Annotations

Surgery for gastro-oesophageal reflux

Surgery for gastro-oesophageal reflux is becoming more popular. Figures from the United States show a rapid increase in the number of children undergoing such operations. From Oklahoma, Tunnell et al report two antireflux procedures in 1977 and 48 operations in 1981. Similar large series are reported from other American centres, but there are no comparable publications from the United Kingdom. Discussion with paediatric medical and surgical colleagues in this country revealed widely differing attitudes towards antireflux treatment with the emphasis on avoiding surgery. There is further disagreement on both the timing and choice of operation. The studies of Carré have had a lasting influence in this country. His publications, however, are confined to the management of patients with an established hiatus hernia associated with gastro-oesophageal reflux.\(^4\) \(^5\)

**Indications for operation**

Surgery is indicated when non-operative measures have failed or are inappropriate. Only a very small number of children with reflux will come to operation. In general, surgery is undertaken for the complications rather than the presence of reflux:

1. Apparent life threatening events (near miss sudden infant death syndrome) associated with confirmed gastro-oesophageal reflux is probably an absolute indication for surgery.\(^6\) \(^7\) Failure of conservative management under these circumstances may be a dead baby. Investigation of a group of such infants has shown that many have an atypical pattern of reflux with a predominance of reflux during sleep.\(^6\)

2. Failure to thrive in association with persistent vomiting is primarily a problem of young infants. Failure to respond to a three to four week course of conservative management raises the question of surgery. Although operation may ease feeding problems and allow an adequate energy intake, the coexistence of other causes of growth retardation may prejudice the outcome.

3. Respiratory complications of reflux, such as recurrent pneumonia and asthma, constitute a major indication for surgery in older children.\(^2\) \(^9\)

4. Oesophagitis and stricture are considered the result of severe reflux with poor acid clearance. The incidence of stricture varies in different surgical series and the issue is further confused by the addition of children with repaired oesophageal atresia. Figures quoted vary from 1\(^4\) to over 40% with a lower incidence in more recent publications.\(^9\) \(^10\) \(^11\) Surgery is the most effective treatment for permanent cure of stricture.

5. Severe gastro-oesophageal reflux is common in severely retarded or brain damaged children.\(^1\) \(^4\) Surgery may be required for failure of medical treatment, to relieve oesophagitis or stricture, or for overwhelming social reasons.\(^9\) \(^13\) \(^14\) Gastrostomy is often a useful addition to facilitate feeding in these children.\(^16\)

**Antireflux surgery**

Antireflux operations are designed to reinforce the natural antireflux mechanisms. The aims are to repair the oesophageal hiatus, to increase the length of intra-abdominal oesophagus, and to restore an acute angle of His (between oesophagus and fundus).\(^17\) \(^18\) The procedures most commonly employed in children are the Nissen and Thal operations.\(^1\) \(^2\) \(^19\) \(^20\) \(^21\) \(^22\) In the Nissen operation, the lower oesophagus is enclosed in a 360° fundal wrap. The result is a one way valve which abolishes reflux, belching, and vomiting. These effects are often permanent.

In the Thal operation, and its variants, a 180°–270° fundal wrap is performed. This is effective in abolishing reflux but preserves the ability to belch and vomit.

Both procedures are generally performed through an abdominal approach.

**Complications of surgery**

Operative deaths are uncommon: 1·4% in a large postal survey.\(^21\) Large modern series quote a 0% operative mortality. However, there is a substantial late death rate of 16–24% from pre-existing conditions or later adhesion obstruction.\(^1\) \(^2\) \(^21\) \(^22\) The dangers of adhesion obstruction in a child who cannot vomit are obvious to the initiated. Adhesion obstruction rates vary from 0·9 to 10% in published series.\(^1\) \(^3\) \(^22\)

Morbidity directly related to the fundoplication include recurrent hiatus hernia, wrap disruption, gas bloat, recurrent gastro-oesophageal reflux, and dysphagia. Turnage et al report that 43% of their patients undergoing fundoplication had at least one postoperative complication and 12% required reoperation.\(^2\) \(^2\) \(^23\) These results seem broadly representative.

The Thal operation seems to be associated with fewer complications and fewer repeat operations.\(^3\) \(^22\) Despite these figures, however, this operation has not yet gained wide acceptance.

A clinical diagnosis of dumping syndrome was made in 8·5% of my own patients but curiously, this problem receives scant attention in the literature. Ashcraft reports transient postoperative diarrhea in some of his patients, which may be a similar problem.\(^5\)

**Results of surgery**

Relief of symptoms is usual if symptoms have been due to gastro-oesophageal reflux. Satisfactory results are reported in 74–94%.\(^1\) \(^2\) \(^3\) \(^10\) Of the different groups undergoing surgery, the results are often most gratifying in severely retarded children. They may be rendered pain free for the first time in their lives. Unfortunately, surgery in these children is associated with the highest complication rate.\(^23\)

**Conclusions**

Antireflux surgery has become popular for very good reasons. The underlying pathophysiology is not understood in the majority of children.

Treatment to control reflux, whether medical or surgical,
is primarily to alleviate the complications of reflux rather than to abolish the cause of reflux. Surgery is extremely effective in abolishing reflux but potential postoperative problems rightly limit its use to only a minority of patients.

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