

The Role of Upper Gastrointestinal Endoscopy in Primary Care

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Upper gastrointestinal endoscopy has become a very useful procedure in detecting pathology and aiding the physician in the evaluation of a patient's problem. A review of one year's sample of 176 examinations performed by a family physician in a small rural hospital shows that there was an 83 percent correlation between pathologic diagnoses of directed biopsies and endoscopic diagnoses. However, there was only a 40 percent correlation between routine radiologic findings and endoscopic findings. Upper gastrointestinal endoscopy has also proven to be a safe procedure that can be used to detect cancer more accurately, locate bleeding sites, and remove foreign bodies. This service can easily be made available to most patients by interested physicians.

With the introduction of fiberoptic instruments and their engineering refinements over the last ten years, gastrointestinal endoscopy has advanced from a seldom used, high-risk procedure to a reliable and safe examination. Although gastrointestinal endoscopy still remains mainly a tool for diagnosis and treatment by well-trained gastroenterologists, the lack of subspecialty qualifications or the unavailability of personnel should not be a limiting factor in its use. However, a demonstrated interest in the medical and/or surgical aspects of gastrointestinal disease is important.

The physicians on the staff of the local community rural hospital in Hastings, Michigan, felt an increasing need for upper gastrointestinal endoscopy. Patients were constantly being referred out of the area for a relatively simple exam-

ination that could be performed at the local level. Therefore, in September 1976, the author was accepted for a two-week intensive preceptorship in upper gastrointestinal endoscopy at the University of Wisconsin, and, upon his return to Hastings, the hospital purchased the necessary equipment.

Upper gastrointestinal endoscopies were performed on 166 patients over the next one-year period on patients referred from the practices of 18 local physicians. In all, 176 examinations were performed.

The purpose of this paper is to evaluate the use of upper gastrointestinal endoscopy over the first year of experience in order to detect any problems and to demonstrate its effectiveness as a diagnostic tool.

Methods

One hundred seventy-six examinations covering a one-year period were included in the study. Of the total number, ten examinations were re-

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Total 166	Upper Gastrointestinal Symptoms		No Upper Gastrointestinal Symptoms	
	Number	Percent	Number	Percent
Positive upper gastrointestinal x-rays	60	36	3	2
Negative upper gastrointestinal x-rays	66	40	—	—
No x-ray	36	22	—	—

peated for various reasons. Therefore, a total of 166 patients were seen. Of this number, there were 53 percent females and 47 percent males.

The age range was from 10 years to 97 years, with the median age in the 46-to 50-year bracket for both males and females.

The forward viewing ACMI F-8 panendoscope was used with the ability to view the esophagus, stomach, and duodenum. The examination involved an initial patient interview to ascertain the reason for referral. The patient was then given a pamphlet including instructions for preexamination preparation and a description of the examination. On the day of the examination, the patient received meperidine and atropine intramuscularly as a premedication. One half hour later, the patient's throat was swabbed with 1/2 percent pontocaine and intravenous diazepam was administered until the patient developed drowsiness, had ptosis, and no longer responded to verbal stimuli. The endoscope was then passed through the mouth and into the esophagus. The esophagus, stomach, duodenal bulb, and second portion of the duodenum were examined in a systematic fashion. At the end of the examination, the patient was observed closely for the next two to three hours by the nursing staff until drowsiness and amnesia subsided.

All 176 summaries of examinations were reviewed in order to answer the following questions:

1. Was the upper gastrointestinal endoscopy examination justified according to the final endoscopic diagnosis?

2. Was an upper gastrointestinal x-ray examination done prior to examination?

3. Of the total number of referrals, did the patient have a negative or positive upper gastrointestinal x-ray series and were these symptoms related to the upper gastrointestinal system?

4. Did the x-ray findings and endoscopic findings correlate?

5. What correlation existed between pathologic and endoscopic diagnoses on those patients who had endoscopically-directed biopsies?

6. What were the total number and distribution of diagnoses made on this patient sample? How many patients were referred for subsequent surgery?

7. What was the complication rate for this procedure?

Results

Of all of the completed examinations, there were 11 normal examinations (six percent of the total). These examinations were felt to be justified because they included patients with gastrointestinal tract symptoms and, in particular, were used as a means to rule out upper gastrointestinal bleeding, clarify the cause of pain, or were follow-up examinations on the healing of gastric ulcers. Also, ten examinations (five percent) were repeated to further evaluate gastric ulcers or because of exacerbation of a patient's symptoms.

In order to evaluate the reasons for referral, the information from the procedure summaries was divided into those patients who had upper gastrointestinal (UGI) series x-rays prior to the endoscopic examination and those with and without symptoms relating to the upper gastrointestinal tract.

Table 2. Correlation of Diagnosis

Endoscopic diagnosis	Agree		Disagree	
	Number	Percent	Number	Percent
X-ray N=129	51	40	78	60
Pathology N=101	84	83	17	17

Upper gastrointestinal x-rays were performed prior to the endoscopic examination in 129 patients (73 percent of examinations).

Exceptions included those patients with acute upper gastrointestinal bleeding, repeat examinations, a foreign body lodged in the esophagus, or when the referring physician felt the symptoms would be diagnosed more easily by endoscopy than by radiography. The reasons for referral are shown in Table 1. Repeat examinations were excluded (10/176 or five percent of total).

It is also important to determine whether there was any correlation between endoscopic findings and the diagnoses of both radiology and pathology. There were 129 radiological examinations done prior to endoscopic evaluation. During 176 examinations, 101 or 57 percent of cases had endoscopically directed biopsies and/or cytology performed. Table 2 summarizes these results.

The total number of diagnoses was 284, or an average of 1.6 diagnoses per examination. Table 3 shows the distribution of these diagnoses. These diagnoses were derived from the initial impression at the completion of the examination and in some cases correlated with the final pathologic biopsy or cytology diagnosis. From all of these diagnoses, 21 patients, or 13 percent of the total 166 patients, were referred for surgical intervention. It is difficult to determine the number of patients who did not receive surgery because of endoscopy and were treated medically following examination.

The complications in this study include two cases of venous phlebitis secondary to intravenous diazepam administration and two inadvertent passages of the endoscope into the trachea. Two examinations were attempted but not performed because of an inability to initiate passage of the instrument.

Discussion

As seen from the data, a common referral for endoscopy included those patients who had a normal upper gastrointestinal x-ray study but had symptoms such as hematemesis, upper abdominal or epigastric pain, recurrent vomiting, or chronic anemia. Endoscopy has proven to be invaluable in these instances, since various mucosal lesions or structural abnormalities may not be evident on x-ray. Another large share of referrals includes those patients with a positive finding on radiologic examination who need further definition or directed biopsy in order to develop a course of therapy.

The relationship of radiology to endoscopy is very important. However, as noted by this and other studies,¹⁻³ the correlation between upper gastrointestinal endoscopy and radiography is relatively poor. A Mayo Clinic study of 1,368 examinations showed an altered diagnosis in 18 percent of patients after endoscopy. However, gastroscopic findings differed significantly from x-ray diagnoses in 7 to 35 percent of cases, depending upon the indication for the endoscopic examination.

The large disparity in this study between endoscopic and radiographic findings of 60 percent may be explained by several factors. All of the upper gastrointestinal series performed were of the single contrast variety and, consequently, small or superficial lesions may not have been detected. Double contrast barium meal studies have been shown to have a 96 percent correlation with upper gastrointestinal findings on endoscopy.⁴

Also, what may be a negative radiologic examination by one interpreter may not always be so to another examiner, and one radiologist may neglect

Table 3. Endoscopic Diagnoses

Diagnosis	No. of diagnoses
1. Chronic or acute gastritis	68
2. Hiatus hernia	53
3. Esophagitis	51
4. Gastric ulcer	22
5. Duodenal ulcer	20
6. Duodenitis	20
7. Acute upper gastrointestinal bleeding, any cause	15
8. Normal examination	11
9. Partial or complete obstruction	7
10. Esophageal varices	7
11. Gastric carcinoma	3
12. Mallory-Weiss syndrome	2
13. Gastric polyps	2
14. Foreign body	2
15. Cancer of esophagus (metastatic)	1

to report a relatively insignificant finding, such as a hiatus hernia, when another will report it. What may be interpreted as a lesion on x-ray may, in fact, be the result of a poorly prepared patient and would have been interpreted differently on repeat examination. Finally, such diagnoses as gastritis, duodenitis, or esophagitis could not possibly be seen on barium meal examinations. It is felt that better communication between referring physician, radiologist, and endoscopist would improve the diagnostic abilities of each procedure to a significant degree.

If a physician is to undertake endoscopy, he/she must be thoroughly knowledgeable concerning the appearance of the lesions and the deformities that are found on examination. Those data show that when using a pathologic diagnosis as a standard, the abnormalities were interpreted correctly 83 percent of the time. This is consistent with most studies in the literature that give an approximate 80 percent accuracy.^{5,6} Causes for variance may include a misplaced biopsy, inexperience of the pathology laboratory in interpreting endoscopy biopsies properly, and the provision of only very small tissue samples which can limit the precision of the proper diagnosis.

Table 3 gives a summary of the total diagnoses

encountered during this study. There were 284 diagnoses or 1.6 diagnoses per examination. The diagnosis of hiatus hernia was very common but this number may not reflect the true frequency since, in review of the patients' records, all hiatus hernias detected that were 3 cm or less in length and showing no signs of reflux were eliminated. This may account for a similar number of hiatus hernia or esophagitis diagnoses.

The frequency of occurrence of gastric and duodenal ulcers is shown to be nearly equal. This is certainly not the case in the general population. However, most gastric ulcers seen on x-ray were referred for endoscopic evaluation while most duodenal ulcers were not. It is interesting to note that often what is described on radiologic examination as an ulcer crater may, in fact, be a defect caused by a scar from a previous ulcer. The exact significance of duodenitis seen endoscopically is not clear, but subjectively, the correlation between duodenitis and the radiologic interpretation of a spastic duodenal bulb seems very high.

Acute upper gastrointestinal bleeding included all of those patients who were referred for endoscopy because of either hematemesis or melena, or both within 24 hours prior to examination. Usually the patient had not received a prior radiologic procedure. The bleeding may or may not have subsided before the examination, but the patient had stabilized vital signs. The detected diagnoses included bleeding ulcers, gastritis, carcinomas, Mallory-Weiss lesions, and esophageal varices. One patient with a duodenal-aortic fistula diagnosed initially by endoscopy was not included in this list.

The foreign bodies were, in both cases, large pieces of meat lodged in the lower one third of the esophagus and were removed in a piecemeal fashion.

Of the gastric polyps, one patient had the polyps removed in toto, but another had a large nonobstructing polyp that was merely biopsied. The gastric polyps can commonly become a mechanical problem but rarely do they have carcinomatous potential.

Obstruction is diagnosed when the endoscope cannot proceed beyond a certain point. This has commonly been caused either by fibrosis or scarring of a certain area, but occasionally an invading carcinoma is present.

There were three cases of gastric carcinoma and

one case of esophageal cancer reported, but the former number includes one patient who was examined three times for a gastric ulcer and had pathologically benign tissue on biopsy specimens. However, subsequent surgery revealed a gastric carcinoma also felt to be present when viewed endoscopically. The two other gastric adenocarcinomas were diagnosed endoscopically by biopsy and verified by subsequent surgery. The cancer of the esophagus was, in fact, a rare metastatic lesion to the esophagus from the breast, diagnosed endoscopically and by directed biopsy.

Upper gastrointestinal endoscopy as an invasive procedure certainly has complications. Reported complications include perforation, intramural hematoma, impaction of the fiberoptic, pseudo-acute abdomen, submandibular swelling, and aspiration pneumonia.⁷ Also, phlebitis and respiratory arrest from the administration of intravenous diazepam, passage of the endoscope into the trachea and dislodging of the teeth are possible problems relating to the procedure. The complications in this study included two cases of venous phlebitis and two cases of passage into the trachea. However, it is mandatory to observe all precautions to prevent any of the above problems from developing.

Cardiac monitoring is necessary for any high-risk patient with either cardiac or pulmonary disease. Resuscitative equipment should be immediately available for use while performing the procedure. The examination should be terminated if the patient becomes unruly, uncooperative, or if gastric contents cannot be removed.

Absolute contraindications for this procedure include severe shock from massive blood loss, acute coronary occlusion, severe heart failure, hyperpyrexia, comatose states, acute or subacute crises such as asthma, recent epileptic seizure, severe emphysema, and obstructive pulmonary disease. The two anatomical defects considered to be contraindications are aortic aneurysms and Zenker-type esophageal diverticula.⁸

Indications for this procedure, as seen from this report, include obscure upper gastrointestinal signs or symptoms not adequately defined by physical examination and/or radiologic studies. Visualization and directed biopsy of a lesion prior to surgery can be helpful in determining the operative procedure. Evaluation of upper gastrointestinal bleeding and retrieval of foreign

bodies make endoscopy very useful as an emergency procedure as well. Presently, a committee of the American Society for Gastrointestinal Endoscopy is working on specific guidelines for the indications for gastrointestinal endoscopy. Their advice will be published in the near future.

Summary

This report has attempted to demonstrate that upper gastrointestinal endoscopy can be a safe and effective tool. Certainly, the author's relatively brief training does not allow for performing such procedures as cauterization of bleeding ulcers, removal of large polyps, or cannulation of the common bile duct. However, this procedure can still be a very useful diagnostic tool. Definitively diagnosing four cases of carcinoma out of 166 patients more than justifies its use. Being able to complement radiologic studies by further defining a lesion or finding a lesion undetected on barium contrast examination also underlines its benefit.

The future of gastrointestinal endoscopy holds promise as an important diagnostic tool. New and improved instruments will, it is hoped, make the examination more available and less expensive to use.

By making this endoscopy service readily available to the patients in the local area, the morbidity and mortality associated with gastrointestinal lesions can be reduced, the limits of preventive medicine can be extended for the patient, and a more accurate diagnosis can be obtained without surgery.

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