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SIMPLIFIED DIRECTIONS FOR EXAMINING THE STOMACH.

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SIMPLIFIED DIRECTIONS FOR EXAMINING THE STOMACH.

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THE systematic examination of the stomach can be no longer disposed of hurriedly. Even those cases that at first sight seem simple, upon further investigation often present difficulties that time and study alone can make clear.

To begin with, a general examination of the patient should be instituted, including those common sources of reflex irritation, the eyes, the nose, and the genitalia, for it happens frequently that the stomach-derangement is but an expression of insufficient oxygenation, anemia, uremia, weak heart, hysteria, or of eye-strain, disease of the turbinates, or pelvic mischief; and permanent relief can scarcely be obtained until the chief and contributing causes are effaced.

It is wise to inquire after special subjective symptoms, and one may begin with the appetite. Is it good, poor, or excessive? What is the character, and what are the hours of meals? Is the food bolted? Are the teeth sound? Is the food well salivated, or is it washed down by fluids? Is there pain or other distress following meals, and if so,

after how long a time, and where located? Are there eructations of gas or food? Is there pyrosis, nausea, or vomiting? Is there distention of the abdomen or rumbling in the stomach or bowels? Are there hurried evacuations following meals? Are the bowels regular?

These simple questions, if intelligently answered, will yield information in proportion to the extent of the examiner's familiarity with the results of precise study of the gastric contents in various affections and under divers conditions, and at times are adequate to allow of a provisional diagnosis, without further tracking. Subsequent events or contradictions in symptoms, however, may lead one to further proceedings. If so, have the abdomen divested of all covers, and carefully examine the part, either in the horizontal or in the upright positions, or in both, by inspection, palpation, percussion, and auscultation. Sometimes by inspection much may be learned of the size, shape, position, contents, and peristalsis of the stomach. Much more will be ascertained by palpation if the hands are well trained, and here experience is particularly precious. To avoid exciting unnecessary contraction of the muscles, and yet to succeed in locating points of tenderness or small indurations, to discover areas having unusual resistance, to estimate the strength of the gastric reflex, to develop the *clapotage* or "splashing sound," and to discover the size, shape, and position of the stomach, require long practice; and while the most expert may fail in very fat or spasmodic individuals, yet the method is invaluable. Percussion, which should usually be immediate, and

auscultation, by means of a large (Dennison's) binaural stethoscope, strengthen one's conclusions, and stethoscopy, in connection with palpation and percussion—"conjoined methods"—is especially useful in studying the motions of the stomach.

Various expedients are employed to render these physical signs more decisive, as that of placing the patient on the chest and knees across two chairs, with the abdomen dependent; or upon one side; the stomach may be distended with gas by administering 2 grams of sodium bicarbonate, followed by 1 gram of tartaric acid, both in solution. If this is inadequate to distend the stomach, increase the amount of gas. (Or this matter may be postponed until the stomach-tube is introduced, when, after securing the gastric contents, air may be pumped into the stomach through the tube by means of Allen's pump, or of rubber bulbs.)

Instead of the stomach, the colon may be inflated by means of acid and alkaline solutions, separately injected with a syringe, or one may be distended with gas and the other with water.

By such methods it is possible to learn accurately the shape, size, and relations of the stomach, and this knowledge has come to be a necessity, if we hope to relieve many conditions that are acknowledged to be common and important.

The next step is to examine the gastric contents, for which recourse is had to Leube's tube. As a means of precision in diagnosis, this instrument has few equals in the armamentarium of the physician. Too often it is employed merely for the therapeutic end of washing out the stomach, a procedure of

conceded usefulness under certain circumstances, and yet one so injudiciously and needlessly applied that some have unjustly discredited it.

Select a soft tube, five feet long, one and one-half inches in circumference, having two good-sized openings near its distal extremity. A series of ink lines should be traced like rings around the tube, one inch apart, beginning twenty inches from and ending thirty inches from the lower extremity. When the tube is in the stomach these lines will serve as guides in measurement, using the incisor teeth as the fixed point. Thus it is possible to say precisely just how much tube has been introduced. To reach the lower border of the stomach in most adults it will be required to pass the tube twenty-two inches, rarely less than twenty, sometimes twenty-four. When there is gastrectasis, from twenty-four to thirty or more inches will be necessary.

The proper distance may be determined partly by the previous external examination, partly (and especially) by the success in the efforts to get a good return flow when siphonage is practised. If too short, the tube does not reach; if too long, it curves up above the level of the fluid and the current is interrupted. Although the contrary has been asserted, really nothing can be learned by a sense of resistance communicated when the tube reaches the bottom of the stomach, provided the instrument has the proper flexibility.

Much is said about the repugnance that individuals have to the use of the tube and the poor success that physicians have in inducing them to submit to

it. This is a needless exaggeration, and may be accounted for by lack of expertness on the part of the physician and by the apprehensions aroused in the patient by the impressive description of the procedure and the solemn injunctions that the patient must exercise self-control.

The patient having consented, when about to pass a tube, every preparation should be made, and the moment the patient is seated the tube should be quickly slipped down; then, if any strangling ensues, the patient must be instructed to breathe slowly, and in the great majority of cases all will be overcome without serious objections or subsequent complaints.

It is not well to disturb the patient with too many directions, but it is sometimes worth while to tell him not to throw the head backward, and after the tube is introduced not to attempt to swallow the mucus that accumulates in the mouth, as this must be allowed to dribble outward from the lips.

An effort should now be made to withdraw a portion of the undiluted stomach-contents for minute examination, a matter under certain circumstances attended with some difficulty. Success is generally attained if the food has been finely divided and the attempt at aspiration made not too soon after eating. The best means of obtaining the contents undiluted is by compressing the patient's abdomen with the hands, at the same time inviting expulsive efforts, as described by Ewald and Boas. This occasionally leads to vomiting, on the advent of which the efforts should be temporarily discontinued, and if merely a small amount is required, recourse may be had to the "stomach-bucket" devised by Max Einhorn.

To simplify the examination, it should be conducted first an hour after breakfast consisting of a stale roll and a glassful of water (Probefrühstück); later, a more complex meal, for instance, a luncheon of meat, with bread and butter, no fluid being permitted, save water; and still later studies may be made of yet more general meals.

It will now be learned that certain varieties of food are well disposed of, while others quite uniformly disagree, or are present in great part entirely undigested or unchanged, or it will be found that a meal that is normally digested at certain hours of the day is at other times not successfully managed, but becomes the source of irritation and distress. This knowledge alone will repay both physician and patient for all possible trouble with the stomach-tube, but other important advantages remain to be described.

The gastric contents should be scrutinized first as to their gross appearances, to ascertain if they show the solvent effects of the gastric juice; if they contain too much fluid or too much mucus; if they are of proper color and of natural odor.

Filter the contents, and take the reaction of the filtrate. If acid, discover whether hydrochloric acid,[1] organic acids, or acid salts, one or more,

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[1] Günzberg's reagent:

Phloroglucin	gr. xxx.
Vanillin	gr. xv.
Absolute alcohol	℥j.

Evaporate to dryness in a capsule over a small flame five drops of this with an equal amount of filtered stomach-contents. The presence of hydrochloric acid is recognized by a brilliant red color.

account for its acidity. If acid, test the total acidity, or, if alkaline,[1] the total alkalinity. Sometimes the gastric filtrate is neutral. The amount of hydrochloric acid present is of vital importance. The presence of lactic acid in appreciable quantity longer than an hour after the test-breakfast is pathologic.[2]

So also there may be found acetic acid, or the fatty acids, usually disclosed by characteristic odors upon heating; and although less frequent evidences of disturbance than lactic acid, they must be regarded as mischievous, both in and of themselves and as the expression of imperfect gastric chemistry.

Investigation should now be made as to the changes of albumins into peptones,[3] and of the starches into maltose,[4] for, contrary to the belief sometimes held, the latter change goes on quite

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[1] By titration.

[2] Uffelmann's reagent: Mix one drop of pure carbolic acid with five drops of a dilute solution of neutral ferric chloride. Add sufficient water to render the whole of an amethyst-blue color A mere trace of lactic acid will change this to a light yellow color.

[3] To a few drams of filtered stomach-contents add a little caustic potash, and then a little dilute cupric sulphate. If peptone or propeptone are present, there is formed a distinct purplish-red color; if merely albumin or syntonin is present, a violet-blue color is seen.

[4] If a little Lugol's solution be added to the specimen, it will turn blue if starch is present, but purple if only erythrodextrin is present. If the starchy matter has progressed beyond this in its change into dextrose, the iodine hue remains unchanged. In normal digestion, an hour after a meal, the iodine hue should not be changed.

extensively in the stomach, under physiologic acidity.[1]

Direct examination of the stomach often yields information as to the sensory state of the organ. It explains the cause of the severe gastralgia, burning, weight, and distress, or the boring ache or pain that sometimes precedes or accompanies the actual development of gastric ulcer.

To accomplish all this requires far less time than would be supposed, thanks to the admirable work of the French, and particularly of the German, investigators.

When facts thus only to be elicited in a given case are collected, one may be allowed to speak with some authority as to the nature of the trouble. To know them thoroughly is to acquire the means of recognizing such important conditions as gastric insufficiency, with or without dilatation, structural diseases of the mucosa, and the nature and course of neuroses.

It is to know the defects in gastric secretion and motion, and to find a guide to the relief of the complex and varied affections that the general practitioner too often groups vaguely under the terms "gastric catarrh" and "nervous dyspepsia."

[1] In the effort to reach simplicity, only a few of the more necessary of the numerous useful tests are here stated. Even these might be omitted, as satisfactory rules for examination are to be found in any one of a number of standard text-books.

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