

# Benign Esophageal Stricture in a Tropical African Population

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In North America, the most common causes of benign esophageal stricture are hiatal hernia and reflux esophagitis. These are localized to the lower end of the esophagus.

At the University College Hospital, Ibadan, Nigeria, the most common cause of benign esophageal stricture is ingestion of corrosives. The ingestion is accidental, suicidal, or for medicinal purposes. This stricture is long, narrow, and irregular. Most extend from the cervical esophagus to the cardioesophageal junction.

A surgical procedure that has given good results is the use of left colon pedicled on the left colic artery for retrosternal isoperistaltic esophagocoloplasty.

Unlike North America, where the most common causes of esophageal stricture are hiatal hernia and reflux esophagitis,<sup>1</sup> at the University College Hospital, Ibadan, Nigeria, the most common cause of benign esophageal stricture is the ingestion of corrosive substances. These substances are solutions containing varying concentrations of caustic soda taken in self-medication, accidentally, or in suicide attempts. Some concoctions are taken as "love potions" and for the purpose of becoming wealthy.

These patients present in the hospital only at the very late stages, when dysphagia starts affecting fluid intake. The strictures are usually long, narrow, and irregular. Most of them extend from the cervical esophagus to the esophagogastric junction.

The purpose of this paper is to review the cases of benign dysphagia and the management of the cases seen in the Department of Surgery, University College Hospital during a two-year period extending from July 1975 to May 1977.

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## Clinical Materials

Twenty cases of benign esophageal lesions were reviewed. This series does not include neoplasms and cases with lesions in the oropharynx (Table 1).

There were 14 males and six females studied, a ratio of 2.3:1. In cases of the stricture, there were 11 males and five females, a ratio of 2.2:1. The youngest patient is 1½ years old and the oldest, 55 years. Most of the patients fell between the ages of 17 and 30 years, and over 40 years, probably corresponding to the periods of the greatest emotional stress.

Of the 14 cases of corrosive ingestion, three were suicide attempts (one male, two females), three were cases involving native concoctions, and the others were said to be accidental. Eight patients drank domestic solutions containing various concentrations of caustic soda. One, a laboratory attendant, drank acid solution and the other four drank solutions of undetermined composition.

All of the patients presented with a history of progressive dysphagia, first to solids and then to liquids. The duration of presentation ranged between nine weeks and 14 months, with an average of about 2½ months. By the time the patients were seen, the dysphagia

was usually so severe that they could hardly swallow fluids (Figures 1 and 2).

The two patients with strictures secondary to reflux esophagitis had symptoms of "heartburn" and epigastric pain for about seven years. Only one patient, with achalasia, had a history of "vomiting and regurgitation" for about ten years, and progressive dysphagia for about eight years. The other had a history of progressive dysphagia for only a year (Figure 3).

## Management

All patients were seen at the late stages of their disease. The patients with strictures were cachectic and dehydrated. In addition to the baseline blood studies, they all had chest roentgenograms, barium-swallow studies, and when possible esophagoscopy. The degree of esophageal strictures made esophagoscopy unsuccessful in many cases.

The two patients with achalasia responded well to a Heller esophagomyotomy. The patient with globus hystericus responded to esophageal bouginage and psychotherapy. The two patients with lower esophageal stricture from reflux esophagitis responded to repeated dilatations. Six patients with corrosive esophageal stricture had colon bypass operations. Six others are responding fairly well to frequent esophageal dilatations. Two died from complications of esophageal perforation during bouginage.

Five patients who had a coloesophagoplasty, initially had a feeding (Stamm) gastrostomy. This was for the purpose of correcting their nutritional status. They were given emulsions of high protein with a high calorie diet and

Table 1. Benign Esophageal Dysphagia				
Cause	Number	Percent	Sex	
			M	F
Esophageal cyst	1	5	1	—
Achalasia	2	10	1	1
Globus hystericus	1	5	1	—
Stricture from reflux esophagitis	2	10	2	—
Stricture from corrosives	14	70	9	5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>14</b>	<b>6</b>

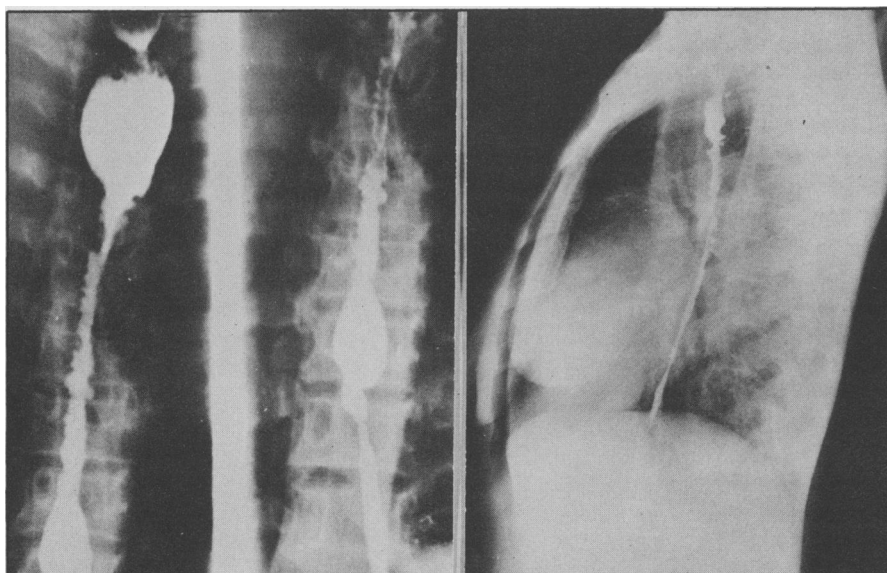


Figure 1. Barium swallow showing corrosive esophageal stricture.

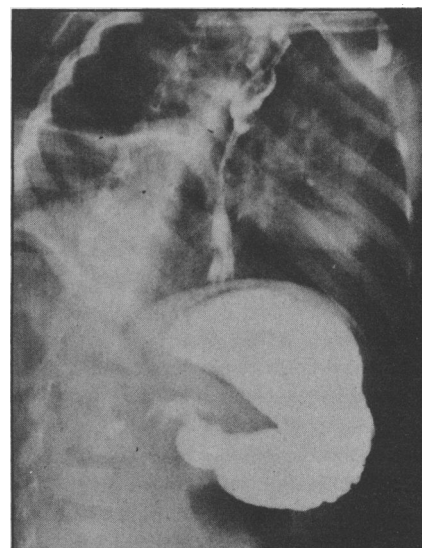


Figure 2. Barium swallow showing corrosive esophageal stricture in a pediatric patient.

vitamin supplements. They also received daily injections of vitamin K to improve the prothrombin time prior to surgery.

At the time of performing a feeding gastrostomy, one patient was noted to have a walled-off perforation at the gastric antrum. This was plicated.

Of the six patients that had colo-esophagoplasty, only one had a subcutaneous presteral colon transplant. The right colon was used in an isoperistaltic way with the pedicle on a branch of the middle colic artery. The graft was removed eight days later because it became gangrenous. This patient eventually died. All the other patients had isoperistaltic left colon transplant (involving various lengths of the trans-

verse and sigmoid colon) retrosternally (Figure 4). The colon grafts were all pedicled on the left colic artery. The other death occurred suddenly on the fourth postoperative day due to pulmonary embolism. All patients for colo-esophagoplasty had a standard bowel preparation before surgery.

### Discussion

In North America, the most common cause of benign esophageal stricture is reflux esophagitis. This type of stricture is usually localized in the distal third of esophagus.<sup>1</sup> In this series at the University College Hospital, the most common cause of esophageal stricture is ingestion of corrosives. This agrees with the views of Martinson.<sup>2</sup>

This type of stricture is long, narrow, and irregular, extending, in many cases, from the cervical esophagus down to the esophagogastric junction (Figures 1 and 2). This usually makes esophagoscopy and initial dilatation hazardous and difficult. With this degree of stricture, dehydration and malnutrition are always present, thus necessitating a feeding gastrostomy as an initial and important step in the management.

These patients with chemical esophageal burns are usually seen only after the acute phase when the strictures and fibrosis have produced severe dysphagia. It has been suggested that immediately after the ingestion of the corrosives, the management should in-

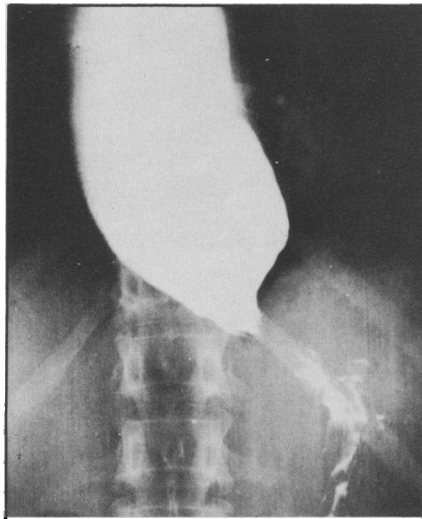


Figure 3. Barium swallow showing esophageal achalasia. Note size of the esophagus.



Figure 4. Barium swallow showing a retrosternal colo-esophagoplasty in a patient with severe corrosive esophageal stricture.

clude copious irrigation of the mouth and oropharynx with water, nothing by mouth, nasogastric suction, systemic antibiotics and occasionally, administration of steroids.<sup>3</sup> Later on, the patient is made to swallow a string for eventual esophageal dilatations. It is still controversial whether esophagoscopy should be attempted or not during the acute phase of esophageal burns.<sup>4,5</sup> It is also controversial whether dilatation should be started during the acute period or after the second week when healing has ensued.<sup>6</sup>

The known procedures for esophageal reconstruction include the use of the stomach, jejunum, and colon. These grafts could be placed in the thorax, in the posterior mediastinum without a thoracotomy,<sup>7,8</sup> retrosternally,<sup>9</sup> and subcutaneously, anterior to the sternum. The use of the retrosternal approach has been found to be very satisfactory. This was used in all the cases operated upon except one who had a subcutaneous approach.

Any adequate segment of the colon may be used for the transplant. It has been found to be both easier and safer to use the left colon with some part of the transverse colon pedicled on the left colic artery, as an isoperistaltic

graft. Antiperistaltic transplant loops have been found to be unsatisfactory and to cause postoperative regurgitation.<sup>10</sup>

Since the scarred esophagus is left in situ, pyloroplasty is usually not necessary. In the cervical anastomosis of the colon graft, care should be taken to avoid injury to the recurrent laryngeal nerve and avulsion of the superior thyroid artery before being ligated. For the cervical end of the anastomosis, it is not necessary to remove any part of the clavicle or the first rib as suggested by some.<sup>11</sup>

The danger of carcinoma developing in scarred esophagus is well established,<sup>12,13</sup> but there is also a great hazard in trying to remove an extensively scarred esophagus from the immediate organs. One danger must be weighed against the other.

During the retrosternal tunnelling, care should be taken not to puncture the pleura on either side and cause pneumothorax. Other complications associated with esophagocoloplasty include peptic ulceration of the colon transplant at the cologastric anastomosis,<sup>14,15</sup> anastomotic leaks, infection, necrosis, and sloughing of the graft.

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