii) High stricture rate (50%).
- iv) Reflux commonly occurs.

This information has been written for the parents of TOF children by TOFS (Tracheo-Oesophageal Fistula Support) – helping children born unable to swallow.

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Related leaflets from TOFS which you might like to read:

1. Colonic interposition
2. Gastric tube oesophagoplasty
3. Gastric interposition
4. Your child in hospital

These are all available from the TOFS web site (www.tofs.org.uk) or from TOFS office.

TOFS also publishes a book, 'The TOF Child,' which is suitable for both parents and medical professional. Details are available from TOFS.

Gastric transposition

The whole stomach is freed, mobilised and moved into the chest. The upper end of the oesophagus is then anastomosed to the top of the stomach in the neck.

This is a relatively new technique and its long-term effectiveness is therefore not yet proven.

ADVANTAGES

- i) Excellent blood supply.
- ii) Incidence of leakage and strictures both reduced to 6% of patients.
- iii) Relatively simple procedure.

DISADVANTAGES

- i) Poor gastric emptying.
- ii) Bulk of the stomach is in the chest; the sheer volume of this affects breathing so that respiratory capacity is reduced.
- iii) Reflux can be a problem.
- iv) 'Dumping' occurs when food enters the intestine quite quickly. It causes sweating, dizziness and diarrhoea. It usually lasts only a few months and then disappears.

Post-operative care

Oesophageal substitution, irrespective of the technique used is a major operation requiring technical skill, expert anaesthesia and high level intensive care post-operatively. Elective paralysis and mechanical ventilation (using drugs to inhibit breathing so that respiration has to be taken over by machines) for a few days post-operatively are generally recommended; this puts less stress on the suture lines and therefore gives them a better chance to heal.

The commencement of oral feeding may be a difficult and prolonged process, particularly if sham feeding was neglected. For colon interposition and gastric tube oesophagoplasty patients, gastrostomy feeds can be used as a 'backup' until oral feeding is established. For gastric transposition patients, the stomach itself has been moved, so a gastrostomy tube is not an option. A jejunostomy tube (a tube into the jejunum, which is a part of the gut a little way below the stomach) is therefore usually inserted for feeding purposes.

Outlook

Unfortunately, long-term complications must be anticipated in all replacement procedures.

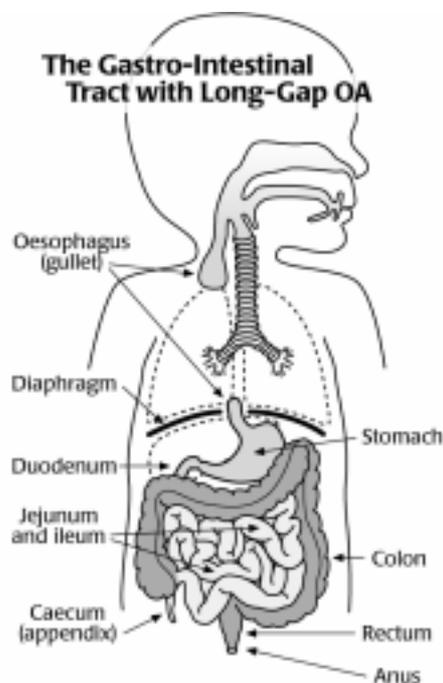
For colonic interposition, strictures at the anastomotic site early on, and redundancy and food stasis in the long term are well known problems.

The gastric tube oesophagoplasty is prone to stricture formation and reflux of acid content into the upper oesophagus. This may produce inflammatory changes (Barrett's oesophagitis).

The gastric transposition may be complicated by delayed gastric emptying and dumping in the short term, and iron deficiency in the long term (probably caused by food moving swiftly through the part of the gut where iron absorption occurs, so that there is little opportunity for uptake).

Should the chosen technique for oesophageal replacement fail or be unsuitable, one of the alternative methods should be implemented.

Reduced respiratory function is a feature of all oesophageal replacements but generally children cope extremely well.



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