

Diagnostic medical esophagoscopy

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THE internist's awareness of esophageal disease has been considerably heightened, during the last 20 years, as the result of new, safer diagnostic technics and of the availability of improved and more effective, usually surgical, therapy. Although radiographic examination remains the mainstay of diagnosis, and motility studies add a sophisticated fillip, the direct inspection of the esophageal lumen through the esophagoscope has come to be a standard part of the gastroenterologist's diagnostic armamentarium.

With the development of the Eder-Hufford esophagoscope the gastroenterologist could use the same technic for inserting the instrument in the patient's esophagus which he had employed in inserting the lens type of gastroscope. The Eder-Hufford esophagoscope consists of a hollow tube with additional channels for aspiration and for a carrier for illumination. It is equipped with a flexible obturator to facilitate insertion through the cricopharyngeal sphincter. A 4X proximal telescope assists the examiner to view the esophageal lumen and to identify any lesion that may be present. In the last 15 years this instrument has found wide acceptance among gastroenterologists. It is rigid and carries the same risks of perforation and other accidents as the older Jackson instrument. A fully flexible (LoPresti) fiberoptic esophagoscope is now available. It consists of a 5-mm fiberoptic bundle for viewing, a 3-mm fiberoptic bundle for transmitting light from an external source, as well as an aspirating channel and an inflating channel. Biopsy forceps can be inserted through the inflating channel.

Esophagoscopy with the Eder-Hufford instrument has been carried out by gastroenterologists at the Cleveland Clinic for the last six years. This report reviews that experience and discusses briefly our recent experience with the new LoPresti fiberoptic esophagoscope.

PATIENTS SELECTED, AND METHOD OF STUDY

During the years 1961 through 1966, 585 successful esophagoscopy examinations were performed in 515 patients. On 88 occasions, gastroscopy

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was carried out afterward. There were 20 unsuccessful attempts at esophagoscopy. No accidents, injuries, or perforations occurred in the course of these examinations, although several perforations developed during pneumatic dilation for achalasia, dilation of stricture, and gastroscopy. Examination was conducted in a fasting patient in a treatment room in the Department of Gastroenterology. The preparation was the same both for inpatients and for outpatients. Premedication consisted of 100 mg of meperidine hydrochloride injected intravenously immediately before the examination. In a small number of patients, in lieu of this preparation or in addition to it, a barbiturate, atropine, and local pharyngeal anesthesia were employed. Both types of preparation seemed equally satisfactory.

TECHNIC OF ESOPHAGOSCOPY

Each patient was examined in the left lateral position with his knees drawn up to the abdomen and the head supported by an assistant to the examiner. The instrument was usually but not always passed "blindly," i.e., with the obturator in place to provide a flexible leading "finger." The examiner's left index finger was used to control the obturator and the patient's tongue, guiding the instrument in the midline to the cricopharyngeal sphincter. The patient then swallowed, opening the sphincter, and allowing the instrument to pass safely through and into the esophagus. Once the esophagoscope was well within the esophagus, the obturator was removed, the telescope positioned, and the instrument advanced under direct vision. When possible, the instrument was passed through the cardia into the stomach. Biopsy specimens were taken when indicated. When a stricture was encountered, the wire guide of the Eder-Puestow dilator was passed through the strictured area under direct vision and left in place as the esophagoscope was being removed. To dilate the stricture, metal, olive-shaped dilators on a suitable wand were subsequently passed along the wire guide.

After the esophagoscopy examination was completed the patient remained under observation for two to three hours until the effects of the medication subsided and the examiner could be certain that no perforation occurred.

INDICATIONS

The indications that prompted esophagoscopy are shown in *Table 1*. The most frequent indication was hiatus hernia demonstrated radiographically and associated with symptoms suggesting the possibility of esophagitis or stricture. The large number of repeated examinations was due to the findings of esophagitis and stricture and the need for repeated dilations and serial progress examinations in a small group of patients. In 104 patients

DIAGNOSTIC MEDICAL ESOPHAGOSCOPY

Table 1.—*Indications for esophageal examinations performed in 515 patients at the Cleveland Clinic, 1961–1966*

Indication	Patients, number	Examinations, number	
		Esophagoscopy	Gastroscopy
Hiatus hernia	181	221	24
Cirrhosis	104	112	4
Hemorrhage	95	100	43
Obstructive lesions	55	60	10
Dysphagia	43	47	6
Achalasia	37	45	1
Total	515	585	88

Table 2.—*Data of esophageal examinations of 181 patients with hiatus hernia as diagnosed from symptoms and roentgenograms*

Diagnosis	Patients, number	Examinations, number	
		Esophagoscopy	Gastroscopy
Normal	27	27	8
Hiatus hernia	47	47	7
Esophagitis or gastritis	78	80	9
Esophagitis plus stricture	29	67	0
Total	181	221	24

with cirrhosis of the liver, esophageal varices were suspected and esophagoscopy was performed to determine whether or not they were present. Upper gastrointestinal hemorrhage, either present or in the past, was the indication in 95 patients. Obstructive lesions prompted 60 examinations in 55 patients with symptoms of food lodged in the esophagus, inability to swallow, or regurgitation of undigested food. Painful swallowing was categorized as dysphagia and prompted 47 examinations in 43 patients. Thirty-five patients with achalasia were examined to evaluate the presumptive diagnosis and the presence or absence of significant esophagitis or neoplasm before the use of the pneumatic dilator or a Heller cardiomyotomy.

RESULTS

The results of the examinations of patients with hiatus hernia are given in Table 2. No abnormalities were detected in 27 patients, but the esophagogastric junction was located above the level of the diaphragm in 47 patients who did not have visible evidence of esophagitis. We have not routinely performed biopsy of the distal portion of the esophagus in pa-

Table 3.—*Data of esophageal examinations of 104 patients with cirrhosis of the liver*

Diagnosis	Patients, number	Examinations, number	
		Esophagoscopy	Gastroscopy
Normal	23	24	1
Varices	74	77	3
Varices and hiatus hernia*	(6)	(6)	(0)
Hiatus hernia	5	5	0
Esophagitis	2	6	0
Total	104	112	4

* Not included in the totals.

Table 4.—*Data of esophageal examinations of 95 patients with gastrointestinal hemorrhage*

Diagnosis	Patients, number	Examinations, number	
		Esophagoscopy	Gastroscopy
Normal	36	36	21
Esophageal varices	32	36	10
Hiatus hernia	16	17	9
Esophagitis or gastritis	11	11	3
Total	95	100	43

tients with hiatus hernia, although it is well established that such biopsy specimens often demonstrate submucosal inflammatory lesions where none can be recognized with the naked eye. Esophagitis or gastritis was present in 107 patients (almost 60 percent) and was accompanied by stricture in 29 patients; 67 examinations were made of these 29 patients. Esophageal stricture was dilated one or more times in each of 22 patients for a total of 62 dilations.

Esophageal varices were suspected in 104 patients with proved cirrhosis of the liver (*Table 3*). In 23 patients, esophagoscopy was normal, but varices were found in 74 patients and were associated with hiatus hernia in six of them. Hiatus hernia without varices, and esophagitis without varices were found in five patients and two patients, respectively.

Ninety-five patients who had had gastrointestinal bleeding, thought to be from the upper portion of the tract, underwent esophagoscopy (*Table 4*). Findings were normal in 36 patients, but esophageal varices were seen in 32. Hiatus hernia without esophagitis or gastritis was found in 16 patients. Esophagitis or gastritis was identified in 11 patients. It was sometimes pos-

DIAGNOSTIC MEDICAL ESOPHAGOSCOPY

Table 5.—Data of esophageal examinations of 55 patients with obstructive lesions of the esophagus

Findings on esophagoscopy	Patients, number	Examinations, number			Dilation, number of procedures
		Esophagoscopy	Gastros-copy	Biopsy	
Normal	13	13	2	2	1
Stomach lesion	6	6	4	1	0
Cancer of esophagus or cardia	23	23	3	15	1
Esophagitis	7	7	1	2	1
Stricture	4	9	0	1	10
Extrinsic pressure	2	2	0	1	0
Total	55	60	10	22	13

Table 6.—Data of esophageal examinations performed on 43 patients with dysphagia

Diagnosis	Patients, number	Examinations, number	
		Esophagoscopy	Gastroscopy
Normal	26	26	3
Abnormal motility or chaliasia	7	8	2
Diverticula	2	2	0
Esophagitis or gastritis	8	11	1
Total	43	47	6

sible to be quite confident that the bleeding point was located, but more often the value of the examination lay in the definite exclusion of the esophagus as the source of bleeding.

Data of 55 patients with symptoms of obstructive lesions have been grouped in *Table 5*. Findings were normal in 13, but biopsies were made in two of these patients, and dilation was performed in one patient. A stomach lesion was identified as the reason for obstruction in each of six patients, and a biopsy specimen was taken from one patient. Carcinoma either of the esophagus or of the cardia of the stomach was found in 23 patients, and biopsy specimens were taken from 15 patients. Esophagitis was found in seven patients and a stricture noted in four patients. Extrinsic pressure was identified in two patients.

Data of patients with dysphagia, not elsewhere classified, are reported in *Table 6*. The majority of the examinations yielded normal findings.

Of the 37 patients with radiographic diagnoses of achalasia, five presented a normal appearance at esophagoscopy (*Table 7*). Thirty-two patients ex-

Table 7.—*Data of esophageal examinations of 37 patients with achalasia diagnosed from roentgenograms*

Diagnosis	Patients, number	Esophagoscopy, number of examinations	Dilations, number of procedures
Normal	5	5	0
Achalasia	32	40	23 (pneumatic) 10 (other)
Total	37	45	33

hibited a mildly dilated esophagus with slight evidence of esophagitis. No neoplasm was found in this group of patients. Pneumatic dilations were performed in 23 of the patients.

FIBEROPTIC ESOPHAGOSCOPY

We used the LoPresti fiberoptic esophagoscope in 39 patients. Fifteen of these examinations were made first with the Eder-Hufford and then the LoPresti fiberscopes. In our initial trials we found that with the fiberoptic instrument a somewhat different technic is required for visualizing the esophagus, since the solid instrument occludes the lumen, and requires the coordinate use of the inflating bulb and the suction apparatus. The view is foroblique (25° angle) rather than directly ahead as with the Eder-Hufford instrument.

One great advantage soon became apparent. The LoPresti instrument is somewhat easier to pass than the Eder-Hufford esophagoscope, and being fully flexible is well tolerated by the patient for a relatively long time. Since the esophagus is inflated, it is possible to obtain a good view of the distal segment and to observe peristaltic movements and the functioning of the gastroesophageal vestibule and the cardia. In most instances, the LoPresti esophagoscope slid readily into the stomach, and satisfactory examination could be made of the upper half of the stomach. Apparently a right-angled view is required to see the pylorus in most instances, for we were unable in any of these examinations to conduct a satisfactory gastroscopic examination of the antrum of the stomach with the LoPresti fiberoptic esophagoscope. We are confident that if hemorrhagic gastritis had been present in any of these patients it would have been detected in this examination.

Several disadvantages accrue from the need to inflate the esophagus. It is our impression that esophageal varices are much less prominent and less easily recognized with the LoPresti instrument than with the Eder-Hufford esophagoscope, and on one occasion an esophageal polyp almost 1 cm in

diameter was only partially seen with the LoPresti instrument although it was quite obvious with the Eder-Hufford instrument.

COMMENT

Our experience established the fact that esophagoscopy can be safely performed as an adjunct to the diagnostic procedures of a gastrointestinal clinic both on inpatients and on outpatients. Esophagoscopy is most valuable in detecting those lesions that are seen poorly or not at all by radiographic examination. The mucosal changes of esophagitis in its moderate or severe form are obvious and unequivocal when the mucosal surface is viewed, but must be inferred from motility changes and secondary signs at the radiographic examination. Esophageal varices of small or moderate size can be identified with confidence when observed directly through the esophagoscope, but frequently are demonstrated equivocally or not at all at the radiographic examination. Endoscopists may on occasion confuse rugal folds and esophageal varices, but they have the advantage over their colleagues in radiology of being able to observe color and form, without the interference of a radiopaque medium. The opportunity of dilating strictures and taking biopsy specimens is likewise denied the roentgenologist. Furthermore, the endoscopist is occasionally given the opportunity to observe the small trickle of blood that identifies a bleeding point. It is true though, that arteriography may sometimes demonstrate this same defect.

Esophagoscopy has been used somewhat sparingly in the six-year period. The results have justified the use and seem to justify increased use of esophagoscopy, particularly in the patient who has gastrointestinal bleeding. Only a few patients underwent esophagoscopy as an emergency procedure to detect the origin of gastrointestinal hemorrhage. In the experience of others, the accuracy in identifying the site of upper gastrointestinal hemorrhage decreased when the procedures were delayed or radiography was performed first.¹

We believe that the LoPresti fiberoptic esophagoscope with its increased ease of passage, its improved view of the gastroesophageal vestibule, and the opportunity it affords for examination of the upper half of the stomach, will lead to increased accuracy of diagnosis and more frequent employment of the gastroesophageal examination.

SUMMARY

During the six-year period of 1961 through 1966, 585 esophagoscopic examinations were performed on 515 patients. The most frequent indication for the examination was hiatus hernia, and next, in the order of frequency, cirrhosis of the liver, upper gastrointestinal hemorrhage, obstructive lesions, dysphagia, and achalasia. There were 20 unsuccessful attempts at examination, but there were no perforations or accidents.

Esophagoscopy provides the best evidence for the diagnosis of esophagitis, esophageal varices, and for the identification of the actual source of esophageal bleeding. Serial observations are important to evaluate the results of therapy.

The LoPresti fiberoptic esophagoscope has been found to be easier to use and to provide a somewhat better view of the distal portion of the esophagus than that provided by the Eder-Hufford esophagoscope, and to obtain satisfactory views of the upper half of the stomach.

REFERENCE

1. Hedberg, S. E.: Early endoscopic diagnosis in upper gastrointestinal hemorrhage. An analysis of 323 cases. *S. Clin. North America* **46**: 499-512, 1966.