GASTROSCOPY: ITS VALUE AND INDICATIONS

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Gastroscopy with the flexible gastroscope is a universally accepted diagnostic procedure and the indications for its use are well established. Opinions of leading gastro-enterologists throughout the world are in accord regarding the value of the procedure. Two well-known gastro-enterologists who have not been actively engaged in gastroscopy but who have watched its development are W. L. Palmer of the University of Chicago and Eusterman of the Mayo Clinic. Palmer[1] has said, "I am hopeful that the new method may be accorded the warm reception it so richly deserves by the conservative members of the profession and that it may be spared the fate of most new methods—overenthusiasm and exploitation by the more radical supporters. But this is too much to expect. I am confident, however, that gastroscopy will withstand the criticism of its adversaries, if there be any, and the exaggeration of its friends. It does not rival the x-ray examination; it is supplementary. The two methods have made the clinical study of gastric disease a definite objective science."

As Palmer correctly prophesized, there has been exploitation by radical supporters, criticism by adversaries, and exaggeration by friends, but gastroscopy has withstood all these, as is evidenced by Eusterman's statement in his introduction to the section of gastro-intestinal disease in the Yearbook of General Medicine for 1938. He states, "accumulating experience also attests the *indispensability* of competent gastroscopic examination in daily gastro-enterologic practice."

The criticisms which have been made of gastroscopy have been of two types. One has come from those who have not taken the trouble to learn about the procedure, or at least have become biased before they learned its indications and limitations. It is true that there have been five cases of perforation of the stomach but these all occurred when an experimental tip was used. The last case occurred in 1935 and this tip has now been discarded.[2] In not one case did complications develop and all the patients recovered uneventfully. No other perforations have been reported in this country or abroad and no deaths have been reported. Criticism of this type is made by those who contend that gastroscopy competes with roentgenology or that gastroscopy is useless because the roentgenologist can see shadows which mean more than the actual visualization of the gastric mucosa by the gastroscopist. Analysis of the facts, of course, disproves these contentions.

The second type of criticism has come from fair, open-minded adversaries and the conservative friends of gastroscopy who warn against overenthusiasm. They mention the difficulties and potential dangers

which may arise from gastroscopic examinations made by careless or poorly trained men. The technic is relatively easy to learn but the use of gentleness and skill are as important in carrying out this procedure as they are in any other diagnostic procedure, whether it be a digital rectal examination or "needling" of the eye. Schindler believes that the flexible gastroscope is safe "even in awkward hands" and so it would seem to be from the conspicuous lack of accidents. However, one need hardly mention the advantage of thorough training and adequate experience. To complement the examiner's skill, one needs an experienced assistant. This assistant must be one who can anticipate the examiner's movements and change the position of the patient's head in such a way that he experiences little or no discomfort. Some patients will complain of a pressure distress in the throat during the examination but only a few have a sore throat which persists for 12 to 24 hours. When carefully done most patients will willingly permit follow-up or recheck gastroscopic examinations. A good assistant will also prevent undue apprehension on the part of the patient. However, an assistant is not a necessity, because such expert gastroscopists as Benedict at the Massachusetts General Hospital and Taylor at St. Bartholomew's Hospital in London work successfully without an assistant. On one occasion it was necessary for me to examine without an assistant a very sick tuberculous patient on the kitchen table of his desert home in Arizona. Even under such conditions the patient experienced little discomfort and later requested a second examination.

Other criticism has dealt with orientation and interpretation of gastroscopic findings. There is no perfect diagnostic method and gastroscopists do not claim that gastroscopy is perfect. Certain areas of the stomach may not be seen by gastroscopy but these areas are not constantly invisible with two exceptions. A small portion of the juxtaesophageal area cannot be seen. The second blind spot is at the tip of the instrument but, by manipulation, this can be reduced to a small area. The other so-called blind spots may or may not be seen and with a varying degree of visibility. However, all blind areas together constitute only a small part of the total mucosal surface. The greater part of the stomach is usually well visualized. Interpretation of the gastroscopic findings involves a personal equation and requires much experience just as are required for cystoscopy, roentgenology, or any other observation.

A frequent point of discussion is how can the gastroscopist differentiate a benign from a malignant lesion or what is the evidence of gastritis. One should realize that the gastroscopist actually sees mucous membrane as other endoscopists visualize hollow organs and cavities. The stomach is distended, the blood and nerve supplies are intact, the

coloring is vivid, and the minute details stand out prominently. In any endoscopic method the examiner makes his diagnosis from what he *sees*. The microscopic examination, if biopsy can be obtained, only adds confirmatory evidence.

Indications for Gastroscopy

Negative Roentgen Findings

In anyone's practice there always is a certain number of patients who complain of chronic distress in the abdomen. In certain cases the roentgen examinations may have been reported as negative; yet, one still suspects some abnormality of the gastro-intestinal tract. Such patients have been estimated by various writers to constitute from 15 to 45 per cent of a practice. It is in this group that gastroscopy is of the greatest value and gastroscopists usually list this group of patients as the most important indications for gastroscopy.

Chronic gastritis is the most common organic cause of abdominal, or at least of upper abdominal, distress.[3] Fifty per cent of all patients examined by gastroscopy will have some form of gastritis according to the experience of both European and American authorities. Because the disease is so common and so distressing to the patient and because the practitioner wishes to make the correct diagnosis, chronic gastritis has been studied with the hope of finding some simple means of diagnosis. It is agreed that the symptoms are so varied and without a definite syndrome that while the presence of gastritis may be suspected, it cannot be made from the patient's history or without gastroscopic examination. Information from gastric analyses has been extensively studied in this group of cases.[4] It has been found that the acid secretion varied from achlorhydria with histamine through the normal range to "hyperacidity."

No type of secretory curve is characteristic of any type of gastritis or even of gastritis in general. In atrophic gastritis one may find normal or even high levels for the acid, while in superficial or hypertrophic gastritis one may find even an achlorhydria. The simplest accurate way to make a diagnosis of gastritis is to employ gastroscopy.

When the roentgen findings in gastritis have been compared to the gastroscopic findings, there has been no correlation between them. The roentgenologist seldom has been able to accurately make the diagnosis. In Schindler's experience, the roentgen diagnosis has been correct in but one case in 200. Others have had similar experiences. On the other hand, by direct inspection of the intact stomach—by gastroscopy—the diagnosis can be made accurately. Not only can one see the inflammatory reaction but it can be classified into chronic superficial, atrophic, or hypertrophic varieties, each of which bears a different prognosis and requires different management.

One may question the significance of mucosal changes which are said to be due to gastritis and certainly the lesser changes may well be doubted; but the marked inflammatory changes with redness, swelling, edema, erosions, ulcerations, or hemorrhages in a friable tissue can easily be seen. There is no doubt that such changes do cause symptoms and the symptoms are entirely relieved when the gastritis subsides.[5] The experienced gastroscopist will not emphasize the lesser changes but will make the diagnosis of gastritis only in the presence of obvious, well-marked changes.

Occult blood in the stools, melena or hematemesis may be due to a gastritis which has not been revealed by roentgen examination. When one sees how friable the inflamed mucosa may be and how easily it bleeds, one can well understand how a gastritis could be the source of occult blood or massive hemorrhage. The frequency of gastric erosions also demonstrates another possible source of bleeding. Some authorities, particularly in Germany, believe that 10 per cent of all cases of massive gastro-intestinal hemorrhage are caused by gastritis. The bleeding from a peptic ulcer or a gastric carcinoma is a well-known phenomenon. At times these lesions may not be revealed by roentgen examination; therefore, bleeding in the gastro-intestinal tract is an important indication for gastroscopy which should be done as soon as the evidence shows that profuse bleeding has stopped.

What has been said of bleeding is equally true of unexplained anorexia, low grade fever, nausea, vomiting, or weight loss. It has been my experience, as it has also been of others, that anorexia and loss in weight are fairly common complaints of patients with gastritis. One must also be on guard to recognize the possible presence of carcinoma in the presence of such complaints. Low grade fever to my knowledge is not a common finding in gastritis but it is in carcinoma. The cause of nausea or vomiting may be revealed by gastroscopy when other methods have failed.

It is obvious that when all the other established methods of examination reveal no abnormalities, many patients with vague or unexplainable symptoms have been considered to have gastric neurosis, psychoneurosis, nervous indigestion, functional dyspepsia, or some other equally incorrect diagnosis. We believe that true gastric neurosis is so uncommon that such a diagnosis is rarely, if ever, justified, and never justified without doing a gastroscopic examination.

Inconclusive Roentgen Findings

The second most important indication for a gastroscopic examination is incomplete, inconclusive, or inconsistent roentgen findings. In this

group the examination is probably most important and is used most commonly following operations on the stomach. In such cases the roentgen findings very frequently leave some doubt concerning the true condition. Marginal or jejunal ulcers are not as well demonstrated as gastric or duodenal ulcer and the roentgen examination may give essentially negative findings but many patients will still have symptoms of ulcer. Because one can usually see almost the entire stomach by gastroscopy, direct visualization by this means becomes a valuable adjunct to the examination. The stoma is usually well seen and any ulceration in or near the opening stands out clearly. A very large number of patients will have a severe mixed type of gastritis following gastric operations. This is rarely detected without a gastroscopic examination.

Deformity of the duodenal bulb without a demonstrable crater or niche may be considered an insufficient or inconclusive finding. The deformity alone, even with symptoms simulating ulcer, constitutes an indication for gastroscopy because ulcerative gastritis may be the cause of symptoms and the duodenal deformity be but an inactive remnant of a previous ulcer. In fact, duodenal ulcer itself is an indication for gastroscopy to confirm or exclude the presence of concomitant gastric disease. Certainly, in any duodenal ulcer for which one contemplates gastric surgery, a gastroscopic examination is warranted first. The presence of gastritis may interfere with the proper function of a new gastric outlet or otherwise impair the physiology of the stomach.

Under the heading of inconclusive findings, one would consider bizarre filling defects, benign tumors, defects suspected of being extragastric, suspected gastric syphilis, suspected lymphogranulomatous disease of the stomach, and other uncommon conditions.

Gastric Ulcer

Every gastric ulcer should be examined by gastroscopy and not once but two or more times. The reason for this is obvious. By direct visualization of the ulcer, the gastroscopist is able to confirm the roentgen diagnosis, but more important, he can accurately observe the healing of the ulcer. It is a well-known phenomenon that the niche seen by roentgen examination may disappear very rapidly after treatment has been instituted. The disappearance of edema about the ulcer has been offered as an explanation for such rapid reduction of the size of the niche. To my knowledge the most rapid time for complete epithelialization, as observed by gastroscopy, of a gastric ulcer has been five weeks, and seven or eight weeks is the usual period. However, some cases will require a longer time. Palmer, Schindler and Templeton[6]

observed some cases with delayed healing, in one of which an ulcer persisted for a year and another patient had a persistent or a recurrent ulcer over a two year period. Their study emphasizes the need for doing both roentgen and gastroscopic examinations when following the course of an ulcer. The ulcer is not always visible at the same time by both methods. The lesion may be visualized by gastroscopy and not by the roentgen ray at one time and vice versa at another time. When doing both gastroscopic and roentgen examinations, there may be a question of which procedure should be done first. Since the real contraindications for gastroscopy may be suspected from the history and physical examination or detected by fluoroscopy of the chest which is always done before making a gastroscopic examination, the latter may precede or follow the roentgen examination. We prefer to have the roentgen study done first, but this is not always feasible. Small flecks of barium may adhere to the mucosa for a day or two after the ingestion of the barium meal and it is possible for barium to remain in an ulcer crater for several days. Because of this fact, gastroscopic examination is rarely carried out in less than two days following roentgen examination and then if there is any question of malignancy of the ulcer, we have the patient's stomach thoroughly lavaged and repeat the gastroscopy the next day.

If the patient lives a long distance from the doctor's office or if time is a vital factor to the patient, gastroscopy should be done before the roentgen examination providing, of course, there are no obvious or questionable contraindications. It should be emphasized that an Ewald tube is always passed before the gastroscopic examination. If any obstructive lesion of the esophagus is present, it will be detected with the Ewald tube and the gastroscopic examination would not be done. Even if the Ewald tube passes successfully, but one encounters resistance with the gastroscope, the examination is discontinued immediately. Certainly, all follow-up gastroscopic examinations should be done before the roentgen study. On the other hand, if a patient comes to us solely for a gastroscopic examination, we insist that the patient bring with him recent roentgen films as well as all other data pertinent to the problem.

Gastric Carcinoma

A gastroscopic examination should be made in all cases where carcinoma is suspected but has not been demonstrated by the roentgen ray. In known cases it should be performed before operation for two reasons: to confirm the diagnosis and to help determine the mucosal extent of the pathological changes. It has been shown that involvement of the mucosa alone is rarely, if ever, detected by the roentgen ray. In a similar

manner it has been shown that inspection and palpation of the tissue at the surgical table does not correspond to what the gastroscopist sees. A point overlooked by most critics and not appreciated by those who have never observed the stomach through the gastroscope is that the gastroscopist sees an *intact, living* stomach as no one else has the opportunity to see it.

The endoscopic diagnosis of malignancy or benignity is the same in any method—it is based on what the endoscopist sees and biopsy adds but confirmatory evidence. Without biopsy, the endoscopic diagnosis is quite accurate and the inability to obtain biopsy is not a drawback. The gastroscopist, then, can in a very high percentage of cases, make an accurate diagnosis. This is particularly true of ulcerating lesions. On the other hand, a small, localized, nonulcerative infiltration may be hard to detect. However, by using both the roentgen and gastroscopic examinations, the diagnosis should be accurately made in nearly every case. Having made the diagnosis, the gastroscopist is of value to the surgeon by determining the mucosal extent of the process. Lesions which have been regarded as inoperable because the infiltration seemed to extend too high for successful surgery have been proved by gastroscopy to be operable. The reverse situation has also been observed; gastroscopy has revealed that the pathological process was too extensive and the patient has been spared an unnecessary laparotomy. Just as important as a preoperative examination is a postoperative examination. Just as the cystoscopist does repeated cystoscopies to watch for recurrences, so does the gastroscopist advise frequent gastroscopies to discover early recurrences of the disease. The same logic applies to roentgen therapy follow-up examinations.

Miscellaneous Conditions

Included in this group are the deficiency diseases, pernicious anemia, blood dyscrasias, allergic states, skin diseases, and the lymphogranulomatous diseases. Already, interesting information is being accumulated on the presence of and the relation of mucosal changes to deficiency diseases. For instance, I have seen a case of early carcinoma which was found by the gastroscopist during his routine examination of a patient with pernicious anemia. The French workers have reported finding gastric changes in lichen planus, chronic urticaria, and certain other skin conditions. They also report gastric changes in allergic conditions. Lymphosarcoma of the stomach has been observed by gastroscopic examination, and gastroscopy may be an aid in differential diagnosis.[7]

Summary

1. Gastroscopy with the flexible Wolf-Schindler gastroscope in skilled hands is a safe, simple, practical office procedure which yields valuable information about the human living stomach and this information is obtainable in no other way.

The following are the established indications for gastroscopy at the present time:

I. Patients with negative gastro-intestinal roentgen findings but in whom one still suspects gastro-intestinal disease as:

(1) Chronic abdominal distress or pain
(2) Hematemesis
(3) Occult blood in the stools
(4) Loss in weight
(5) Nausea and/or vomiting
(6) Diarrhea
(7) Unexplained low grade fever
(8) Anorexia
(9) Anemia

II. Patients with inconclusive or inconsistent roentgen findings as:

(1) Postoperative stomach (resection and gastro-enterostomy)
(2) Bizarre or questionable filling defects
(3) Questionable benign tumors
(4) Questionable syphilis of the stomach
(5) Question of extra- or intragastric lesions
(6) Deformed duodenal bulb without niche or crater.

III. Gastric ulcers

IV. Gastric carcinoma

Miscellaneous conditions as deficiency diseases, anemias, lymphogranulomatous diseases, allergic states, certain skin conditions, and blood dyscrasias are not established indications but gastroscopy has proved helpful in their diagnosis.

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