OESOPHAGEAL STENOSIS DUE TO REFLUX OESOPHAGITIS*

BY

JOSÉ BOIX-OCHOA and FRITZ REHBEIN

From The Surgical Department of the Children's Hospital, Bremen, Germany

During childhood the majority of acquired oesophageal strictures are due to gastro-oesophageal reflux (Willich, 1963). Usually this reflux is caused by a hiatal hernia. Minor forms of hernia and cardiac achalasia may cause a reflux that is so severe that oesophagitis and subsequent stricture formation result. One-quarter of our operated cases had more or less well-formed strictures. Our routine is to try conservative treatment first, and this was successful in the majority of the minor forms of hernia. But in view of the high incidence of strictures among our cases, early operative treatment is recommended if conservative treatment fails.

Subjects and Methods of Treatment

Between 1954 and 1964, 226 hiatal hernias were operated on in the surgical department of the Children's Hospital, Bremen. Included in this number are children with minor forms of hernias and cardiac achalasia in which conservative treatment failed. Of these, 54 were complicated by stenosis, an incidence of 24%. Bettex, Stilhart, and Nussle's (1961) statistics showed an average of 17% strictures secondary to hiatal hernias. The incidence of the strictures increases with age (Fig. 1). While the number of hiatal hernias decreases from the first to the fifth year of age, the total number of stricture cases remains about the same.

The treatment of the strictures depends on their severity. In the minority gastrostomy and bouginage are sufficient. The gastrostomy makes the dilatation easier and diminishes its danger. The child is discharged home with the thread passing through the nose, oesophagus, and gastrostomy (Fig. 2a). The dilator is passed through the oesophagus by aid of this thread and a filiform bougie (Fig. 2b). Following this method very thick bougies may be used without any danger.

Six children in this series were dealt with successfully by operating on the hiatal hernia only. These stenoses were most probably mainly due to spasm with only minor organic changes (Table 1).

In Group C (Table 1), which includes the cases where

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TABLE 1
METHODS OF TREATMENT IN 54 CASES OF OESOPHAGEAL STRICURE

<table>
<thead>
<tr>
<th>Groups</th>
<th>Methods of Treatment</th>
<th>No. of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Gastrostomy, then bouginage</td>
<td>3</td>
</tr>
<tr>
<td>B</td>
<td>Operation on the hiatal hernia only</td>
<td>6</td>
</tr>
<tr>
<td>C</td>
<td>Operation on the hiatal hernia plus gastrostomy, then bouginage</td>
<td>16</td>
</tr>
<tr>
<td>D</td>
<td>Gastrostomy, then bouginage, then operation on the hiatal hernia, then bouginage again</td>
<td>28</td>
</tr>
<tr>
<td>E</td>
<td>Resection plus colon transplantation</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>54</td>
</tr>
</tbody>
</table>

children are able to swallow liquid and semi-solid food, gastrostomy was performed in the same stage of operation for hiatal hernia. The gastrostomy is used for post-operative bouginage.

In Group D gastrostomy was first performed for feeding and for bouginage. Repeated dilatation is continued for a period of two to three months, after which in a second stage the operation for hiatal hernia is done. This is followed by further bouginage. Most of the operations were performed by a combined thoraco-abdominal approach (Rehbein and Röpke, 1962). The aim of this operation is to mobilize the oesophagus, to bring the cardia below the diaphragm, and to fix the lesser curvature of the stomach to the anterior abdominal wall.

Successful results are obtained from this method in non-complicated cases of hiatal hernias because normal anatomical conditions of the cardio-oesophageal region are achieved.

In advanced cases with severe strictures and short oesophagus, surgical repair of hiatal hernia cannot be complete and a clinical cure is not always to be expected. Colonic transplantation is then recommended. Our series includes one case (Table 1) with colonic transplantation: two years after the operation the child is in good condition.

Results of Treatment

The results of treatment are shown in Table 2, which includes follow-up till March 31, 1964. The high percentage of successful results is due to the fact that many of the stenoses were mild and could easily be dilated, so that after operating on the hernia the reflux disappeared.

The result was poor in two children, one presenting with recurrence of the stricture many years after the operation. This child will need colonic transplantation, showing that in severe cases a relapse of the stenosis should always be expected.

Discussion

Dilatation alone rarely produces successful results. Mere dilatation without operation for hiatal hernia leads to persistence of the reflux and subsequent oesophagitis with further stricture formation (Barrett, 1950; Bettek et al., 1961). In early and mild cases of stenosis operation on the hiatal hernia alone may be successful. But in the majority, operation plus bouginage should be performed. We have found that in only a proportion of cases are there marked pathological changes in the oesophagus. In the remainder operative correction of the hernia alone may be successful, and only a few dilatations may be necessary for permanent cure. Waterston (1962) achieved satisfactory results by a single retrograde dilatation during the repair of the hernia. Bettek et al. successfully performed oesophago-gastropexy in those stenosed cases.

In some cases, however, the oesophagus is shortened and narrowed by severe stricture formation, in which case repair can only be incomplete, and prolonged bouginage is essential. It is surprising that in spite of incomplete surgical correction in this way a fairly good result may be achieved. Of course, observation has not yet continued long enough for final judgement. There were 3 failures in our series, and in view of the severity of the condition further recurrences must be expected. A resection will have to be performed. A direct anastomosis will usually not be possible (Franklin and Henderson, 1955), and at present intrathoracic colonic transplantation seems to be the best method (Johansson and Silander, 1963; Waterston, 1962). As vagotomy is connected with the performance of this operation, pyloroplasty must be done in the same stage. This diminishes the risk of reflux into the transplanted colon.

Although there are a few cases that require primary colonic transplantation the easier method of correcting the hernia followed by bouginage is worth trying first.

Summary

Fifty-five cases of oesophageal strictures due to reflux were analysed. The result of treatment depends on the severity of the stricture. In the great majority of cases operative correction of the hiatal hernia and prolonged bouginage lead to successful results. In cases of recurrence colonic transplantation is performed.
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Oesophageal Stenosis Due to Reflux Oesophagitis

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