

Treatment of reflux strictures of the oesophagus by the Nissen-Rossetti operation

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Eight patients with bougie-resistant strictures of the oesophagus due to gastric reflux have been treated by the Nissen-Rossetti operation. Follow-up clinical and barium studies show the results to be encouraging. The principle involved is the prevention of reflux.

There are several forms of treatment available for a stricture of the oesophagus caused by reflux of gastric fluid. In this context only strictures which resist the passage of bougies and the oesophagoscope are included. A constant narrowing is shown on barium swallow. If sufficient barium passes into the stomach a hiatus hernia and reflux are seen. The stricture is in the region of the junction of squamous mucous membrane and the non-acid-secreting fundal type of gastric mucous membrane. As this latter type of mucous membrane may line the lower oesophagus, the stricture may be some distance above the herniated stomach (Barrett, 1950).

Repeated dilatations have enabled many patients to carry on with a fluid diet, but the stricture very often becomes progressively tighter and perforation by bougie is a significant risk.

Collis (1965) managed 69 patients with benign oesophageal strictures by gastropasty. He believed that the stricture could be controlled by preventing the reflux.

Belsey (1966) reported his experience with colon transplants. He achieved an 81% success rate. In his operation the stomach was wrapped around the lower end of the transplanted colon to prevent reflux from the stomach to the colon (Belsey, 1965). He found that oesophagogastrostomy was unsatisfactory, with a success rate of 44%.

Brain (1967) described his experience with jejunal transplantation for simple strictures of the oesophagus. Relief of all symptoms was obtained in 73% of the survivors. Post-operative barium reflux was noted in 72%.

Barrett (1962) observed that in resected specimens of the strictured area, the whole length of the palpable mass was composed of submucous fibrosis on the inside and hypertrophied muscle on

the outside. Some resolution is possible in each of the elements causing the obstruction.

Nissen and Rossetti (1963) described the prevention of gastric reflux by enfolding the lower oesophagus with the fundus of the stomach.

In the operation used in these patients the left chest is opened through the eighth interspace. A lateral incision is made in the diaphragm (Harrison and Norton, 1969). The oesophagus is freed to the level of the hilum with preservation of the lower oesophageal artery. The oesophagus and stomach are freed from the hiatus. The lesser curvature is freed to below the left gastric artery and the greater curvature for about half its length. After this a large part of the stomach can be

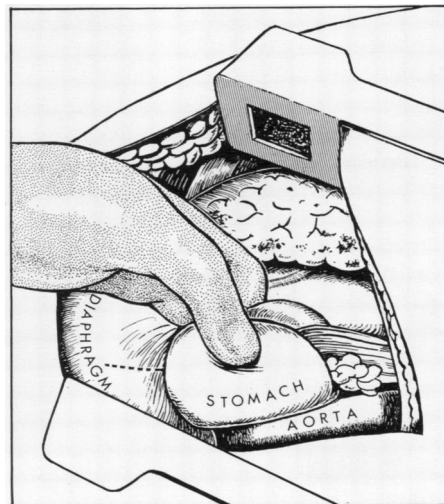


FIG. 1. The stomach surrounds the lower oesophagus preparatory to stitching. Dotted line shows site of the radial incision in diaphragm.

elevated through the hiatus without tension. It is laid postero-lateral to the oesophagus and used to enfold the lower 2–3 in. (50–76 mm.) of the oesophagus. This includes most of the thickened oesophagus in strictures of the lower end (Fig. 1). The stomach is sutured to the oesophagus in a transverse plane at the superior border of the encirclement, and the two vertical enfolding edges of stomach are sutured to the oesophagus and to each other. A size 24F or larger tube or bougie and a nasogastric tube are passed into the stomach before the enfolding. The large tube is removed after this. Fingers around the oesophagus in the chest help to pass the bougie.

A few sutures are placed between the stomach and the antero-lateral hiatus edge. Posteriorly, the hiatus is left open and stitches are placed from the stomach to any areolar tissue available. Recently, the hiatus has been enlarged by a radial incision 1 in. (25.4 mm.) in length, as there is some evidence from other patients that with a gain in weight gastric obstruction can develop at the hiatus.

The patient who required resection had had a pyloroplasty at a previous operation. If a pyloroplasty had been required at the time of resection the chest would have been closed and an abdominal incision made for the approach.

CASE REPORTS

CASE 1 L.M., a woman aged 66, complained of heart-burn for 10 years and dysphagia for five years. A

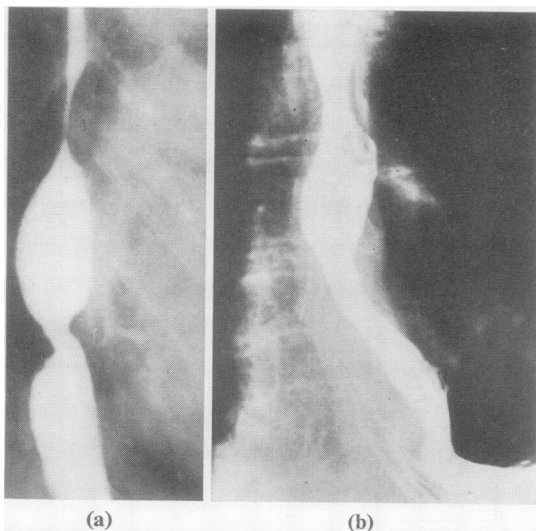


FIG. 2. Case 1. (a) Oesophageal stricture 3 in. (76 mm.) above the hiatus. (b) Complete disappearance of the stricture four years following surgery.

barium meal in December 1965 (Fig. 2a) showed a stricture 3 in. (76 mm.) above the hiatus with an intervening hiatus hernia and reflux. A Nissen-Rossetti operation was performed in February 1966. The oesophagus was much thickened in the strictured area. A 24F bougie was passed with difficulty. Since operation there have been no symptoms of reflux and swallowing has steadily improved to become normal. A four-year radiological follow-up on 4 February 1970 (Fig. 2b) showed that the stricture had completely resolved and there was no hold up of barium or evidence of reflux.

CASE 2 A.M., a woman aged 51, complained of progressive dysphagia for three years. There was no clear history of reflux. A barium meal in January 1966 showed a stricture of the lower oesophagus with the appearance of a penetrating ulcer. A hiatus hernia and reflux were present. In March 1966 a Nissen-Rossetti operation was performed. Considerable peri-oesophageal adhesion was present and the oesophagus was very thickened in its lower 2 in. (50.8 mm.). Dilatation was difficult. Within three weeks the patient swallowed soft solids. Since operation there have been two day-long episodes of dysphagia which resolved spontaneously. Otherwise she has eaten normally. Barium examination on 16 April 1970, four years post-operatively, showed neither stricture nor hold up. Very slight reflux of barium was observed.

CASE 3 R.W., a boy aged 16, had had symptoms of reflux since the age of 3, with previous operations at the ages of 3 and 14 years. However, the symptoms of dysphagia and reflux persisted. He frequently twisted his head to the left, contracted his abdominal muscles and regurgitated bitter fluid. This relieved a feeling of discomfort in the abdomen. A barium meal in June 1967 showed a stricture just below the level of the aortic arch. A hiatus hernia and reflux were present. There were 3–4 in. (76–102 mm.) of oesophagus between the stomach and the stricture. Oesophagoscopy showed an ulcerated narrow area at 35 cm. This obstructed the oesophagoscope but a 24F bougie was eased through it. Biopsies showed squamous epithelium proximal and fundal type mucosa distal to the stricture. In July 1967 a Nissen-Rossetti operation was performed. The oesophagus was thickened and surrounded by much fibrosis. Only at the level of the aortic arch did the oesophagus feel normal. A bougie was passed with considerable difficulty through the stricture 4 in. (102 mm.) above the diaphragm. The lower 3 in. (76 mm.) of the oesophagus were enfolded, leaving the stricture area free. Since operation he has swallowed normally with no symptoms of reflux. The movements of the head previously associated with reflux have stopped. Barium examination performed on 10 April 1970, almost three years post-operatively, showed a normal looking oesophagus with no evidence of stricture, hold up or reflux.

CASE 4 I.G., a man aged 63, had symptoms of heart-burn for many years with dysphagia for five months.

In September 1966 a barium meal showed a low oesophageal stricture with hiatus hernia and reflux. In February 1967 a Nissen-Rossetti operation was performed. The oesophagus was firm and thick for 1 in. (25 mm.) above the hernia. Considerable pressure was required to pass a dilating bougie through this area. This patient has not had a satisfactory result and the reason is not clear. Dysphagia persists after dilatation on two separate occasions. A stricture and excess oedematous mucous membrane were found but no ulceration. Repeated barium examinations showed a persisting stricture with a variable degree of hold up. Reflux could not be excluded because the barium emptied rapidly into the duodenum. The stomach continues to surround the lower oesophagus. Dilatation with a Negus bag in April 1970 produced improvement.

CASE 5 P.H., a man aged 68, had symptoms of heartburn for one year with dysphagia for six months. A barium meal in January 1968 (Fig. 3a, b) showed a stricture of the lower oesophagus with hiatus hernia and reflux. In June 1968 a Nissen-Rossetti operation was performed. There was much thickening in and around the lower oesophagus and moderate resistance to the passage of a bougie. Dysphagia persisted but with proper dentures swallowing steadily improved. Considerable improvement was seen in a barium examination two months post-operatively (Fig. 3c). On 21 January 1970, some 18 months post-operatively (Fig. 3d), neither hold up nor reflux was demonstrated.

CASE 6 O.M., a woman aged 67, had reflux symptoms for seven years with severe dysphagia for one year, producing loss of 3 st. (19 kg.) in weight in three

years. In September 1967 vagotomy and pyloroplasty were performed without relief. In March 1968 a barium meal showed stricture of the lower oesophagus with hiatus hernia and reflux. At operation in September 1968 a leiomyoma was found in the strictured area. Bougies could not be passed. With a finger in the stomach no opening could be felt into the oesophagus. The lower oesophagus disintegrated with manipulation. A local resection of the lower end of the oesophagus and adjacent stomach with re-establishment of the continuity of the gut by an oesophago-gastrostomy was performed. One inch (25 mm.) of oesophagus and the end to side anastomosis were enfolded by stomach. Swallowing has steadily improved to normal, except for an occasional short-lasting sensation of hold up. A barium meal on 15 April 1970, 19 months post-operatively, showed narrowing at the anastomosis. There was minimal hold up and reflux was not present.

CASE 7 L.W., a woman aged 76, had symptoms of reflux and increasing dysphagia for four years. In December 1968 a barium meal showed a stricture in the lower oesophagus with hiatus hernia and reflux. In January 1969 a Nissen-Rossetti operation was performed. The lower oesophagus was thickened and there was moderate resistance to the passage of a bougie. The post-operative course was complicated and death occurred from a massive pulmonary embolus.

CASE 8 E.T., a woman aged 57, had symptoms of gastric reflux for 25 years and dysphagia for 18 months, during which time she had three oesophageal dilations. At the fourth oesophagoscopy in

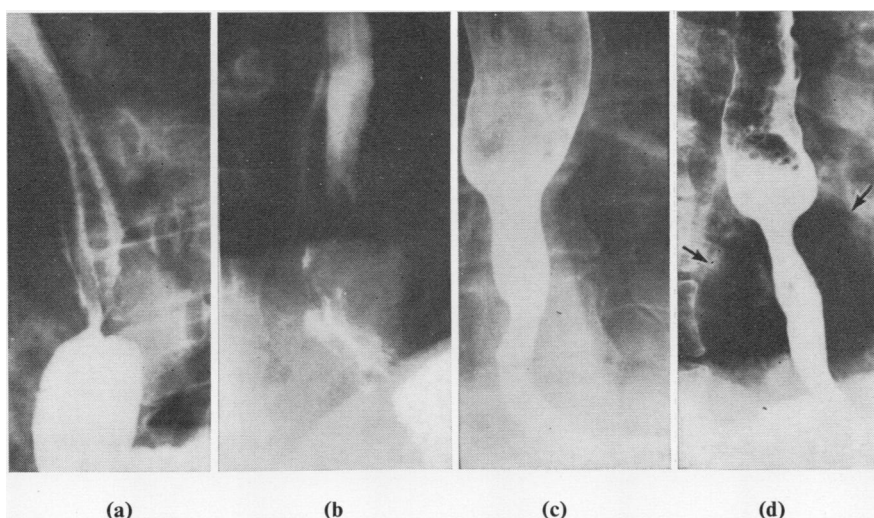


FIG. 3. Case 5. (a, b) Stricture of the lower oesophagus with hiatus hernia and reflux. (c) Considerable improvement two months after surgery. (d) No stricture is seen. Gas in the stomach surrounding the oesophagus is clearly demonstrated (arrowed).

November 1969 it was not possible to pass a bougie. A barium meal in May 1968 showed a stricture with an ulcer about 2 in. (50 mm.) above the hiatus, with hiatus hernia and reflux. In November 1969 a Nissen-Rossetti operation was performed. This had been delayed because of gross bilateral bronchiectasis and general frailty. The lower 4 in. (102 mm.) of oesophagus were thick, firm and adherent to surrounding tissues. The stricture was dilated by a finger forcibly pushed through from an incision in the fundus. Since operation swallowing has steadily improved. There are no symptoms of reflux. A barium meal performed three weeks post-operatively showed that the ulcer had disappeared. Examination in April 1970, five months post-operatively, showed further improvement. Neither reflux nor significant hold up was seen.

DISCUSSION

In the seven cases of conservative operation described, there have been five successes, one relative failure and one death. The single case of resection and enfolding is successful. The longest and shortest follow-ups have been four years and six months respectively. The improving quality of life in the successful cases has been dramatic.

In these patients it was not possible to reduce the oesophagus into the abdomen without undue tension or without elevating the diaphragm. The fate of the vagus nerves is not clear. In all cases they must have been distorted; in some they were not seen beside the stricture. Gastric secretion tests have not been done, but there is no evidence of pyloric obstruction.

This operation prevents reflux, apparently by the embracing action of the inner wall of the

stomach on the oesophagus and by the transmission of abdominal pressure in the lumen of the stomach around the oesophagus. Pearson, Henderson, and Parrish (1969) showed a well-defined pressure change between the oesophagus and the stomach following oesophagogastrostomy with inkwell invagination of the oesophagus into the stomach.

The evidence from these cases suggests that, if the stricture can be enlarged to accept a 24 to 26F bougie, it is worth trying this conservative operation. A resection with enfolding of the oesophagus could be done at a later date if the operation described fails.

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