

A SIMPLE NONOPERATIVE METHOD
OF TREATING GASTRIC ULCER

PRELIMINARY REPORT

ALBERT A. EPSTEIN, M.D.
Associate Physician, Mount Sinai Hospital
NEW YORK

In discussing the treatment of gastric ulcer, Moynihan¹ says: "The present medical treatment is woefully inefficient. Medical treatment, if properly carried out for a prolonged period, should enable an ulcer to heal. The need for surgical procedure is a confession that such treatment is unattainable or has failed." This statement expresses the view generally held concerning the present treatment of gastric ulcer, and gains particular significance when we consider its source.

The chief hindrances in the healing of a stomach ulcer are: (1) the direct irritation caused by the chemism of the gastric juice, as well as by the food which enters the stomach; and (2) the indirect irritation which manifests itself in increased peristalsis or hypermotility. It is reasonable to suppose that the ulcer would ultimately heal if these obstacles were overcome, i. e., if the gastric juice was not merely modified, but entirely removed, and food was prevented from entering the stomach for a sufficient period of time. The withholding of food is a relatively simple matter, and rectal alimentation is of great assistance in this respect. The rest is easily accomplished by the application of a simple nonoperative expedient, namely, continuous irrigation. This is the basis of the method to be described. Other details of technic and procedure have been added to make the method accurate, scientific and, at the same time, practical.

APPARATUS REQUIRED

The apparatus is the same in principle as that employed in the continuous irrigation of the chest after thoracotomy for empyema. The inflow and return circuit is maintained through two suitably adapted duodenal tubes. The apparatus consists of: a standard irrigating stand with four hooks, placed radially (preferably at right angles) and at different levels; two narrow-necked irrigating bottles, each of from $\frac{1}{2}$ to 1 gallon capacity, fitted with a side spout, and rubber stoppers, each with a single perforation, provided for the neck and side spout; one double irrigating bottle holder, and two single irrigating bottle holders; one irrigating bottle (700 c.c. capacity) graduated with an outlet at the bottom (Carrel-Dakin type); one wide-necked bottle, of from 1 to 2 gallon capacity, fitted with a rubber stopper with three perforations; one glass or hard rubber T-tube (3/16 inch bore); one Y-shaped (glass or metal) two-way stopcock;² two

spring pinchcocks; two L-shaped glass tubes (3/16 inch bore); two U-shaped glass tubes (3/16 inch bore); one straight glass tube about 4 inches long (3/16 inch bore); two glass connecting tubes (3/16 inch bore); one glass syringe (from 2 to 4 ounce capacity); one glass funnel (from 4 to 6 ounce capacity); rubber tubing ($\frac{1}{4}$ inch bore), and two duodenal tubes.

The duodenal tubes in the present arrangement³ constitute the intrastomachic irrigating system. One of the tubes is fitted with a Rehfuß tip, and the other is fitted with a modified Lyons tip. The modification consists in the removal of a lateral sector from the tip, so that it has a concave channel on one side. As is shown in the diagram (Fig. 1), the Rehfuß tip is placed from $2\frac{1}{2}$ to 3 inches in advance of the other, which, by virtue of its side channel, is fitted snugly over the rubber tubing of the Rehfuß tube. The channeled tip is fastened firmly against the rubber tubing by means of threads of surgical silk. The rubber tubes connecting with the metal tips are placed parallel and are held together by loops of silk thread.

SOLUTIONS REQUIRED

The solutions required are: a saturated solution of Congo-red, a 0.25 per cent. solution of colloidal iron,⁴ and distilled water.

ASSEMBLY OF APPARATUS

Figure 3 shows the apparatus as it appears when completely assembled at the bedside.

The double irrigating bottle holder (*H-1*) is suspended from the top hook of the stand. One end of the cross arm holds the large irrigating bottle *A*, and the other arm, the smaller irrigating flask *B*. Bottles *C* and *D* are suspended from the second and third hooks, respectively, by means of metal holders. Rubber stoppers, each with one perforation, are fitted into the neck and side spout of bottles *A* and *C*; bottle *D* is corked with a rubber stopper having three perforations, in two of which straight glass tubes are placed, and the stem of a T-shaped tube passes through the third perforation.

One arm of an inverted U-tube is placed in the stopper of bottle *A*; rubber tubing (*K-1*), provided with a pinchcock (*PC-1*), connects the other arm of the U-tube with one of the straight glass tubes projecting from the stopper of bottle *D*. The side spout of bottle *A* is fitted with a perforated stopper through which passes one arm of an L-tube (*L-1*). A piece of tubing 6 inches long is attached at one end to flask *B* (*K-2*), and at the other, to one arm of a Y-shaped two-way stopcock (*2-WSC*). A short piece of tubing also connects the other arm of the stopcock with the side spout of *A*. Thus the two arms of the Y-shaped stopcock join bottles *A* and *B*. A long piece of tubing (*K-3*) is fastened to the stem of the two-way stopcock. It ultimately connects with one of the duodenal tubes, forming the inflow channel of the irrigating system.

One arm of an inverted U-tube (*U-2*) is fitted into the stopper in the neck of bottle *C*. Rubber tubing (*K-4*) connects the other arm of this U-tube with the second straight glass tube in bottle *D*. The side spout of bottle *C* is fitted with a rubber stopper carrying one arm of an L-tube (*L-2*); to the other arm, a long piece of tubing is attached (*K-5*), the free end of which reaches well into a bucket resting on the floor. This tube is provided with a metal or hard

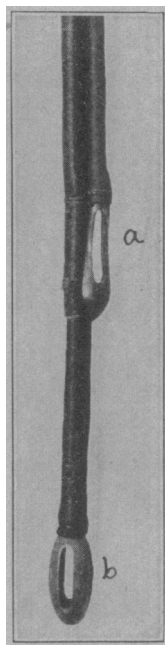


Fig. 1.—Tips of duodenal tubes: *a*, Lyons tip with side channel; *b*, Rehfuß tip.



Fig. 2.—Cross-section of rubber tube and channeled tip, showing their close position.

3. Modifications are being made in order to produce a more finished instrument.

4. The colloidal iron employed is a solution of dialyzed basic ferric oxychloride. It appears on the market as a 5 per cent. solution. The preparation used is that of Pfanzstiel, obtained from the Special Chemicals Company, Highland Park, Ill.

1. Moynihan, B.: Treatment of Gastric Ulcer, *Lancet* 1:267-271 (Feb. 11) 1922.

2. In place of the two-way stopcock, a Y-shaped tube (glass or hard rubber) with two extra screw pinchcocks may be used.

rubber pinchcock (*PC-2*) and serves to convey the water from the exhaust bottle *C*. The stem of the T-tube in bottle *D* passes through the rubber stopper, and attached to one of its arms, which is provided with a metal pinchcock (*PC-3*), is a short piece of rubber tubing (*K-6*). To the other arm, a long piece of rubber tubing (*K-7*) is attached. The latter tube connects ultimately with the second duodenal tube and constitutes the drain or return-flow channel of the irrigating system.

METHOD OF TREATMENT

The patient is put to bed with his head and shoulders resting on two pillows. The joined duodenal tubes, which have been previously chilled, are then swallowed and left in place for a period of about ten to fifteen minutes. The depth to which the tube is permitted to enter is dependent on the information derived from a previous fluoroscopic examination. Never should the distal portion of the tube be nearer than 1 to 1½ inches to the pyloric ring.

The distilled water is first warmed to body temperature or even a little higher, then colored with the saturated solution of Congo-red (1 c.c. to the gallon), and poured into bottle *A*. This constitutes the irrigating fluid. Distilled water is used to reduce the stimulating effect of the fluid on the gastric mucosa to a minimum. The Congo-red added to it serves as an indicator of the presence of hydrochloric acid in the stomach, which manifests itself by the blue coloration of the return fluid. Flask *B* is filled up to the zero mark with a 0.25 per cent. colloidal iron solution. The method of its use will be indicated later. It serves the purpose of a stypic and mild astringent; moreover, by its precipitating action, it removes all the mucus which adheres to the gastric mucosa, as well as the peptic ferments. Bottle *C* (exhaust bottle) is filled to the neck with tap water.

The various stoppers are then fitted into their proper places. The ends of the rubber tubes *K-3* and *K-7*, inflow and outflow, are joined to the loose ends of the two duodenal catheters by means of glass connecting tubes. These two connecting tubes are fastened with safety pins (*M-1* and *M-2*) to the sheet or coverlet alongside the patient, so that they may be plainly in view. Through these glass tubes, the color as well as the course of the inflow and outflow of the irrigating fluid can be observed.

To start the irrigation, the two-way stopcock (*2-W S C*) is turned so as to permit the flow from bottle *A*. By opening the pinchcock (*PC-3*) at the loose end of the T-tube in bottle *D*, the flow into the stomach is facilitated, and any gas or air present is permitted to escape. After from 500 to 600 c.c. of the colored distilled water has entered the stomach, the pinchcock (*PC-3*), just referred to, is closed. The stopcock (*PC-2*) is now opened to permit the water

to flow from bottle *C*. This creates a partial vacuum in *D* (vacuum drain), which in turn causes suction in the return duodenal tube, bringing about a flow from the stomach. Bottle *D* serves as a receptacle for the return fluid.⁵

As long as hydrochloric acid is present in the stomach, the return flow will remain colored blue. The irrigation should be continued until the return fluid is of the same color as the irrigating fluid. If solid particles are seen to be present in the return fluid after all the acid has been removed, the irrigation should be continued until they are no longer present.⁶ The inflow is then stopped; but the suction is continued until all the irrigating fluid has been removed from the stomach. Fifty cubic centimeters of the colloidal iron solution is then allowed to flow into the stomach, and permitted to remain there. The duodenal tubes are then withdrawn and the treatment is complete. The patient is permitted to rest for two hours. The colloidal iron is given for the first three days only, or longer in cases in which no food is given by mouth. In the two hour interval between treatments, a 5 per cent. glucose solution is administered by the rectal drip method.

Each period of irrigation, followed by the instillation of colloidal iron, constitutes a treatment. The number of treatments which it is possible to carry out in the course of a day is somewhat variable, and depends on a number of circumstances: (1) the expertness of the attendant in the necessary technic; (2) the ease with which the patient takes the tubes and retains them in situ; (3) the quantity of mucus and debris to be removed from the stomach, including bile regurgitated into the stomach; (4) the rate and quantity of gastric secretion, and (5) the comfort and physical endurance of the patient. From the experience thus far gained, the number of treatments need not exceed four, but, for proper efficacy, no less than two should be given daily. That total duration of the treatment is from two to three weeks. In the first week, the maximum number of irrigations are given. Subsequently, the number is gradually reduced, and so timed as to fit in with the feeding of the patient.

FEEDING OF THE PATIENT

No food is given by mouth for the first three days. On the fourth and fifth days, one ounce of equal parts of milk and cream, warmed to body temperature or

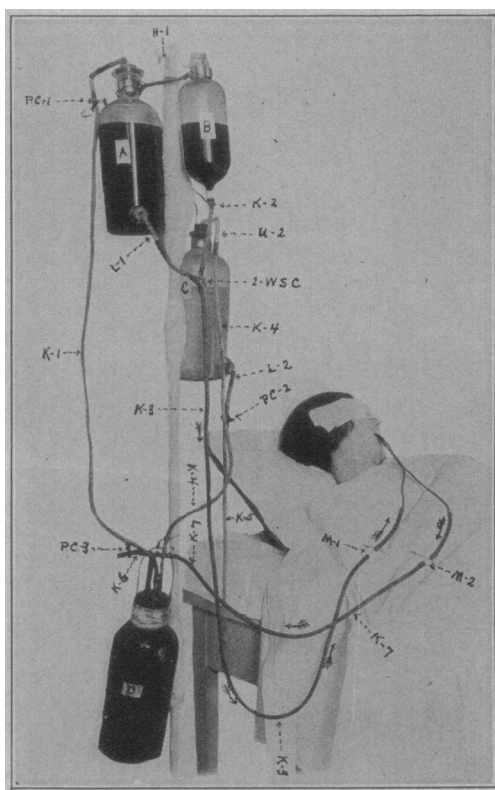


Fig. 3.—Apparatus assembled at bedside.

5. Occasionally shreds of mucus or food debris will obstruct the fenestrae in the metal tips of the return tube, and thus interfere with the return flow. The tube should then be disconnected at *M-2* and the glass hand syringe should be employed to clear the channel. The obstruction is usually removed by alternately forcing some fluid through the tube and withdrawing it.

6. In cases of gastric ulcer associated with anacidity, the Congo-red is of no special advantage and the irrigation should be continued as long as mucus and debris are present in the return fluid.

slightly above, is given one hour after each stomach irrigation. On the sixth day, 2 ounces of the milk and cream mixture is given. As soon as the irrigations are reduced in number, the number of feedings is increased. Farina and strained oatmeal gruel are added; on the seventh day one egg, boiled for one minute, is added. On the eighth day, a second egg is added, and the quantity of gruel is increased from 1 to 4 ounces. On the ninth day, a third egg is added. On the tenth day, 50 gm. of scraped beef and three well buttered pieces of zwieback, divided into three portions, are added. The allowance of milk and cream is doubled. On the eleventh day, 75 gm. of chicken is substituted for the beef. The gruel is increased to 3 ounces. Subsequent feeding depends on indications. Rectal instillations are continued throughout, the quantity being reduced as feeding by mouth is increased.

It may be necessary, in certain cases, to withhold food from the stomach longer than indicated above. In such cases, duodenal feeding may be resorted to. This is readily accomplished by permitting the forward irrigating tube to pass down to the duodenum, after first removing all the fluid from the stomach.

Thus far, the plan of treatment outlined above has been followed by the late Dr. E. A. Aronson and myself in seven cases selected from his private practice. Among these were four cases of gastric ulcer, one case of pyloric ulcer with pylorospasm and marked food retention, one case of duodenal ulcer, and one case of gastrojejunal ulcer. A detailed analysis of these cases will appear in a future report. For the present, it may be stated that the relief which the patients have obtained by this method of treatment has been very striking. Whether the results thus obtained will prove to be permanent requires further observation; but they have been sufficiently promising to warrant this preliminary communication.

70 East Eighty-Third Street.

CLASSIFICATION OF CONGENITAL CLEFTS OF THE LIP AND PALATE

WITH A SUGGESTION FOR RECORDING THESE
CASES *

JOHN STAIGE DAVIS, M.D.

BALTIMORE

AND

HARRY P. RITCHIE, M.D.

ST. PAUL

The group plan for the description, discussion and recording of cases of congenital cleft of the lip and palate has recently received considerable attention from those especially interested in the subject; but we believe that it is of so much importance that it should be advocated more strongly if its general adoption is anticipated. The growth of the plan has been gradual, suggestions being received here and there from our associates, and particularly from the late Dr. H. M. Sherman of San Francisco, whose definitions of the groups are so exact in wording and direct in form that we believe they will, with slight simplification, become the most important feature of the scheme.

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It is now generally accepted, by those who have given thought to the matter, that the term "harelip" should be discarded, and that the deformity thus named should be called "congenital cleft of the lip." Analysis of the word "harelip" reveals that its use has no foundation except as a simile. Embryologically considered, all congenital clefts of the lip and palate are the result of failure in the same process of union and, therefore, should be considered under this heading. When this point of view is taken, it becomes possible to classify the clefts on a surgical basis, according to the general procedure required for the repair of a given case.

The entire medical profession is interested in these clefts, because, sooner or later, patients with this deformity will come under the observation of nearly every one.

So far, there have been no generally accepted standard terms for describing congenital clefts of the lip and palate, and, in consequence, it is often difficult to understand the descriptions in some of the numerous articles written on the subject. One author may use a set of terms to describe certain of these conditions, while another may use the same terms to describe those conditions which are surgically different. Then again an author may have a set of terms which, it appears on investigation, he alone uses, and the reader may have to depend on the illustrations to find what is really meant by the text. In fact, the terminology is considerably confused; and, in a review of a number of classifications, we have not found one which we consider so rational as that which we shall present.

CLASSIFICATION

The object of this communication is to propose a simple classification for congenital clefts of the lip and palate, which is based upon the proposition agreed to by us, namely, that *the alveolar process forms the foundation for a surgical grouping*.

Accepting this as a logical basis, Dr. Sherman suggested the following terms for grouping these clefts: Group I, prealveolar cleft; Group II, postalveolar cleft; Group III, unilateral alveolar cleft, and Group IV, bilateral alveolar cleft.

In reviewing these terms we have agreed that there are two objections to them: First, the terms as they stand are incomplete; therefore, the word "process" should be included to make them exact. Second, the terms "unilateral" and "bilateral" may well be applied to Group I, and, therefore, cannot be used primarily in one instance and not in another. In meeting these objections we have revised and combined the terms into three groups: Group I, prealveolar (process) cleft; Group II, postalveolar (process) cleft, and, Group III, alveolar (process) cleft.

Furthermore, the group terms, while self-explanatory as they stand, do not give sufficient detail to be practicable in describing these cases, since, while each group usually occurs alone, it may be present in combination with other groups. It must also be borne in mind that the clefts of lip, palate and alveolar process may vary in extent, and, therefore, a number of anatomic varieties may be found which require description.

We present the following classification which is based on a proper conception of congenital cleft of the lip and palate, and we believe that it will fulfil the requirements.