CLINICAL OBSERVATIONS IN STOMACH SURGERY.*

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Surgery of the stomach is still in a developmental state. Many surgeons are making progress in this field, and although there can not as yet be many conclusions which can reasonably be expected to be permanent, still it seems worth the effort to exchange the points of clinical experience at this time.

It is, of course, out of the question to discuss this subject thoroughly in the time given to a paper in this Section, but I believe that it will be possible to present the features which seem of greatest practical importance as they have impressed themselves on me in my clinical observations.

Ultimately the greatest portion of stomach surgery must be done for the relief of gastric ulcer or one of its various sequelæ—hemorrhage, perforation, adhesions, cicatricial contraction with pyloric obstruction and its consequent gastric dilatation, hour-glass stomach and carcinoma. The wider my field of observation has become the more I am convinced that there is in this condition a great opportunity for surgical work of the highest value.

The operation for the relief of hemorrhage from a gastric ulcer, introduced by Mikulicz sixteen years ago, which has been practiced by many surgeons, but was brought to the general attention of the surgical profession especially by the clearness and force of Mayo Robson's writings, will become less and less indicated as the practitioners of internal medicine become convinced of the fact that these cases can be safely relieved by a simple operation performed in the interval between attacks.

The same condition will reduce the frequency with which the surgeon will be called on to operate for the relief of perforative gastric ulcer. The statistics of Wier and Foote and those of Tinker will serve to indicate the gravity of this operation, especially when compared with the statistics of Mayo, Finney and others, of operations performed in the interval.

In all cases of ulcer of the stomach which do not heal completely and permanently by internal treatment or in which the healing is followed by pyloric obstruction, it seems proper that surgical treatment be employed. There are three factors which aid greatly in bringing about this conclusion: 1. The diagnosis can now usually be made without difficulty because the attention of the profession has been sufficiently directed toward this condition to make its recognition probable. 2. The operative technic has been so thoroughly perfected that interval operations are accompanied by very little danger. 3. A sufficient number of cases have been observed for a number of years to make the permanency of cure an established fact.

Mayo established the principle of providing perfect drainage of the deformed stomach by making an anastomosis between the very lowest portion of this organ with the jejunum. This is the most important factor which has served to build up a satisfactory technic in this class of cases. Many surgeons operating on the stomach have not yet grasped this idea. This is true especially of the

surgeons who have been unsuccessful in this class of work. It should be stated here that in making a posterior gastroenterostomy the surgeon will employ this principle in most cases, whether he does it intentionally or accidentally, but in the anterior operation he is just as certain not to do this, unless his attention is fixed on this end at the time of the operation.

In my own experience the persistent vomiting after gastroenterostomy—"vicious circle"—has been absent since I appreciated this principle and have applied it. The vomiting simply resulted from the fact that fluid could not help flowing into the stomach from the proximal end of the small intestine, because it had to flow down hill, the opening in the stomach not being in the lowest point of this organ. All that has been said and written concerning the cause of this pernicious vomiting, with the exception of what refers to this one condition, is, I believe, based on faulty observation, and all of the complicated operations which have been invented to prevent this vomiting are unnecessary, if the principle introduced by Mayo is properly appreciated and applied.

ELASTIC LIGATURE METHOD.

It is probably of little importance whether the anastomosis is made with ordinary sutures or with those aided by a mechanical splint, like the Mayo-Robson calcified bone bobbin, or with the Murphy button. In all but thirteen of my cases I have used the Murphy button, in four the needle and thread and in nine the McGraw elastic ligature. All of the latter I have made during the present year, and have found the method exceedingly easy and satisfactory so far as the immediate results are concerned. None of the patients showed any shock. They were all able to sit up in bed on the day following the operation and all recovered. The time which has elapsed since these operations were performed is, however, too short to determine the ultimate result. The points of importance in this method are that as large an opening as desired can be obtained and that there can not possibly be either separation or leakage or infection from the intestinal or stomach contents.

In applying the method the following conditions must be borne in mind: 1. A round rubber cord 2 mm. in diameter, made of the best material, should be used. 2. A posterior row of Lembert sutures is applied. 3. A long, straight needle armed with the rubber ligature is passed into the lumen of the intestine and out again at the desired distance, from 5 to 10 c.m. away from the point of introduction. 4. While an assistant holds the intestine the surgeon stretches the rubber in the needle and when quite thin draws it rapidly through the intestine. 5. The same step is repeated through the stomach. 6. A strong silk ligature is placed across and underneath the rubber ligature between the latter and the point where the stomach and intestine come together. 7. A single tie is made in the rubber ligature after the latter has been drawn very tightly. 8. The silk ligature is passed around the ends of the rubber ligature where they cross and tied securely three times. 9. The ends of the latter are released and cut off, being held by the silk ligature. 10. The Lembert suture is continued around in front until the point of its beginning is reached, where it will be tied. 11. Care must be exercised to prevent tying the rubber ligature too far backward and thus getting behind the posterior row of Lembert sutures.

I am thus explicit in describing the steps of this operation because I find that only those who are thoroughly familiar with the method have used it, and apparently all with great satisfaction.

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It has been found that a gastroenterostomy opening made with a Murphy button will remain open and act perfectly in cases in which the pylorus is permanently occluded, but in cases in which it is only temporarily occluded because of an open ulcer with its resulting induration and edema, the gastroenterostomy opening contracts as soon as the pylorus again becomes normal or nearly so. Unfortunately, this closure of the gastroenterostomy opening is likely to be followed by a recurrence of the ulcer and the consequent obstruction of this orifice, which frequently necessitates a repetition of the operation.

This can be avoided by making an excision of the pylorus at the time of the primary operation or by closing the pylorus with a silver wire passed around the pyloric end of the stomach or the beginning of the duodenum two or three times, drawing it just tightly enough to occlude this orifice completely, but not sufficiently tight to cause pressure necrosis. This method has, however, not been tried sufficiently to secure its absolute establishment.

It is claimed that by making a large anastomotic opening by means of the McGraw elastic ligature one can secure a permanent opening under all conditions. My own cases are still too recent to be of value in confirming this claim. The results secured in cases of the class under consideration by the operation of gastroenterostomy properly performed are certainly very encouraging.

Recently Fowler has described an operation consisting in gastroenterostomy and enteroenterostomy between the portions of the jejunum at the proximal and distal side of the point at which the anastomosis was made with the stomach. Aside from this the intestine is occluded by means of a silver wire passed three times around its lumen between the point at which it is anastomosed with jejunum and the stomach, so that the bile and pancreatic fluid can be emptied into the small intestine, but not into the stomach. This operation has given very satisfactory results in the hands of its author, but in my experience the much simpler method of making an anastomosis between the lowest portion of the stomach and the jejunum has been so satisfactory that I have not found it necessary to make the more complicated operation.

PYLOROPLASTY.

Operations for the enlargement of a contracted pylorus have not been very satisfactory, principally because the obstruction was not fully relieved by the operation usually employed—the Heinecke-Mikulicz or some modification of this—on account of the pouch-like deformity which is present in most of these cases, necessitating the elevation of the food to the level of the pylorus before it can be emptied into the duodenum even after the plastic operation has been made on the contracted pylorus.

One year ago Finney published a method which seems to promise well, but it has not attained sufficient age to have stood the practical test of time. I have employed this method but once, making use of the McGraw elastic ligature instead of making the horse-shoe shaped incision.

Theoretically this is a good operation and practically it can be performed with great ease. It will be interesting to observe the permanent results in the cases which have been operated on by this method during the past year.

In many cases a very moderate pyloric obstruction will give rise to most distressing symptoms because it is accompanied not only with a pouch-like deformity of the

greater curvature of the stomach, but because at the same time gastropsis is present. Thus the normal drainage of the stomach is interfered with mechanically in three ways: 1. By the constriction of the pylorus. 2. By the deformity. 3. By the malposition of the organ.

In simple enteroptosis a number of authors claim great benefit to the patient from various operations intended to elevate the organ. Most of these methods interfere seriously with the mobility of the organ and are painful, for a time at least.

This is not the case with the method described and practiced by Beyea, and that devised independently by Bier. These methods are very similar and virtually consist in shortening the gastrohepatic and gastrophrenic ligaments by means of several rows of fine silk sutures.

Experience seems to show that this method gives permanent relief in simple gastropsis, the pain disappearing quickly and permanently, and the patient gaining rapidly in weight and strength. Whether this method is applicable to cases such as I have described remains to be seen by experience.

I have operated on but two of these cases by a method similar to those mentioned above, but which at the same time fixed the stomach to the abdominal wall. The results were so unsatisfactory, although in each case I could note some improvement, that I did not repeat the operation.

Since studying the methods described by Beyea and Bier, it seems plain that the interference with the mobility of the stomach prevented the complete recovery of my patients, and that with better technic the results would have been better.

OBSTRUCTION OF PYLORUS DUE TO CARCINOMA.

In carcinoma of the pylorus there is never any indication for performing a complicated operation similar to that described by Fowler in connection with gastroenterostomy, because the pylorus is permanently obstructed at the time of the operation, and this obstruction becomes more complete as time progresses.

In cases in which the tumor is sufficiently circumscribed to make its removal practicable, there is again no occasion for performing any operation except an anastomosis between the remnant of the stomach and the jejunum. It is, however, important to select a point sufficiently distant from the point at which the duodenum passes through the mesocolon to avoid all tension. The operation is very simple if performed after a definite plan.

The duodenum is clamped double after tearing a small opening through the folds of the omenta above and below. It is then severed between these clamps. A circular silk suture is applied to the end of the duodenum, and while this is tied the crushed end is inverted into the lumen of the intestine. A few sutures will serve to cover this circular purse-string suture and complete the closure of the intestine. Then the greater and lesser omentum are caught successively, always between two pairs of forceps, care being taken not to injure the pancreas behind the duodenum to the right and the vessels supplying the colon below.

In this manner any desired portion of the stomach or the entire organ can be removed without causing any considerable amount of shock or the loss of much blood. When a safe point has been reached beyond the growth, two pairs of clamp forceps are again applied and the same steps repeated that were described in connection with the duodenum. Instead of applying a purse-string suture, however, it is best to apply a simple glover's stitch, grasping the stomach wall to either side of the

clamp forceps, and passing loosely across the latter. When the entire row of sutures has been applied, the forceps are loosened and the suture drawn tightly. This serves to insert the crushed end of the stomach into its lumen. Then a second row of continuous Lembert sutures is applied over this row, leaving the stomach in the form of a closed sac. An anastomosis is now made between the remaining portion of the stomach and the duodenum, preferably by means of the Murphy button. At this point it is of the greatest importance, first, to choose the lowest point of the stomach; second, to select a portion of the jejunum which is sufficiently free to prevent all tension.

Of course, in cases in which it is not possible to remove the entire tumor, it is much better for the patient if only a gastroenterostomy is made to give temporary relief from the pyloric obstruction.

It should be stated here that occasionally a carcinoma will be found which is apparently perfectly movable, but which is found later to have invaded the pancreas, the latter organ being attached to and moving with the stomach.

GASTRECTOMY.

Complete gastrectomy, although it is now a recognized operation, must always remain rare, because cases in which the disease is sufficiently advanced to require this operation are usually so far advanced that the operation is useless. When indicated, the steps which have just been described are simply to be carried further until the entire organ has been removed. Here again, it is of the utmost importance to unite the esophagus to a loop of the jejunum, sufficiently loose to prevent tension.

I have never removed the entire stomach, but in two cases of partial gastrectomy so small a portion of the cardiac end of the stomach could be preserved that I virtually had an opportunity to test this method. It is very simple, and I believe it must be ordinarily, at least temporarily, successful in cases in which it would be indicated.

In all of these operations there are a few points of great practical value, concerning the preparation of the patient and the after-treatment, which are not generally appreciated and which are consequently worthy of mention in this paper.

Many of these patients entered the hospital in an extremely emaciated condition, because almost always milk is the only food which has been given for a considerable period of time. The stomach contains a quantity of residual decomposing material and the milk which is taken is at once changed into a similar decaying substance, from which it is, of course, impossible to secure any nutrition, even from the portion which may pass the pyloric obstruction into the intestine. If the stomach is carefully irrigated with warm normal salt solution through a large-sized stomach tube before food is given, every three to six hours, the conditions for obtaining some benefit from the food will be greatly improved. In most cases the use of an ounce of one of the various concentrated liquid predigested foods in the market, given in three ounces of normal salt solution after making gastric lavage every three to six hours, will be followed by rapid improvement in strength. In this manner the absorption from the stomach of products of decomposition will be prevented, and for this the absorption of at least a small amount of concentrated food will be substituted. It is best at first to spray the pharynx with a 4 per cent. solution of cocaine and to permit the patient to swallow a little of this rather than to wait for five minutes before

introducing the stomach tube. This will prevent unnecessary gagging and discomfort of the patient.

It is well to introduce through the stomach tube into the stomach once a day, or less frequently, after the lavage, two ounces of castor oil or olive oil and then to withdraw the tube. Unless the pylorus has been entirely occluded the oil will find its way into the intestine and will aid the nutrition of the patient.

It is well to place these patients on nutrient enemata at the same time. One ounce of one of the liquid predigested foods in the market, dissolved in three ounces of normal salt solution and introduced through a soft rubber catheter which has been inserted a distance of two to three inches, seems to be of the greatest value.

In case the patient is nauseated after the operation, gastric lavage should again be employed at once. If the patient has been accustomed to the use of the stomach tube before the operation, it is, of course, a great advantage to him after the operation.

It is important to use only a small amount of water in making gastric lavage after the operation for fear of disturbing the healing of the wound in the stomach. We introduce but half a pint at a time. Neglecting this precaution caused the death of one of my patients.

Rectal feeding should be continued for two weeks after the operation, but small amounts of predigested liquid nourishment may be given every three hours by mouth after the fourth or fifth day in most cases.

I have reviewed the histories of the cases on which I have made stomach operations at the Augustana Hospital, and find that in seven cases gastrostomies were made for the relief of obstruction of the esophagus; one of these was made for the purpose of dilating a benign stricture, one for the purpose of feeding a patient who had been starved to a mere skeleton because of the presence of a diverticulum which had completely occluded the esophagus. The former case recovered, the latter died of exhaustion. She was in an almost hopeless condition when she entered the hospital. Of the five remaining cases operated on for obstruction of the esophagus due to carcinoma, three recovered and two died of exhaustion, being in a hopelessly starved condition when admitted.

Two cases operated on for perforation of the stomach, one due to ulcer, the other due to gunshot wound, both died from diffuse peritonitis which was present at the time of admission. In each case the perforation had existed for eighteen hours and the abdominal cavity was full of food and a thin cloudy fluid.

There were nine pylorectomies and incomplete gastrectomies with three deaths, one from shock two hours after the operation, one from overdistension of the small remnant of the stomach with fluid during gastric lavage after the patient had been normal for four days. The lavage was ordered because the patient was slightly nauseated and the nurse misunderstood the order in regard to the quantity to be used at a time. The third case died as a result of loosening of a Murphy button on the seventh day. The patient was badly nourished, and it is likely that union was retarded.

In the first of these three cases a gastroenterostomy should have been made, because the patient's condition was greatly reduced on account of the complete obstruction of the pylorus by the carcinoma, but the tumor seemed so completely confined to the stomach that it seemed as though its removal might result in a permanent cure. In the second case, the death was plainly due to an accident, which could have been avoided. In the third case I believe that my technic was at fault.

There were seventeen gastroenterostomies for the relief of non-malignant obstruction of the pylorus. Of these sixteen recovered and one died. The latter was a patient 74 years of age, greatly reduced in strength, with an almost complete cicatricial obstruction of the pylorus. Her death was due to exhaustion.

There were also twenty-one gastroenterostomies for the relief of pyloric obstruction due to carcinoma in cases in which a complete excision of the tumor was not possible. Of these twenty recovered and one died from exhaustion. The patient was greatly reduced on account of an almost complete obstruction of the pylorus. He was 65 years of age. The autopsy showed perfect healing of the anastomosis and there was no peritonitis.

During the same time I have operated on a number of cases at two other hospitals, but I have not had the necessary time to review the histories of these cases, and consequently this paper was based on the observations made in the study of this series of fifty-six cases.

Regarding the immediate results, I would say that the cases of obstruction due to carcinoma experienced great relief, many of them being not only freed from pain and nausea and vomiting, but gaining very greatly in strength, and almost all expressed their great appreciation of the benefits of the operation. The ultimate results in these cases will be reported later.

In the non-malignant cases I think that there has been great benefit in almost every case. The ultimate results will also be reported later.

It is likely that a larger experience will modify many of the opinions expressed in this paper, and it is not intended that it should carry great weight.

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DISCUSSION

ON PAPERS OF DRs. KNOTT, NILES AND OCHSNER.*

DR. E. WYLLIS ANDREWS, Chicago—It must be admitted that American surgeons have been backward and that they are following in the steps of the Germans in developing gastric surgery. But, of course, we all know that the world recognizes the excellent pioneer work of the American surgeons in intestinal surgery. The evolution of gastric surgery will take over a large number of men, who formerly treated the cases medically, into the surgical domain. We used to accept those cases when they were sent to us by the interne for operation, which was very rarely. Now we assume that the pathology, symptomatology, etiology and indications for operation belong to our field. There is no more reason why a gastric ulcer should be classed as medical than there is why the same condition on the leg or on the tongue should be considered a medical disease. Dr. Dunsmoor expressed his surprise and disapproval that so many surgeons were willing to enter on operative work in the lower abdomen, and were so much afraid of the work above the umbilicus. I remember reading the statement by Dr. Willoughby Furness that the proximity of the solar plexus made surgery in the upper abdomen more dangerous from the standpoint of shock. Now this false conservatism or timidity deters operators in this field, but when you consider the anatomy you will find that it is easier to repair the stomach walls than it is to do the same in one of the small intestines. It is a fertile field for the operator. What are the indications for operative interference in stomach disease? The indications are not simply existence of chronic stomach disease, whose nature we can not determine. I think the trend of modern surgery is in this direction: when we have a case of chronic stomach trouble we operate for diagnosis. How many times a dyspeptic patient will be operated on, say for hemorrhoids, then sent to some specialist, who will remove an ovary; then you may send for some one who will anchor a floating kidney; then for some one, who in despair will remove the appendix; and after all this the patient comes back to you as bad as ever.

* The papers of Drs. Knott and Niles appeared in THE JOURNAL of May 23.

But if the patient had been sent to a surgeon who would have performed a gastroenterostomy in the first instance, you would have cured the case. Dr. Ochsner spoke of a number of cases in which he had operated for pure gastric pain. Probably he now performs a gastroenterostomy on all cases of obscure gastric pain and cures a large proportion of them. Now, I think we must all recognize that the chain of disorders, beginning with ulcer and ending in stenosis or carcinoma, we have the same indication for early operation that we have in other abdominal conditions. There is frequently the case of the gastric ulcer, running over a period of pain, vomiting and hemorrhage, and later producing carcinomatous degeneration of the healthy tissue. Dr. Bevan has reported a case of pylorotomy for the removal of pyloric carcinoma, which commenced in ulcer of the stomach. Dr. Niles traced in his paper the history of a carcinoma of the pyloric end of the stomach, beginning, as you will find nearly every one of them, in gastric ulcer. Surgery must recognize the clinical continuity of these factors ending in carcinoma, and must operate more often in the ulcer stage without waiting for perforation, hematemesis or malignant obstruction.

DR. WILLIAM J. MAYO, Rochester, Minn.—The surgery of gastric ulcer at this time is really the surgery of its complications. This is shown by the first two papers that were read to-day in regard to stomach adhesions, pyloric obstruction, hemorrhage and perforation. It is not the gastric ulcer which we have been operating for; it is the complications of the gastric ulcer. We must keep this very clearly in mind. What are we going to do with the cases we see before the complications arise? This is a part of the subject which must be cleared up. The ulcers which produce the complications are usually in the pyloric end of the gastric cavity. The pyloric part of the stomach is the muscular part, and it is on this side that we not only get the gastric ulcer, but at least 60 per cent. of all the gastric cancers, and it is altogether probable that many have their origin in ulcer. We can not usually excise these ulcers, as they are often multiple. I have searched for a bleeding ulcer half an hour and been unable to find it, although the patient had a severe hemorrhage three or four days before the operation. The pyloric obstruction is a complication of gastric ulcer, but the ulcer is there long before you get the obstruction; so that operations on the pylorus can not cure the condition, because the ulcer does not depend on obstruction, and in many of the cases the ulcer is beyond the pylorus in the duodenum, and after plastic operations, which are intended to cure the ulcer by enlarging the pylorus, the food must still pass through the ulcerated area before it reaches the bowel.

Gastroenterostomy is the most satisfactory operation for ulcer, as it drains the stomach at a point to the left of the ulcerated portion, and if the pylorus be obstructed the cure will be permanent; but if the pylorus be open, as soon as the ulcer heals the spasm relaxes and the food passes down through the pylorus again and the fistula contracts, and relapse may occur. In such cases resection of the pyloric end of the stomach or the ulcer bearing area will be best, as recommended by Rodman.

Just a word in regard to cancer. Our only reasonably satisfactory operations for this condition have been extirpation. The operation for pyloric growth usually is not difficult, and by removing all of the lesser curvature the pylorus and the body of the stomach to the left gastroepiploic vessel, all of the lymphatics will be removed and the remaining portion of the stomach may be expected to remain free, as it is isolated from the pyloric end by reason of a separate vascular and lymphatic arrangement. In 27 resections of the stomach for cancer, 5 died from the operation, one died later from another cause; but of the 21 that recovered, the average length of life was over a year, one living over three years and two alive and well over two years.

DR. CARL WAGNER, Chicago—Three cases of so-called inoperable carcinomas, which have occurred in my practice, come to my mind. The most important one afflicted a woman aged 53. She was emaciated to a skeleton and had a tumor of the size of a fist in the stomach region, which first appeared about a half year previous, growing steadily since. The pa-

tient presented all the symptoms of carcinoma of the stomach, such as the presence of lactic acid, absence of muriatic acid, emaciation, vomiting and pains. Several surgeons were consulted, who all concurred in the diagnosis of inoperable carcinoma of the pyloric end of the stomach. The patient had another tumor in the inguinal region, below the Poupart ligament, also the size of a fist, which was diagnosed as a lipoma, and, of course, not brought into any connection with the tumor visible in the stomach region. When she came under my care I also was of the opinion that I was confronted with inoperable neoplasm of the stomach, and took therapeutic measures accordingly, until one day I recollected a case of my former experience, where I found, with an exploratory laparotomy, a fatty tumor, originating in the ligamentum teres, hepatitis suspensorium and overlying parts of liver, stomach, gall bladder and part of ascending and transverse colon, which caused a condition similar to that presented in the present case. Thus I resorted to an exploratory laparotomy also in this case.

The tumor, which the operation exposed, consisted mainly of omentum, which had converted part of the stomach, colon transversum, liver, gall bladder and the corresponding parietal peritoneum, through exudates and adhesions, into one solid, unique mass. It could be removed very readily, in spite of a few difficulties, and careful examination showed otherwise absolute normal conditions of the organs involved. There were no signs of old ulcer cicatrices in the stomach in spite of the fact that such could have been suspected to exist on account of pains, which the patient stated she had suffered during nineteen years previous to the first appearance of the tumor. This latter misled the physicians to conceive the theory of ulcer, cicatrix and subsequent carcinoma, just as in the book.

I closed the abdomen, somewhat disappointed at not having found any explanation for the development of the inflammatory condition of such grave bearing on the whole organism. However, when I proceeded to extirpate the alleged lipoma, which, as above stated, was located at the region of the fossa ovalis femoralis, everything became clear to me. After freeing it from its covering, it unfolded itself just like a lipoma arborescence, such as we find in the knee joint, and with a pedicle as thin as a lead pencil entering into the femoral canal in the peritoneal cavity. On traction it proved to be in connection with the omentum and represented an elongated end-piece of it, which had slipped through the femoral ring in the form of a femoral hernia out of the abdominal cavity, and developed outside of the femoral ring into this large tumor.

The weight of this extra abdominal tumor caused, with every motion, especially when walking, a pulling, jerking sensation at the insertion point of the large omentum, namely, at the large curvature of the stomach, and thus produced intense pains. In the good old German style, hot plates, hot poultices and all kinds of other counter-irritants were applied frequently to the stomach region, during years, with the result that in time local peritonitis, with adhesions and exudate masses, developed. Seven years have elapsed since the operation and the woman is still enjoying very good health. Consequently, the alleged inoperable carcinoma of the stomach, which had reduced the patient to skin and bones, and, undoubtedly, would have terminated her miserable existence within a few weeks on account of marasmus, was no carcinoma at all.

This case serves as an excuse for a plea for greater frequency of exploratory laparotomy in such so-called absolutely hopeless cases of inoperable carcinoma of the stomach.

DR. WILLIAM L. RODMAN, Philadelphia—There is no more important subject at the present time than gastric surgery. Here in America we have been a little slow in moving along in this direction. I think that Dr. Mayo admirably summed up the situation when he said that the surgery of the stomach is principally the surgery of the complications of ulcer rather than the first ulcer itself. I think we should always keep in mind that it is the complications resulting from gastric ulcer that require operations on the stomach. Therefore, as he says, the real question is as to what to do with the

gastric ulcers, if they can be diagnosticated sufficiently early to render excision possible. There is no doubt that we will come very early to the excision of the ulcers before complications take place. It has already been done in an increasing number of cases year by year, and I feel that in time the treatment of gastric ulcer will be partial gastrectomy, and that the mortality will not be more than 5 or 10 per cent. Taking all the early operations done during the past fifteen years, it has not been more than 15 per cent., and surely at the present time it should not be more than one-half of that.

I would like to call attention to one point that Dr. Knott did not refer to in his paper. These adhesions between the anterior wall of the stomach and the abdominal parieties, which would seem to be easy and safe to break up during the operation for gastric ulcer, do not always prove so. Thus, Hofmeister has said that adhesions should always be picked apart very carefully, having in mind not only the possibility, but the probability of tearing into the wall of the stomach itself.

On one point I would rather differ from Dr. Niles. He speaks of the inadvisability of excision in a majority of instances because of the fact that multiple ulcers may exist. That is true undoubtedly in many instances, but it does not occur sufficiently often to deter one from doing a partial gastrectomy if there is a well-marked tumor, and it may occur even in benign as well as malignant disease. Even if the small ulcer is overlooked, no harm is done. We must remember always, as Dr. Niles and Dr. Murphy and Dr. Ochsner have said, that there always is a marked tendency to the development of benign disease in the stomach, when there has been chronic disease. Some go so far as to make the statement that at least 50 per cent. of all gastric ulcers go on and develop into carcinoma, and we must all admit that a great number do, and it is for this reason that partial gastrectomy, which is not much more dangerous than gastrojejunostomy, is of much more value. I also wish to say with Dr. Ochsner, that we owe a great deal to Dr. Mayo in perfecting anterior gastrojejunostomy. There is no doubt that the anterior operation will closely rival the posterior method, and there is no more reason why the vicious circle should occur when the anterior operation is done, than when the posterior is performed. Personally, I have always employed the latter operation. It seems to me to be the most anatomic, and the majority of writers prefer it to the anterior. The anterior operation is of so much advantage early in the breaking up of these adhesions, that if it can be done without the vicious circle (and I believe it can), it will certainly be used far more in the future than it has in the past. I have no doubt that it is very important that the lowest point on the wall of the stomach be selected, where drainage can be easily established, and in that manner I am sure that the vicious circle will be avoided. I believe that with the operation as performed by Dr. Mayo, or by Dr. Van Hocker, there will be in a certain number of cases the vicious circle, but these cases must be subsequently met by entire anastomosis.

DR. A. H. FORDIER, Kansas City, Mo.—If we could locate the position of the ulcer, on first thought it would seem advisable to excise it, but when we take into consideration the pathologic changes, the difficulty of locating the ulcer at the time of the operation, the inability to define its limit, the numerous vascular adhesions to surrounding organs and the slowness with which scar tissue heals, this idea is then dispelled and some other procedure suggests itself that would be equally efficient and less dangerous. This operation I believe to be preferably gastroenterostomy. I have performed a number of these operations. The majority of them have been performed in the anterior wall of the stomach. In none of my cases have I had any trouble from the so-called vicious circle. It is very essential that the opening in the stomach should be at the most dependent point. This feature of the operation I called attention to some eight years ago. Many of these cases at the time of the operation have been erroneously diagnosed as malignant, and even during the operation the indurated mass surrounding the side of the ulcer has been misleading.

When you take into consideration the fact that there frequently exists attachments to the pancreas, the liver and other structures, and that there is an indurated mass with inflammatory and secretarial changes, you can easily understand that one might be lead into believing the condition to be malignant. Hence, many of these cases have been permitted to go on and die as malignant. Cases have recovered from an anastomosis between the stomach and the intestines. That has been so in two or three of my cases. Even at the time of the operation I have made the diagnosis of malignancy. I do not approve of the partial removal of the stomach in malignant cases, as very few, if any, of these cases are permanently cured by such procedure, beside, the operation is one attended with a high mortality, and the patient's condition is not more comfortable during the time that they live than if an anastomosis had been made between the stomach and the intestines. These patients are in a condition, as a rule, that will not tolerate prolonged operative procedures, hence the operation must be quickly performed in order to keep down the mortality.

I would give my preference to the use of the Murphy button in these cases, owing to the time in which it can be done and the fact that the great majority of them recover by this procedure.

DR. ARTHUR DEAN BEVAN, Chicago—I feel that it is unfortunate that this subject has been divided up between two sections. I call attention to the fact that in the Section on Obstetrics and Diseases of Women a paper has been read on the subject of "Gastric Ulcer and Its Complications." I should like, and I think it proper, Mr. Chairman, to call attention to the fact that another Section in the Association is infringing on the rights of this Section, and that a paper is being read over there that properly belongs to the Section on Surgery and Anatomy. In the second place, I call attention to the fact that the very important work of obstetrics has been largely omitted by that Section, and on this account I give notice that I shall, at the proper time, make a motion that the delegates of the Section on Surgery and Anatomy be instructed to call the attention of the House of Delegates to this point, and to ask them to notify the Section on Obstetrics and Diseases of Women of this fact, call their attention to the fact that they are infringing on the work of the Section on Surgery and Anatomy, and to instruct them in the future to limit their work to the very important work of obstetrics and the surgical work on the genital organs of women.

DR. VAN BUREN KNOTT, Sioux City, Iowa—The general trend of your remarks seemed to be in accord with the policy urged in my paper; in other words, that the surgery of the stomach is on the increase, and that many cases had been in the past improperly treated or not treated at all, which, in the light of recent knowledge, could have been relieved by surgical methods. While we in the United States have been in the past accused of being behind the advanced position secured by Germany in gastric surgery, we will no longer be liable to such criticism, as in this country as good work is being done in this direction as is done anywhere. With the increased experience gained by the larger volume of work done, our ability to better treat these cases will increase and will be made manifest by better results. The securing of better results will encourage more men to take up this work, and more exact diagnoses will follow, and with the diagnosis will be found the treatment.

DR. H. D. NILES, Salt Lake City—My reason for preferring gastrojejunostomy in the treatment of ulcers of the stomach is that the ulcer will get well, no matter what stage it may have reached, if the part is put at rest. In other words, if you rest the ulcer it will be naturally inclined to heal of itself. Moreover, when you remove the ulcers that you see by excision you are sure to leave two or three there that you can not see, and which in time are pretty sure to do damage. Gastroenterostomy removes all those ulcers which you see, but there still remains those which you do not see. We know that there is a pathology in the upper half of the abdomen, in and about the stomach, that produces many deaths, and we have been discussing these different measures for treatment, while many of our patients go on to death. We know that

there is one radical way to reason, and if each of us will be positive in his conviction that there is only one kind of treatment that is based on surgical conception, I am sure that the mortality following gastric pathology or the treatment of gastric pathology will be much less. It is time for this gastric pathology to be removed, not only from the domain of medicine, but from obstetrics and gynecology, and the treatment of the future will certainly follow the paths of surgery for the removal of the pathology in the upper half of the abdomen.

DR. A. J. OCHSNER, Chicago—The statistics concerning my own experience which I gave in my paper and the discussion of Dr. Cordier would seem to leave the impression that pylorotomy is an operation which will be likely to be abandoned more and more. The facts of the case are, however, precisely the opposite for the following reasons: Up to the present time these cases have come under our care at a time when the complete removal of the carcinoma of the pylorus was exceedingly improbable, which is shown by the fact that out of 79 cases on which we attempted to operate, 23 were cases in which no operation at all was possible. However, we find that the stomach, with its thick walls and with its distribution of lymphatics, which Dr. Mayo has described, is an organ of which the complete removal is not at all impossible and the statistics of Mikulicz, Czerny, Kocher, Mayo and others would confirm this.

The reason why the mortality has been large in my own cases is that in two cases a fatal blunder was made; in the third case a gastroenterostomy should have been made, in order to make it possible to build up the patient who was virtually starved and a pylorotomy should have been made later. Eliminate these blunders and the mortality would not have been high. Another reason why the mortality has been high, is because we have not approached this operation in a sensible way. If we will apply two pair of forceps to the duodenum as far as possible beyond the tumor and still sufficiently close to the latter to avoid injuring the common duct, we can cause a compression which will prevent any danger of hemorrhage from this point and which will facilitate the closing of the duodenum. We then apply another pair of forceps to prevent hemorrhage from the gastrohepatic omentum. The gastrocolic omentum is grasped in the same way. After these forceps have been applied a section is made of the duodenum between the first two pair of forceps which are left in place. If the malignant growth is confined to the tissues of the stomach the operation can be accomplished with great facility. A point to be borne in mind is, that the gastrohepatic omentum is to be removed. Therefore, we place successive pairs of forceps up to a point beyond the distribution of the lymphatics which communicate with the pyloric end of the stomach. There can be no hemorrhage because the blood supply comes from vessels caught by these forceps.

In doing this operation we must be careful not to injure the pancreas or to go too close to the transverse colon. If we bear these points in mind we can accomplish the operation safely in a short time. The pyloric end of the duodenum can be closed best by placing a simple purse-string suture about the duodenum. There can be no hemorrhage because this suture compresses all of the vessels. Then you take the lowest point you can select in the remaining portion of the stomach and attach it to the jejunum, leaving a sufficient portion free beyond the point at which the duodenum crosses the mesocolon to prevent all tension.

I think that with early operation and with these steps in view we should in the future have, not 5 or 10 per cent., but a very large proportion of permanent cures.

No Damages to Eddyites.—The interesting situation is reported from Des Moines, Ia., of an Eddyite suing for damages inflicted by falling into an unprotected hole. The *Chicago Clinic* says that the Solomon who presided over the case brought the litigant to testify that there is no disease, pain or ache. He instructed the jury that the defendant could not be held for negligence in the production of things that, according to the testimony of the plaintiff, did not and could not exist. The jury decided against the Eddyite.