Fundic Patch Operation in the Treatment of Esophageal Stricture with Barrett’s Esophagus
—A Case Report—

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ABSTRACT: A 66-year-old woman, who had a stricture of the distal esophagus with Barrett’s epithelium caused by gastroesophageal reflux, was operated upon by means of the fundic patch method. Preoperative manometric and pH studies revealed that the patient had a cardiac incompetence and a delayed acid clearance of the esophagus. Endoscopic biopsies between 33-35 cm from the incisors, above the gastroesophageal junction, showed columnar metaplasia with a villiform surface, mucous glands, intestinal goblet cells, moderate inflammatory changes and focal mild dysplasia. After the operation, relief of the dysphagia and reflux symptoms were obtained successfully, and an endoscopy done 7 months later demonstrated that the esophageal lumen was adequate enough for passage, and that there was improvement of the esophagitis, though persistent Barrett’s esophagus without malignancy still existed. These results indicate that the fundic patch operation with the formation of a mucosal valve and 270° fundoplication is a useful method of choice for benign strictures of the lower esophagus.

KEY WORDS: benign esophageal stricture, Barrett’s esophagus, fundic patch operation

INTRODUCTION

Sustained gastroesophageal reflux (GER) produces various reactive and inflammatory changes in the squamous epithelium of the lower esophagus. Advanced reflux esophagitis is associated with the development of fibrous stricture of the esophagus. There have been previous reports1,2 that the combination of anti-reflux procedure and bougien- age was an effective treatment for patients with esophageal stricture due to GER.

In our department, the fundic patch operation3,4 has been used for the majority of patients with achalasia of the esophagus. In these patients, sufficient dilatation of the narrow segment and prevention of GER were achieved by the technique consisting of patching with the mobilized fundus and 270° fundoplication.

Barrett’s esophagus, which is thought to be an acquired disease produced by persistent GER, is occasionally accompanied by peptic stricture of the esophagus. We treated a patient with Barrett’s esophagus with the fundic patch operation and achieved a satisfactory...
result. This procedure has an advantage in the case of benign esophageal strictures secondary to GER.

**Case Report**

A 66-year-old woman was admitted to our hospital in December 1985 with dysphagia being the chief complaint. She had experienced occasional heartburn and GER symptoms for 20 years but had received no treatment. From September 1985, the symptoms had become progressive and dysphagia was occurring with every meal 1 month later.

On admission, physical examination and laboratory data showed no abnormality. Upper gastrointestinal series were performed, which demonstrated a circular stenosis with slight irregularity at the end of the esophagus, including a possible short esophagus (Fig. 1). Endoscopically, the gastroesophageal junction was identified at 35 cm from the incisors on the distal margin of a passable stricture. A large deep ulcer located at 34 cm, and a maple leaf-shaped columnar epithelium existed as far as 33 cm from the incisors taking up three quarters of the esophageal circumference. This area was stained incompletely by the endoscopic injection of lugol (Fig. 2). There were multiple superficial ulcers extending proximally from 33 cm. Biopsies taken between 33 and 35 cm showed columnar metaplasia including goblet cells with focal areas of mild dysplasia.

Esophageal manometric study, carried out by the method of constant infusion, showed that the lower esophageal sphincter pressure was 14.7 mmHg. In 24-hour pH monitoring, acid reflux of the esophagus was defined whenever the pH was less than 5. As for the parameters, reflux time per hour was 14.9 min, the longest time of a single reflux being 91.5 min. These findings suggested that the patient had both cardiac incompetence and delayed acid clearance of the esophagus.

The preoperative diagnosis was esophageal stricture plus Barrett's esophagus caused by GER. The operation was done using a transdiaphragmatic approach through the left 7th intercostal space. After the mobilization of the lower esophagus and proximal stomach, the left lateral wall of the stenotic esophagus was incised longitudinally and the

![Fig. 1](image1). Preoperative esophagram demonstrated a short esophagus with stricture at the gastroesophageal junction in an upright position.

![Fig. 2](image2). Endoscopic film at 30-35 cm of the esophagus before operation. An arrow indicates the gastroesophageal junction at 35 cm from the incisors with circular stenosis. A maple leaf-shaped columnar epithelium was not stained by the injection of lugol.