

A PLEA FOR MORE DIRECT METHODS IN DEALING WITH GASTRIC ULCERS AND CANCER*

R. C. COFFEY, M.D.
PORTLAND, ORE.

The strides in gastric surgery during the last ten years have been very remarkable. Originally the first aim of the surgeon was to diminish the mortality of disease with the least mortality resulting from the means of relief, but as Dr. Charles Mayo says, the modern requirement is the relief of morbidity. In other words, the patient not only demands relief from the immediate conditions with a low mortality, but he has a right to expect symptomatic relief and immunity from sequelæ. I dare say that the first thought of most, if not all operators in the early development of the surgical treatment of callous gastric ulcer was the excision of the ulcer. The first stomach operation of any kind that I ever attempted was ten years ago, when an ulcer in the posterior wall and lesser curvature, such as shown in Figure 4, was excised. The patient died from faulty technic and I did no more gastric surgery until I learned

mortality has been greatly diminished, and, as the reports come in year by year, we learn that many of the ulcers supposedly cured by gastro-enterostomy have been only temporarily relieved, and, in the case of ulcers located at other points than near the pylorus, there has not been even temporary relief in a large percentage of cases; furthermore, the danger of the development of cancer in a callous ulcer is much greater than has been supposed. Gerster¹ makes the following summary on callous ulcer of the stomach:

During the past year attention has been called by authors, both here and abroad, to the great tendency of callous gastric ulcer to carcinomatous change. Wilson and McCarthy¹ have shown that in 71 per cent. of resections for carcinoma, a pre-existing callous ulcer could be demonstrated. This was in a series of 153 cases. At the meeting of the Deutsche Gesellschaft für Chirurgie, in the spring of 1910, Ewald stated, in discussing Payr's report that 26 per cent. of gastric ulcers underwent malignant change, that he considered this estimate far too low. In Germany, the trend of opinion seems to be developing in this direction. In France an experience of Tuffier bears out this point. He found an induration of the greater curvature, the size of a nut, with two slightly enlarged lymph-nodes in the great omentum near by. The

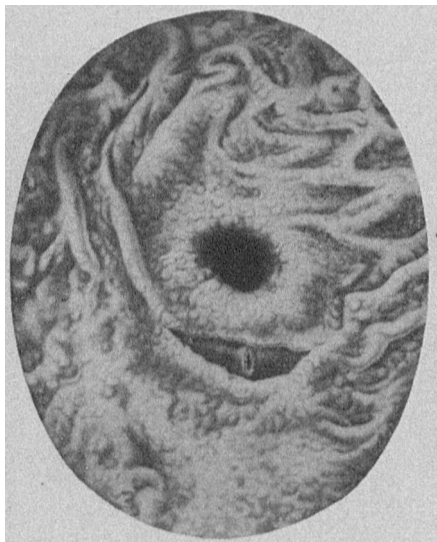


Fig. 1.—Post-mortem specimen of stomach mucous membrane in which is shown a stoma forty-eight hours after a gastro-enterostomy; also a silt in the mucous membrane produced by clamps. Crossing the silt is a vessel which was devitalized by the clamp and which gave way thirty hours after the operation, producing a fatal hemorrhage.

more of Mayo's work in gastro-enterostomy. It is possible that other surgeons have had similar experiences which have not been reported.

The brilliant work of Mayo Robson, the Mayo brothers, Mickulicz, Moynihan, and others, brought gastro-enterostomy so prominently before the profession and so rapidly reduced the mortality that it became almost the universal operation for gastric ulcer. Soon afterward, however, Rodman ventured to put forth his bold procedure for excising the ulcer-bearing area in the pylorus. The mortality has deterred the majority of surgeons from adopting it, but, as technic has been improving, more and more work is being done along this line. The

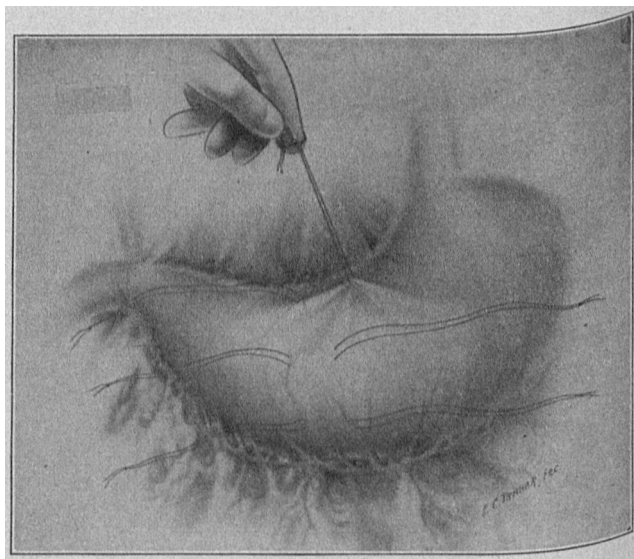


Fig. 2.—Placing traction loops preparatory to opening the stomach for exploration.

impression gained was that of a chronic ulcer. It was resected and the nodes extirpated. Microscopic examination revealed a typical callous ulcer, at the base of which a carcinoma was beginning to develop. From this experience he concludes that every gastric ulcer which is solitary, and which is easily accessible, should be extirpated. Many other surgeons have emphasized the impossibility of distinguishing malignant from inflammatory tumors of the stomach by gross examination.

The general trend of opinion seems to be leading to this: that gastric ulcers, situated in the body of the stomach but not yet causing stenosis, are not cured by gastro-enterostomy. Resection, when possible, should be done, not only because the ulcer is not cured by gastro-enterostomy, but mainly because its continued existence is a constant menace as regards the probability of a change to carcinoma.

Eiselsberg advocates unilateral pyloric exclusion in addition to gastro-enterostomy for ulcers in the pylorus in cases in which the condition of the patient makes resection dangerous or impracticable because of the presence of adhesions; also in those cases in which there

* Read in the Section on Surgery of the American Medical Association, at the Sixty-Second Annual Session, held at Los Angeles, June, 1911.

* For reasons of space, a large number of illustrations are here omitted, but the complete article appears in the Transactions of the Section, and also in the author's reprints, a copy of which will be sent on request by the author or by THE JOURNAL on receipt of a stamped and self-addressed envelope.

1. Progressive Medicine, June, 1911, p. 110.

is doubt regarding the nature of the tumor existing, and when for apparent reasons one cannot resect. For, as he states, "even a cancer, where it is not subject to the passage of fluid over it, has its growth very much retarded." Eiselsberg further suggests this procedure as a preliminary step to a resection to be carried out on some later occasion.

Mayo, in 1908, made the statement that all callous ulcers not located at or near the pylorus should be excised by direct attack. In 1910, he described² a method of transgastric excision of ulcers of the posterior wall which he stated had been previously used by Dr. Pilcher. In the same month I published an article³ in which another method of excising ulcers of the posterior wall was described, and a number of cases were reported. In the very next case of the kind, after the publication of this paper, it became evident that the ulcerating process had extended beyond the clamps, making it necessary to release the clamps and extend the excision. This allowed a good deal of spilling of stomach contents and among other things revealed the fact that the mucous membrane had been injured by pressure of the clamps. The operation was finally completed

The operation was completed in 30 minutes in a very satisfactory manner. The patient was in no way shocked or depressed by the operation and 24 hours after the operation felt well and had a normal pulse and normal temperature. Thirty hours after the operation the nurse noticed an increase in the patient's pulse rate but she was unable to reach me until 36 hours after the operation, or 10 p. m., October 30. At this time the patient's pulse was about 160. I immediately called Dr. Jones and we were unable to make a diagnosis of anything serious. As the patient's wife stated that he had frequently had spells of palpitation of the heart, we tried to persuade ourselves that it was a nervous condition. The patient did not vomit nor was he nauseated. Gas passed from the bowels, but no blood. The temperature was about 100. Therefore we could not believe bleeding was taking place. The patient died at 6 p. m., October 31, 56 hours after the operation. A necropsy was held shortly after death. When the abdomen was opened the intestines were seen to be filled with dark blood. On opening the stomach and examining the ulcer we found that no hemorrhage had taken place from the ulcer. Examination of the stoma, which shows in the center of Figure 1, showed union perfect and no possibility of a hemorrhage. The stomach was practically empty, while the intestines were filled with blood. We realized that death had been caused by hemorrhage but we had not found the point from which the hemorrhage had come, and did not find it until the stomach was entirely

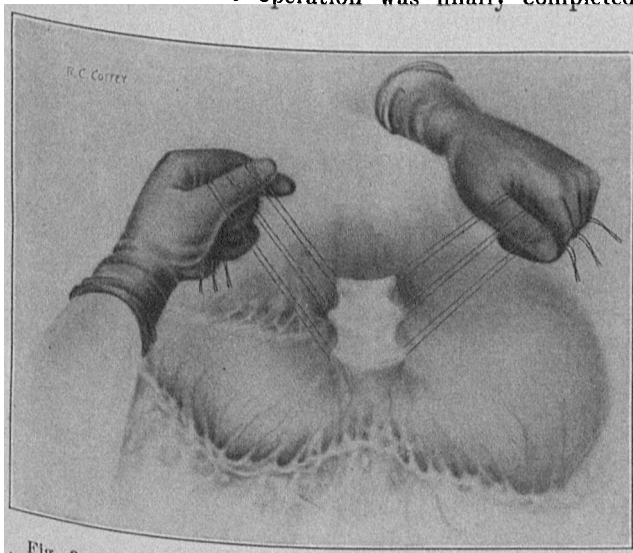


Fig. 3.—Lifting a section of anterior stomach wall by traction to permit the air in the stomach to rise to point of proposed incision.

and the patient recovered. By this case, however, I learned that the use of clamps is by no means ideal for this excision and further that it is not without danger. Curiously enough, my very next stomach operation—although the simplest kind of a gastro-enterostomy for obstructive ulcer and an ideal case—resulted in the death of the patient from secondary hemorrhage from pressure of the stomach clamps, which case I shall relate in detail:

The patient, a male, 50 years of age, had suffered with stomach trouble five years or more. Recently he had rapidly lost flesh and was unable to retain food to any extent. He was referred to me by Dr. Noble Wylie Jones, October 28, with a diagnosis of an obstructive ulcer at the pylorus. The chemical examination of gastric juice showed a slight excess of free hydrochloric acid. October 29, the patient was operated on, a callous ulcer obstructing the pylorus just on the duodenal side was found, and a gastroenterostomy was performed by the posterior no-loop method. The case was an ideal one.

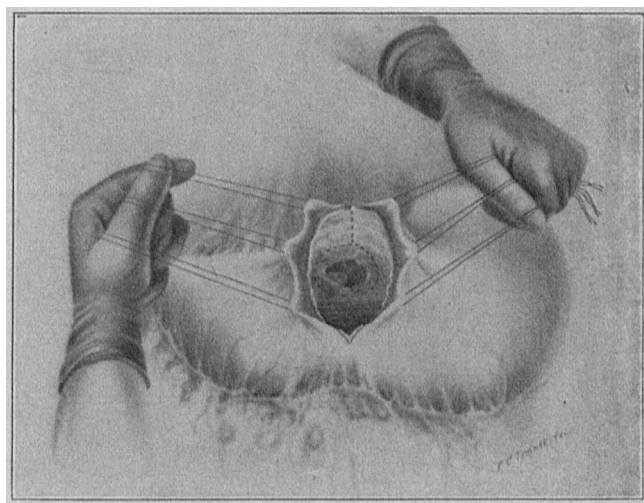


Fig. 4.—The stomach has been incised, exposing the mucous surface. A callous ulcer is seen in the background, while the fluid contained in the stomach may be seen gravitating to the back. Dotted line indicates extent of incision by which this ulcer was removed from the posterior wall and the lesser curvature.

removed and washed, when we discovered a slit in the mucous membrane about an inch from the stoma which marked the place where one blade of the clamps had held the stomach. Running directly across this slit in the mucous membrane was a blood-vessel the wall of which had sloughed. The clamp had devitalized the vessel and the gastric juice, being excessive, had undoubtedly digested the devitalized coat of the vessel and the hemorrhage began.

I had previously noted in animal experimentation that the mucous membrane is frequently broken by the clamp in gastro-intestinal anastomosis, but as I had not seen cases of death reported from this cause I inferred that there was practically no danger. The clinical experience just mentioned coupled with what I have seen in animal experimentation has led me to the belief that there have unquestionably been other deaths from the same cause, in which cases the cause has been either undetected or unreported. The function of clamps in gastro-intestinal surgery is three-fold: to hold the viscous for convenient suturing; second, to prevent the escape

2. *Ann. Surg.*, December, 1910.

3. Coffey, R. C., *Surgical Treatment of Ulcers Along the Lesser Curvature*, Surg., Gynec. and Obstet., December, 1910.

of large quantities of gastro-intestinal contents; third, to control hemorrhage while the operation is going on. After these experiences I sought to devise a plan by which these ends could be accomplished without the use of clamps and made extensive experimental studies in devising a technic. First, as to the manner of holding the viscus, I soon found that traction loops passed through all the coats, as shown in Figure 2, held it just as well as clamps; second, if traction loops were placed on tension, thus lifting high a part of the front wall of the viscus (Fig. 3), the air in the viscus rose to the top so that when the lifted part was incised, the air escaped, the intravisceral pressure was destroyed, the fluid gravitated to the posterior and lower portions (Fig. 4) from which it could be dipped out with a ladle or dipper, and the viscus could be dried and made clean with gauze without spilling a drop of the fluid (Figs. 5 and 6); third, the hemorrhage could be controlled by temporary use of artery forceps or ligation of the vessels.

An exploratory incision in the stomach should usually be made transversely, thereby paralleling the vessels and avoiding hemorrhage almost entirely. Through such an incision, after the fluid has been removed by

closed just as we would close the original exploratory incision, which process is as follows:

The line of sutures begins from within. The needle passes from within out and from without in and the suture is knotted inside as shown in Figure 7. The loose end is cut off and the suture continued by a right-angle, through-and-through suture the length of the incision. The traction loops are tied together over the line of union, as shown in Figures 8 and 9. These traction loops make inversion of the edges very simple. After this is done a peritoneal suture may be used to cover up all the knots (Fig. 10). This makes an ideal technic. In case the exploration reveals extensive ulceration at the pylorus or reveals a malignancy (Fig. 11) requiring a pylorotomy, the greater omentum below and the lesser omentum above are ligated in sections and the vessels running along the curvatures of the stomach are doubly ligated at each end. The gauze is also packed into that part of the stomach which is to be retained as well as that part which is to be removed. The lesser peritoneal cavity having already been packed with gauze, the field of operation is practically extraperitoneal. The

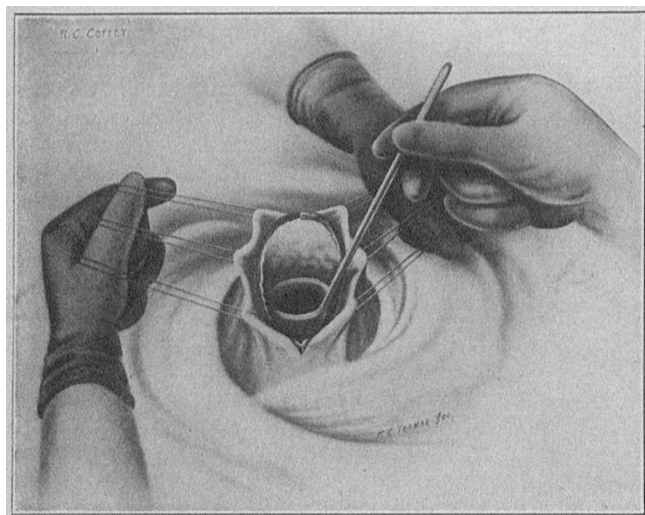


Fig. 5.—Dipping fluid from the open stomach with a ladle.

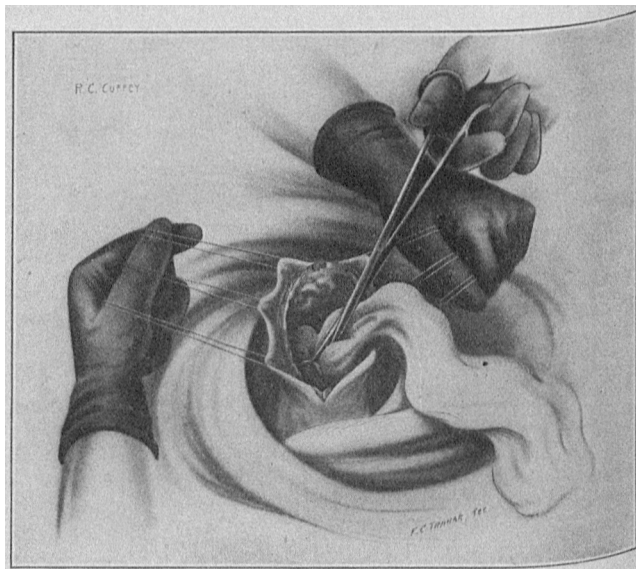


Fig. 6.—Sponging the mucous membrane dry with gauze.

the technic just described, an accurate inspection of the stomach mucous membrane can be made with no danger of spilling the stomach contents or soiling the peritoneal cavity. If an ulcer exists, the remainder of the stomach may be explored for other possible ulcers and the general condition of the mucous membrane inspected. When an ulcer is found, as shown in Figure 4, it is then well to open the gastro-colic omentum and the gastro-hepatic omentum and pack the lesser peritoneal cavity with gauze, after which the ulcer may be excised by any technic which may be suitable for the case at hand, for, after the stomach is well cleaned and inspected as I have described, no matter where the ulcer is, it may be trimmed out with a pair of scissors exactly in the same way in which a bad spot in a garment may be trimmed out, preparatory to mending. The ulcer shown in Figure 4 for excision was located on the posterior wall near the attachment of the gastro-hepatic omentum. It was trimmed out by extending the exploratory incision down nearly to the ulcer, as shown by the dotted line, and then by the cutting out of the callous portion around the ulcer. The wound was then

gauze within the ends of the stomach takes up every particle of the fluid. The exploratory incision is now extended to the point of cutting the stomach in two. Tenaculum forceps grasp the two walls of the stomach and the gauze in each of the divided ends. Two traction sutures are placed in the anterior and two in the posterior wall of the duodenum just below the place at which the section is to be made (Fig. 12).

The section of the duodenum is now made and the pylorotomy is completed. The distal cut end of the duodenum is held up by the four traction sutures, which arrangement causes the fluid to gravitate down the intestine while the end is being sutured after the manner shown in Figures 7 to 10. The cardiac pouch of the stomach is now inspected. If there is any portion of the remaining stomach which looks suspicious, it may be removed with perfect ease. If not, three additional traction loops are placed on the posterior wall of the stomach, as indicated, and the end closed in the manner shown in Figures 7 to 10. The cardiac pouch is now connected to the duodenum by a posterior gastro-enterostomy without clamps, as follows:

An opening in the mesocolon is made with the finger or forceps just to the left of the ligament of Treitz. Four traction loops are passed through all the coats of the stomach and are so arranged that there will be one traction loop on either side of the end of the line of proposed incision, which line is about 2 inches in length. Four corresponding sutures are placed in the jejunum, the upper one being about 1 inch from where the jejunum emerges. The traction loops in the stomach nearest the intestine and the traction loops in the intestine nearest the stomach are designated inner traction loops (I. T. L.) as they are located inside the proposed line of incision into the stomach and intestine. The other traction loops are located outside the proposed line of incision and are designated outer traction loops (O. T. L.). Gauze sponges are now laid between the stomach and the intestine (Fig. 13). The next step in the operation consists in placing a continuous peritoneal suture (C. S. 1) as shown in Figure 14 which is begun at the end of the incision farthest from the operator. After two or three stitches have been taken the two inner traction sutures at this end are tied over the line of suture. The continuous peritoneal suture (C. S. 1) is then continued to the other end of the proposed

caught with mosquito forceps and ligated with small thread. It will be found on opening the stomach and intestine that the fluid has gravitated away from the field, leaving it perfectly clean and doing away with the necessity of any clamps or constriction. The second continuous suture (C. S. 2) then begins at the end of the anastomosis nearest the operator and proceeds as an over-and-over stitch to the opposite end (Fig. 18), when the corner is turned and this suture (C. S. 2) returns to the operator with a right-angle, continuous through-and-through suture indicated in Figure 19, where it is tied to its other end. The outer traction sutures are now tied over the line of union. The second continuous suture (C. S. 2) may be chromicized catgut or linen. For the final step of the operation the continuous peritoneal suture (C. S. 1) is now picked up and made to cover in the through-and-through suture and the knots of the traction loops, and it is finally tied to its originally free end (C. S. 1, Fig. 20). In more than fifty experimental operations by this method our average time has been about fifteen minutes. Under exactly the same circumstances we are able to do this operation just as quickly as when we have used the clamps. The line of suture is made much stronger at the ends by the inner traction sutures posteriorly and the outer traction

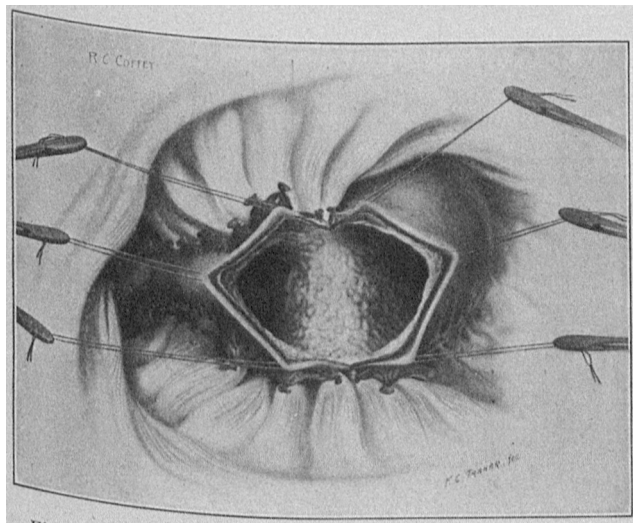


FIG. 11.—A transverse exploratory incision to determine the extent of a cancer of the pylorus developing on an ulcer. Gastrocolic and lesser omenta have been cut and the lesser peritoneal cavity is filled with gauze. The stomach has been emptied and dried, as in Figures 5 and 6. Vessels at the upper and lower borders of the stomach have been ligated preparatory to doing pylorotomy.

incision just beyond the inner traction sutures. This continuous peritoneal suture (C. S. 1) is then knotted on itself and laid aside until all other steps of the operation are completed, when it is continued around the anastomosis as a finishing suture. The other inner traction loops are now tied together, and are from now on used to hold up the intestine (Fig. 15). In order to be sure that this peritoneal suture is not disarranged by the further steps of the operation, a continuous through-and-through suture of catgut is run from one pair of traction sutures to the other (on the posterior side only) before any incision is made in the stomach or intestine (Fig. 16). This suture has been designated the posterior reinforcement suture (P. R. S.).

An assistant now picks up the outer traction loops (O. T. L.) and lifts up the stomach and intestine while the surgeon makes an incision with the knife down to the mucosa and then opens the mucosa with a pair of scissors (Fig. 17). There will usually be two or three bleeding vessels on the stomach side which should be

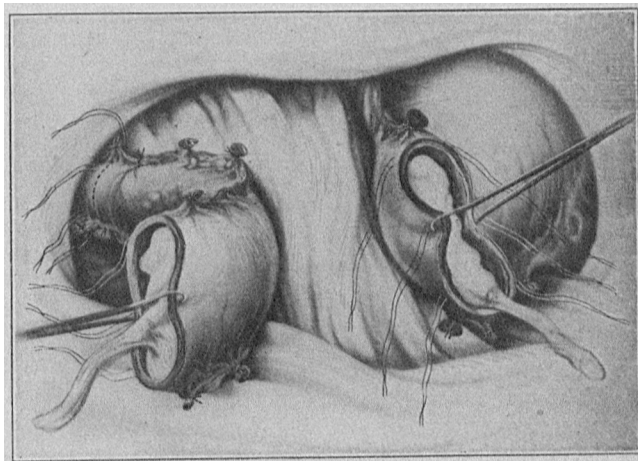


FIG. 12.—Stomach has been cut near the middle and each end is packed with gauze to prevent soiling. Three additional traction loops have been placed in back wall of the cardiac pouch preparatory to closing this remaining portion by technic, shown in Figures 7 to 10, inclusive. The pyloric portion has been freed and is ready to be removed by cutting the duodenum at the dotted line. Traction loops have been placed on each side of the duodenum to facilitate the technic of its closing.

sutures anteriorly than can possibly be done without the traction loops. The reader will readily observe the immense holding power of these traction loops after they are tied together, by looking at Figure 21, which represents a sectional view across the ends of the anastomosis. Figure 22 shows a sectional view across the middle of the anastomosis, which differs in results from the ordinary clamp method in use when clamps are employed only by having the posterior reinforcement suture.

We have recently removed the cecum for carcinoma and have then made an anastomosis between the ileum and the transverse colon by this method. To our delight we found that the fluid within the closed intestine, both large and small, had gravitated away from the field of operation, leaving the field perfectly clean (Fig. 23). The necessity for leaving an inch or two of dead end of the ileum and cecum into which part of the fluid at the site of operation may gravitate will readily be appreciated.

The gastro-enterostomy without clamps here described was primarily intended only for those cases in which the stomach had previously been emptied through an exploratory incision and it was thought that it would be necessary to constrict the intestine above and below with gauze to protect from intestinal contents, but we soon found that the field was much cleaner without constriction, for no matter how much we tried, the inclosed field could not be stripped perfectly clean when clamps were used. The gastro-enterostomy can be done without clamps on an unopened stomach provided the site of operation can be lifted to a higher level than the other portion of the stomach, and the fluid can be removed by the method shown in Figures 5 and 6. If, as a result of adhesions, or a short mesocolon, it is impossible thus to lift the stomach, it is necessary to empty it by the method shown in Figures 2 to 6, as a preliminary step, which process it is probably wise to follow in most cases of ulcer of the stomach for purposes of exploration. In simple uncomplicated obstructive ulcer at the pylorus not requiring exploration there is still a field for clamps.

CONCLUSIONS

In summing up I find:

First.—It is generally the opinion of progressive gastric surgeons that callous ulcers of the stomach not located near the pylorus should be excised, and there is a rapidly growing belief that the Rodman operation should be performed more frequently, (a) because the drainage operation does not always cure; (b) because of the large percentage of callous ulcers (26 per cent.) which become cancerous.

Second.—In order to do good ulcer surgery it is necessary to determine the extent and location of the ulceration. This can only be done properly as a rule through an incision in the stomach wall and when clamps are not used.

Third.—The incision should be ample and should usually be made transversely to avoid the vessels, after which step the inside of the stomach should be seen. By the use of deeply placed traction loops the anterior wall of the stomach is lifted, the gas in the stomach comes to the top and escapes when the incision is made, thus relieving the intragastric pressure. The fluid now immediately gravitates to the lower levels of the stomach cavity, from which it may be dipped and sponged with deliberation. After the stomach is thus emptied and the cavity dried, the inspection of the mucous membrane is easy and the mystery and difficulties of stomach surgery vanish; for the surgeon, after opening the omentum above and below the stomach and packing the lesser peritoneal cavity with gauze, proceeds to trim out the diseased portion with the same precision and completeness with which he would amputate a leg for gangrene or remove a breast for cancer.

Fourth.—By the use of traction loops, gastro-enterostomy may be done by the "no-clamp" method just as quickly as with the clamp method, much more directly and accurately, and with less soiling and less danger. Pylorotomy for ulcer or cancer is also done in a more correct surgical manner by using the traction loops than by the use of clamps. Another advantage is that the remaining portion of the stomach may be carefully inspected again after the gauze is removed from its cavity with the view of detecting any disease which may exist.

667 Glisan Street.

ABSTRACT OF DISCUSSION

DR. J. W. DRAPER MAURY, Rochester, Minn.: Many methods have been suggested for the excision of gastric ulcers and the last word remains to be said. This is because the problem is wrapt up in a cancer equation yet to be solved. Sufficient is known, however, to justify the positive statement that any technic which does not insure the freest possible removal beyond the ulcer margin is worthless, because in over 70 per cent. of ulcers the margin is carcinomatous. At St. Mary's hospital we have worked out on animals a method of ulcer excision by a strangulation stitch which under certain conditions has certain advantages over ordinary excision. In the majority of cases it cannot be used to advantage. It is much more rapid than excision; has been free from fatality in experimental work and does away with all hemorrhage and annoying gaping of the wound. It seems to me probable, however, that even the limited use to which we thought it might occasionally be put will probably be still further restricted by the method that Dr. Coffey has just presented.

A stitch consisting of two pentagons, one lying on the mucous surface of the stomach, the other on the serous surface, may easily be applied by a continuous suture. The tissue within the pentagons will be deprived of blood-supply when inversion and tight tying of the stitch occurs. It is obvious that an odd-sided figure must be used in order completely to surround and "scissor" the included tissue. Dr. Selby, by the clever employment of litharge and wire, has prepared a radiograph of a hypothetical ulcer. In this, double strands of the stitch can readily be seen and its constricting action understood.

In from fifty to one hundred hours the gangrenous tissue, including the ulcer, sloughs. Dr. MacCarty has made some studies on the residual tissue which suggest encouraging results.

The essentials in the use of this method are as follows: (1) The use of heavy linen twine which the bare hand cannot break; (2) the placing of the pentagon well beyond the ulcer in normal tissue; (3) the careful suturing of the serosa by Lambert stitches after the pentagon is tied. Without these it will certainly perforate.

DR. W. W. SKINNER, Geneva, N. Y.: Possibly some present heard me describe very briefly at Atlantic City two years ago the operation which has been described so ably to-day. Dr. Zimmer of Rochester, N. Y., and I made use of this method in 1896. The case was one of bullet wound perforating both walls of the stomach. At my suggestion the bullet wound in the anterior wall of the stomach was enlarged and the stomach contents, which consisted of a large supper eaten just before the accident, were removed. The posterior wall of the stomach was pulled through the anterior stomach incision, the bruised posterior area cut out, and the incision enlarged sufficiently to inspect the region behind the stomach, so that we were able to trace the bullet wound through the tail of the pancreas and into the muscular tissues behind. This patient made an admirable recovery. The posterior cut was sewed from the inside of the stomach with three layers of stitches. We used the buttonhole stitch. Since then I have used this operation a number of times in cases of posterior ulcer of the stomach, which I referred to in the discussion two years ago.

The advantages of this operation are very great. In the first place, if you make a vertical incision through the lesser omentum, the exposure of the posterior wall of the stomach is very inadequate; if you make an incision transversely to the line of the body, you cut off important blood and lymphatic supply and nerves. An incision through the anterior wall of the stomach, selecting a place where the blood-vessels are very few, is comparatively free from danger.

A method which I use in some cases is the following: During the first stages of anesthesia a small-sized nasal feeding tube is passed through the nose into the stomach; the stomach is washed out while the anesthesia is going on and the tube is left *in situ*; and then just before opening the stomach this washing is repeated.

During the anesthesia there will be jets of green fluid from the tube, which otherwise would be spilled into the peritoneal cavity. This procedure causes no strangling and no trouble.

I agree with Dr. Coffey that no clamps are needed. It is sufficient to pull the posterior wall of the stomach through the anterior. That makes a sufficient clamp, and the preliminary washing prevents infection.

When I use clamps, I am accustomed to make use of very small and simple ones. I refer to the ordinary little pine tongue-depressors that are sold by the thousand. They make a most admirable clamp, if thoroughly steamed, boiled or otherwise sterilized. The trouble with the steel clamp is that it exerts a constant and increasing pressure, whereas the little pine pieces (of which I use four tied with catgut) exert a uniform flat pressure throughout the operation.

DR. E. WYLLYS ANDREWS, Chicago: If we are about to return to the direct surgical treatment of gastric ulcer, which was so nearly supplanted in routine practice by the general adoption of gastro-enterostomy, it would be well for us to remember certain advantages and certain disadvantages of this direct method of operating. As to the advantages, those who have not tried direct opening of the stomach are not aware of the great ease and safety with which that organ can be laid widely open and its whole interior exposed. No clamps are necessary, the field can be amply protected by sponges, and the stomach can be drawn entirely out and lie on the anterior abdominal wall. The incision can be made vertically between two of the large superficial branches of the vessels running on the greater curvature, and made bloodless and as long as we wish it; that is, the length of the incision may be made the whole width of the stomach. With such an opening one can explore nearly the whole interior of the stomach and can close it again quickly and safely.

Long-continued experimentation on animals, as well as many successive operations on the human stomach, have led me to lose all fear of this procedure as one step in necessary technic.

If the pendulum is going to swing in the direction of this kind of work again, one must mention among the disadvantages that certain parts of the stomach cannot easily be inspected. At least 6 per cent. of the peptic ulcers lie near the cardia and that portion of the stomach cannot be drawn out or seen except by means of a glow lamp or reflected light. Ulcers near the pylorus cannot be drawn out or treated surgically, unless by a Rodman excision, or as Kocher and some others did, by pyloroplasty directly through the pylorus. In bleeding ulcer, or a peptic ulcer not bleeding, one perhaps causing obstruction, Finney's operation is more radical and effective than pyloroplasty. A further problem and drawback to this kind of work is the puzzle of what to do after finding the ulcer. The ulcer may be excised and the wound sutured; the vessel if bleeding may be ligated inside or outside the stomach wall, or at the bottom of the ulcer; the ulcer may be treated by the hot cautery point and some bleeding vessels thus checked; or the ulcer may be ligated by lifting a cone of stomach tissue from the inner aspect. But this is somewhat unsatisfactory and dangerous, unless protected by an outside row of stitches. After having solved the problem of opening and finding the ulcer, which of itself is not always easy, with all the proposed and tried methods of dealing directly with ulcer, none of them as yet has seemed to be ideal.

DR. CHARLES H. MAYO, Rochester, Minn.: In something over 1,100 gastro-enterostomies performed at our clinic, we have encountered about every kind of complication. We have had nothing serious in the line of operative injury that Dr. Coffey speaks of, and yet we have had to reopen wounds on account of hemorrhage in the line of union, or the suture line, from the stomach to the intestine. We have also had to reopen because of hemorrhage from the ulcer, and we have had deaths occur following hemorrhage from the ulcer, and from perforation, although in the old days we were taught to believe that ulcer was cured and all hemorrhage would cease the moment gastro-enterostomy was performed. But we all know that gastro-enterostomy is merely a drainage operation and does not have a healing action on the ulcer. With drainage unobstructed, the ulcer may get well, but merely because a patient stops bleeding from an ulcer, or the pain ceases, is no sign that the ulcer has healed.

An excavating ulcer does not become cured unless excised or unless Nature cures it by a perforation. When Nature perforates an ulcer, all the coats are brought together and up to that point it is not a recurring ulcer but the same ulcer. The point is merely that it dips in a little deeper or spreads wider. Maury has devised a stitch which can be used on deep ulcers and to control hemorrhage, which has been used experimentally on animals, and we have used it on the human subject in a few instances, apparently with great benefit.

The question of whether or not we should use clamps is a point of technic. We much prefer to use steel clamps occasionally. One cannot otherwise always get a stomach up as it is necessary to do to carry out the technic presented by Dr. Coffey in his excellent paper.

In the treatment of ulcers we should recognize and overcome the danger of hemorrhage and recognize the possibility of the subsequent development of cancer, since ulcers of the stomach are liable to precede carcinomatous conditions.

Ulcers in the duodenum, embracing nearly two-thirds of all the ulcers in this region, are fortunately not prone to become carcinomatous. Very few operators, in a lifetime of surgery, will ever see a primary cancer of the duodenum, except at the ampulla, where the intestine is opened in excising the carcinoma; but it really does not belong primarily to the duodenum; therefore circular sutures may be used on an ulcer in that location to depress it, if the tissue resistance is such that it can be depressed, and protecting sutures can be placed over the point of inversion.

This operation is a serious one if there is but little acid in the stomach. Often the stomach acid content is very low, and patients succumb to sepsis.

DR. A. J. OCHSNER, Chicago: Severe, dangerous hemorrhage has occurred so seldom after the application of ordinary pressure clamps in the operation of gastro-enterostomy that I believe when it does occur it is because of the softened condition of the tissues in the vicinity of the ulcer. If the clamp is applied within a relatively short distance from the ulcer, I believe that the accident which happened in this case is not only possible but likely to occur. Ordinarily that is not necessary. The anastomosis should always be made at the lowest point of the stomach, as shown us many years ago by W. J. Mayo; and when that is done, I believe that one can safely apply the pressure-clamp without the danger of hemorrhage. I have seen two or three cases of hemorrhage in instances in which the sutures were not as perfectly applied as they should have been, at the junction of the gastro-epiploic vessels with the wound. But the danger of which Dr. Coffey speaks I believe is one which occurs only rarely and which should be avoided. In cases in which one cannot make the anastomosis at a considerable distance from the ulcer, one should perform the operation which Dr. Coffey has shown us. All of the facts which Dr. Coffey has illustrated here I have personally experienced. The fear of soiling and of hemorrhage during the operation really amount to very little, if the operation is performed as described by Dr. Coffey.

Many years ago, while I was Professor Senn's assistant, he made this identical operation. Since that time I have performed this operation by applying very delicately toothed forceps to the blood-vessels at the margin, grasping all of the layers of the intestinal wall, that is, the mucous layer, the muscular layer and the serous layer, and placing these clamps at regular intervals.

As regards the pentagonal stitch that Dr. Maury has shown us, the difficulty about that stitch in practical application is this: It works beautifully in the stomach of the dog, and undoubtedly would work beautifully in the normal human stomach. Since Dr. Maury has introduced this stitch I have not had a case in the human being in which it seemed as though it would work. Where the ulcer is small it is not necessary, and where the ulcer is large you would have to fold in so large a portion of the stomach wall that the covering would be very much more difficult and much more prone to cause a troublesome deformity which might ultimately result in obstruction, than would simply excising the ulcer and making the suture as done in Dr. Coffey's cases.

Regarding the operation that Dr. Skinner has described. I wish to state that in 1891 Dr. Charles T. Parks described this very operation and performed it in a case of gunshot wound through both the anterior and posterior walls of the stomach.

Speaking of approaching the posterior wall of the stomach, the best way, if the anterior wall is punctured by a small perforation, which is very commonly the case in gunshot wounds, is to lift up the transverse colon and split the transverse mesocolon precisely as one does in posterior gastro-enterostomy, which is a much more simple operation than the one that has been described. Then drain through the lesser omentum, and you still have perfect drainage.

DR. ROBERT T. COFFEY, Portland, Ore.: The technic of sewing is the same as that used when we use clamps. The principle that I wished to bring out was the method of lifting up the front wall of the stomach with traction loops, thereby making an air bubble which escapes when the stomach wall is incised and relieves intragastric tension; the fluid then gravitates to the lower levels and may be dipped or sponged out without spilling, and much more perfectly than when clamps are used or by the freehand methods which previously have been described. Danger from the spilling of fluid contents is not great, but it is annoying to an esthetic operator, and it can be avoided providing you lift the parts up as shown. That is the principal point. As to describing the technic of removing the ulcer, that is not intended to be a major part of the paper at all. It is simply a matter of so cleansing the stomach that we can go ahead and do any operation which seems advisable on the stomach with just as much ease and care and just as much nicety as we can amputate a leg. Besides using the traction loops for holding the stomach while cleansing, I have used them to strengthen greatly the line of suture and facilitate the turning of peritoneal surfaces.

Dr. Andrews stated that it was impossible to see ulcers of the cardia. It is not impossible, if you will make an incision at right angles to the median incision following the rib arch on the left side. You will find that you can very easily inspect the entire stomach from the inside, and I have done so in two cases in which the ulcer was located very close to the esophagus. It also is possible to inspect the pyloric section after the stomach is wide open. I hoped to learn from the discussion how frequently hemorrhage resulting from pressure of clamps had occurred, and I am surprised but glad to learn that it does not occur in the experience of anyone else. In the case described the vessel was open where it crossed the slit which had been made by the clamp; furthermore, there had been no hemorrhage either from the original ulcer or the site of operation. The anastomosis was made at the lowest point of the stomach and was more than 4 inches from the ulcer, thus avoiding the criticism of Dr. Oschner. The fact remains, however, that if anyone desires to investigate the result of clamps on the mucous membrane he will be surprised to note that it is broken or slit in a very large percentage of cases. It would be surprising if there have not been more serious hemorrhages resulting from clamp pressure than is indicated by the discussion to-day. I have done many hundreds of experimental anastomoses in addition to my clinical work. Most of my experimental anastomoses have been done by the various free-hand and traction-loop methods with a view to learning to sew skilfully, but, like Dr. Mayo, I have not heretofore done any clinical work without clamps. By the technic here described, however, I have been able to do even more satisfactory work in excisions of ulcers and in doing pylorotomy for carcinoma than I have been able to do with the clamps, leaving out the possible danger from clamp pressure. It is unquestionably cleaner, more thorough and more surgical. The gastro-enterostomy described is, as will be noted, a sequel or part of the gastrectomy and is used after the stomach has been emptied of its contents. The traction loops when tied unquestionably add material strength to the union. I am not prepared to advise the discarding of clamps in cases of simple gastro-enterostomy for simple unquestionable pyloric or duodenal obstructive ulcers when there is no call for exploration. This, however, is the only field, it seems to me, in which clamps can be used to advantage.

SMOOTH ATROPHY OF THE TONGUE*

LINDSAY S. MILNE, M.D.
NEW YORK

For many years the occurrence of smooth atrophy of the base of the tongue in cases of syphilis was handed down as a tradition in Virchow's laboratory in Berlin and from this source chiefly the first knowledge of the condition was disseminated.

Since the publication of Lewin and Heller,¹ however, in 1894, comparatively little has been written about smooth atrophy of the base of the tongue in reference to its diagnostic value in syphilis. In their series of 6,583 cases which came to autopsy in the Charité Hospital in Berlin, 200 presented a history of syphilis, 156 acquired and forty-four congenital. Of these, eighty-five cases of acquired syphilis showed no smooth atrophy. One hundred and three cases presented smooth atrophy of the base of the tongue and of these, seventy-one (69 per cent.) have a definite syphilitic history. Thus, in 45 per cent. of cases of acquired syphilis smooth atrophy was found to occur.

Symmers (1910),² in 623 cases, found seventy-five in which there had been a distinct history of syphilis, and in sixty-four (84 per cent.) of these, smooth atrophy of the base of the tongue was noted, fifty-five complete and nine partial. In three of his syphilitic cases the lymphoid follicles at the base of the tongue were hyperplastic.

In this institute, smooth atrophy of the base of the tongue has been looked for as a routine and its occurrence noted fairly frequently. In 1909, out of 505 autopsies, it was found in thirty-nine cases (twenty-five male and fourteen female). In all of these the condition was quite definite, all doubtful cases in which atrophy was only slight or moderate being excluded. In three, however, it was only partial, but in the affected portions was quite distinctive.

The accompanying tables indicate the class of case in which this condition of smooth atrophy was found, and its relationship to syphilis.

TABLE 1.—SMOOTH ATROPHY OF THE BASE OF THE TONGUE, BUT NO HISTORY OR SIGNS OF SYPHILIS AND WITH A GOOD FAMILY RECORD

Case.	Sex.	Age.	Cause of Death.
1	M.	66	Acute yellow atrophy of the liver.
2	M.	65	Cancer of rectum.
3	M.	29	Phthisis.
4	M.	60	Pneumonia, pericarditis, advanced general arteriosclerosis.
5	M.	51	Phthisis and acute suppurative peritonitis.
6	M.	74	Pneumonia.
7	M.	50	Cirrhosis of the liver with primary cancer.
8	M.	59	Cerebral softening and senile atrophy.
9	F.	62	Gangrene of lung following operation on hemorrhoids.
10	F.	28	Disseminated sclerosis.
11	F.	54	Senile atrophy general.
12	F.	65	Nephritis.
13	F.	40	Carcinoma of uterus.
14	F.	62	Pemphigus.

TABLE 2.—SMOOTH ATROPHY OF THE BASE OF THE TONGUE WITH NO SIGNS OF SYPHILIS. HISTORY OF SYPHILIS DENIED, BUT POSSIBLY MAY HAVE OCCURRED

Case.	Sex.	Age.	Cause of Death.
1	M.	47	Pneumococcal pericarditis (gonorrhea several times).
2	M.	55	Cirrhosis of the liver (chronic laryngitis, not tuberculous, possibly syphilitic).
3	F.	77	Cancer of the cecum (5 children, all died young; had 1 miscarriage).

* From the Russell Sage Institute of Pathology.
1. Lewin and Heller: Die glatte Atrophie der Zungenwurzel und ihr Verhältniss zur Syphilis, Virchow's Arch. f. path. Anat., 1894, cxxxviii, 1.
2. Symmers: Smooth Atrophy of Base of the Tongue, Am. Jour. of Med. Sc., 1910, cxi, 859.