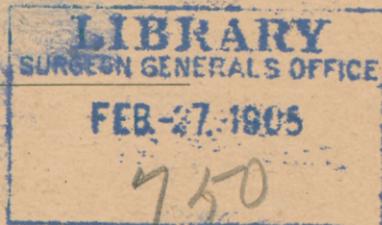


MURPHY (J. B.)

SURGICAL CLINIC AND DEMONSTRATION.

BY J. B. MURPHY, M. D.  
CHICAGO.

Given before the members of the National Association of Railway  
Surgeons, May 4, 1895, at Cook County Hospital, Chicago.



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## SURGICAL CLINIC AND DEMONSTRATION

BY J. B. MURPHY, M. D.

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Before taking up the operative treatment of the lesions of the gall tracts produced by gall stones, let us first consider, under what conditions and in what positions in the gall tracts, gall stones produce symptoms or physical signs of disease. The three positions are: first, within the gall bladder itself, as shown in Figure 1, a; second, in the cystic duct; and

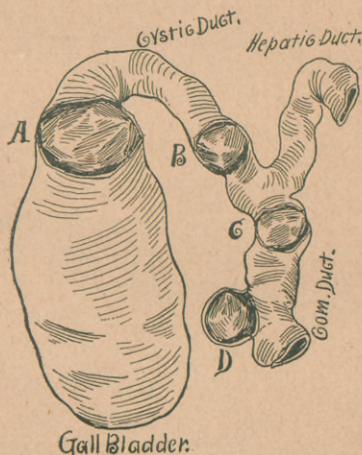
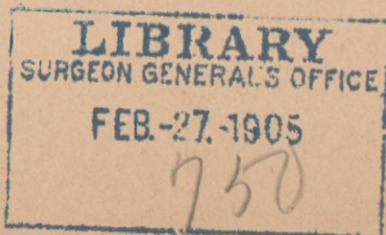


Fig. 1

third, in the common duct. Gall stones are always primarily formed either in the gall bladder or cystic duct, and never in the hepatic nor common ducts. The pathologic changes produced by gall stones in the gall bladder are: first, a catarrhal condition from the traumatism or irritation from the gall stones on the mucous membrane. This produces a gradual thickening of the wall of the gall bladder and a subsequent contraction. Second, auto-infection of the gall bladder with a purulent secretion. The symptoms presented in a given case depend upon the degree and virulence of the infection.



In mild cases we have only a sense of weight and tenderness over the region of the gall bladder just beneath the ninth costal cartilage. The patient is indisposed, may have nausea, rarely vomiting. The pain is not excessive in these cases. There is always some elevation of temperature, from  $99^{\circ}$  to  $100^{\circ}$ . In these mild cases there is no cystitis nor peritonitis, and therefore no adhesions from infection.

In the more severe cases the patient complains of great tenderness over the region of the gall bladder, is tympanitic, has pain on deep inspiration, nausea and vomiting, the tongue is dry and coated, the temperature is elevated from,  $100^{\circ}$  to  $102^{\circ}$  and the pulse increased in frequency, there is an anxious expression, no jaundice, nor is there any increase of bile in the urine, there is a pericystitis and an adhesive peritonitis. If the infection be virulent, there may be a gangrene of the gall bladder with perforation. This I have observed in three cases. The rule is that there is an active adhesive peritonitis, and the gall bladder is prevented from perforating into the general peritoneal cavity, by the adherent intestines. It can thus be seen that the attacks may vary greatly in severity, but they all have the common characteristics of local pain and tenderness in the region of the gall bladder, elevation of temperature, even if it is not more than a degree, which is the rule rather than the exception, and frequently nausea and vomiting. The one disease from which it is most difficult to differentiate acute septic cholecystitis is appendicitis; still, the latter disease is usually the more acute, the temperature is usually higher, the tenderness is more pronounced and general, and the induration is lower as a rule. In very obese patients it is impossible to make a differential diagnosis. Still, as both are conditions demanding operation, the patient is not additionally jeopardized by mistaking one for the other. After each of the attacks of cholecystitis the gall bladder has deposited in it additional connective tissue, and this is followed by contraction. For this reason we find in cases of cholelithiasis, with obstruction either of the cystic or common duct, that the gall bladder is contracted in upwards of 80 per cent. of the cases. This is an important physical sign in differentiating between organic ob-

struction and gall stone obstruction. The second place in the tract in which gall stones produce symptoms, and the one in which they most frequently cause trouble, is in the cystic duct—Fig. 1, b. In this position the symptoms are always produced by the obstruction, their duration and severity depending upon the length of time the stone is impacted, or the presence or absence of sepsis, whether it passes out

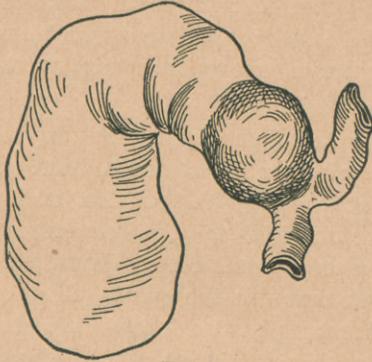


Fig. 2.

through the cystic duct into the common duct, or whether, after having been impacted for a length of time, the gall bladder at its neck becomes sufficiently dilated to allow the stone to drop back into the gall bladder without having passed through the cystic duct. Figure 2, represents the changes produced in the gall bladder by repeated attacks of obstruction of the cystic duct with gall stones. It will be noted that in figure 1 the cystic duct is long and the gall bladder short; after each attack the gall bladder appropriates a portion of the cystic duct, shortening the former and lengthening the latter, until finally the cystic duct is enlarged to the size of gall bladder down to the junction of the hepatic duct. Unless the stone encroaches on the caliber of the common duct, as shown in fig. 2, jaundice is not present. When this dilatation has been progressing for years, the patient will have complained of repeated paroxysms of pain in the right epigastric region always accompanied by nausea, frequently by vomiting, always accompanied by tenderness beneath the ninth costal cartilage, never accompanied by temperature except when a secondary infection has taken

place. If the impaction in the cystic duct be prolonged, the gall bladder will be enlarged and may extend down as far as Poupart's ligament on the right side. If an enlarged gall bladder of this kind be carefully palpated, the adherent lower margin of the liver can be detected at its neck. There is usually great disturbance in digestion, and many of these patients carry a diet list in their pockets, believing their symptoms to be due to "gastric catarrh," and the attacks of pain which they have every few weeks they designate as "gastralgia."

The third place in the gall tract in which gall stones produce symptoms is in the common duct. Here the symptoms are produced also by obstruction and retention, and it is only in obstruction to the common duct that we have gall stones producing jaundice. When the stone has passed through the cystic duct and entered the common duct, it may pass on into the duodenum in a very short time and with very little pain. When it is large the pain is proportionately more severe and the duration longer. It is not an uncommon occurrence to have the stone arrested in any position in the common duct when a diverticulum is formed, as shown in fig. 1 d, more frequently in the ampulla of Vater and retained there for months, during all of which time the patient is jaundiced. In many of the cases there is a fever of "intermittent" type, accompanied by the regular rigor and sweat; the temperature often reaches  $105^{\circ}$ . These symptoms occur at irregular intervals, and must not be attributed to ague. When the calculus is impacted in either the cystic or common duct, it occasionally causes a perforation, and a septic peritonitis is produced. When gall stones retained in the common duct are accompanied by a septic fever, there is great danger to the life of the patient; first, from cholemia; second, from sapræmia, and third, from secondary abscesses of the liver, making it imperative on the part of the doctor to give immediate relief, or the life of the patient will be jeopardized.

With this brief review on the pathologic conditions, we will consider the operative procedures themselves. In the first variety where there has existed a chronic catarrhal or mild infected cholecystitis for many years, we will find not in-

frequently that after this inflammation has occurred, the bladder has if possible contracted down until there is but a small protuberance left at its junction with the hepatic duct. When this pathologic condition is encountered, what is the indication? There is but one, and that is, the removal of the small gall bladder. If, on the other hand, we have an enlarged suppurating gall bladder, or if we have a cystic condition of the gall bladder duct with the patulous, we may draw the gall bladder up to the incision in the parietal peritoneum, suture it there, and perform either a primary cholecystostomy, or a secondary operation two or three days later. If the gall bladder be attenuated, as is sometimes the case, it would be difficult to put in a row of sutures without getting the needle occasionally entirely through the wall of the gall bladder, thus producing a leakage. I have suggested and practiced the following plan for overcoming this danger. I draw the fundus of the gall bladder out through the incision onto the surface of the abdomen, as shown in fig. "3," and secure it

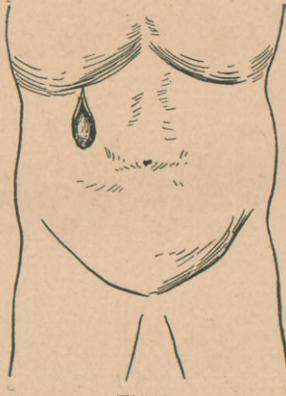


Fig. 3

in this position by packing with iodoform gauze. The dislocation is readily accomplished by passing the finger down around the gall bladder and drawing it out into the opening. We then have the gall bladder protruding through the incision, and resting upon the surface of the abdomen where it may protrude from one, to five inches beyond the surface. At the end of four or five days we can make an incision into the gall bladder and drain it. It may

be asked, what will become of the large mass of gall bladder that is protruding above the abdominal wall? It will rapidly contract into the bottom of the opening. Why does it enlarge? It enlarges because there is more or less obstruction to the cystic duct. If that obstruction be free from catarrh, we have an enlargement of the gall bladder, unless it be counteracted by compensating hypertrophy. As soon as we can make an incision into the gall bladder, the tension is taken off and then commences contraction—not immediate contraction, but a more firm and positive contraction of the cicatricial tissue in its wall. We will find two days after we have made an incision in the gall bladder that contraction has commenced. In two weeks it will have receded below the level of the wall of the abdomen, and in four weeks it will have drawn itself entirely into the incision. If we have accomplished good drainage, we can render the gall bladder aseptic. If occlusion of the cystic duct is present, we have to provide for the permanent mucus secretion of the gall bladder or if it were a case of permanent occlusion of the cystic duct, and we were to perform this operation, the gall bladder would contract below the surface; still, there might be a permanent fistula remaining. There must be a constant outlet of the mucus that is secreted from the mucous surface of the gall bladder, which is larger than the secretion of mucus would be in the healthy condition. Therefore in treating a case of this class by drainage externally we would have a permanent fistula, which condition could only be overcome by active interference, the complete removal of the gall bladder down to the point of obstruction, or by drainage into the intestine. If the gall bladder be so adherent that it cannot be removed from its surroundings without considerable laceration, then we have no choice in the matter; we have to make a permanent drainage into the intestine. i. e., we have to perform a cholecystenterostomy, which we may do immediately or in a second operation. In doing this operation we may perform it with suture, or with the anastomosis button devised for that purpose. In performing the operation with the suture, we have the danger of non-union that has been so frequently mentioned in the history of this operation. In performing the operation with the button, we have to con-

tend with; first, the alleged danger of non-union; second, the possibilities of obstruction occurring in the intestine from the button; third, the infection of the gall tract; not one of which have occurred in a single case of the large number operated. The danger of non-union with this device is less than that with the suture, because we have a perfect contact of the entire circumference. If, however, in this operation, or in the operation with suture, we have a pus infection at the position of approximation, we will have the same result that we have in the presence of infection in other parts of the body; i. e., an absence of union, the result of infection. If the tissues have been perfectly approximated and ordinary care has been used, the danger of infection is very slight, as it is one of the safest positions in the abdomen for an operation.

In this case of cholelithiasis, what operation is indicated? This patient is suffering from recurrent cholecystitis without obstruction to the duct, i. e., without continued obstruction. If we find here that we can remove the calculus through a large gall bladder that can be brought to the external opening, we have no indication for making another communication between the gall bladder and intestine. The canal is not occluded. On the other hand, if we have a contracted gall bladder, a gall bladder which we cannot bring to the surface, then we may be compelled, in order to relieve the patient, and drain it properly, to join it to the intestine. If we cut in here and find the gall bladder surrounded by adhesions, and are compelled to tear off the peritoneum of the gall bladder or of the intestine, in order to expose the gall bladder, we have a condition contra-indicating the use of the anastomosis button. For there is danger in approximating these surfaces as after having removed the tissue on which we depend for primary union, i. e., the peritoneum. The indication then would be deep drainage, which may be performed with the drainage-tube button, which we have here. Fig. 4. We may find in this case a very much contracted and adherent gall bladder, as the patient has had frequent attacks of cholecystitis, in which condition her life would be greatly jeopardized by performing any operation whatever. We will

make an exploratory incision, and if this condition exists, we will close the abdomen. Until the incision is made there can be no definite procedure determined upon, as the operator must use his judgment to overcome the pathologic conditions found within; from without, we cannot ascertain the size of the gall bladder, nor the extent and nature of the adhesions. If the adhesions be extensive, particularly where we have jaundice, we are not justified in lacerating them, as we know that patients with cholemia are very prone to hemorrhage, bleeding profusely from slight lacerations, which will continue for days after the operation has been performed. Concerning the operation with the button, I desire to call attention to a few points.

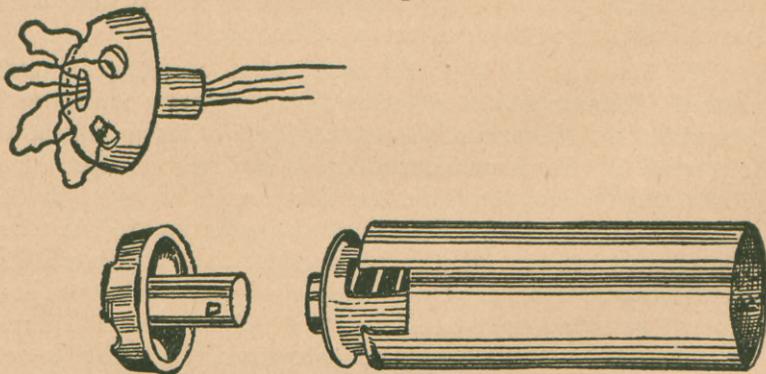


Fig. 4

Remember that the object of the operation is to unite the duodenum to the gall bladder; it is therefore necessary to be able to bring into the field for work two tissues, that of the gall bladder and that of the duodenum. As soon as we have opened the peritoneal cavity, the first thing to determine is, can we bring the gall bladder to the intestine? The next thing is, can the intestine be brought into the field of operation? Never begin with the suturing until you have decided these two points. As soon as these are settled, then you decide on the position in which you place your sutures, and first insert a running thread into the intestine without opening it. Next, insert the suture into the gall bladder; incise it; place either half of the button in position and have your assistant control it. Then bring up the duodenum into the opening, make an incision between the lines of sutures

and place the other half of the button in position. Then the assistant draws the cylinders into close apposition with the forceps and before the forceps are removed the cylinders must touch each other and be in position to slip together, the operator must then take a firm hold of both halves of the button and must feel, before the clasp is taken off, that he has the button sufficiently under control to press it home. He should never take off the forceps until he is sure, particularly where the gall bladder is contracted, as there is a tendency to draw back into the abdomen, and unless he is careful, after the forceps are removed from the button, the gall bladder may slip from his grasp, and he may have some difficulty in fastening it and bringing it around in position.

I spoke of the dangers of non-union. I mentioned to you also the danger of obstruction by the button. I would say that, so far, there has not been reported to me an authentic case in which I can find the details of a single obstruction produced by the button after it had been liberated from the position in which it was placed by the operator. There have been cases in which the button has not been found, but in not a single case has there been symptoms of obstruction produced by the button itself, that is, an intestinal obstruction.

#### EXPLORATORY OPERATION.

I can just feel the edge of the liver below the margin of the rib and that is all that can be outlined. This is the first time I have examined the patient, the diagnosis being based entirely upon the history. The line of incision will be from the ninth costal cartilage along the edge of the rectus for a distance of three and a half inches. As a result of repeated attacks of cholecystitis there is contraction and adhesion of the gall bladder. We have here a gall bladder that is greatly contracted, and I can just reach the end of it with the tip of my finger, three or three and a-half inches below the surface of the abdomen, firmly adherent to the liver, surrounded by a dense exudate joining it to the duodenum. We have here a condition that contra-indicates any operative interference as long as the patient has no permanent obstruction of the duct, and as long as her life is not materially endangered by the pathologic conditions present.

An operation for the removal of the gall bladder is not justified, because it would jeopardize her life. There is nothing left to do but close up the abdomen. The gall bladder will continue to contract until the calculi are either expelled or become encysted in its cicatricial wall. I will ask the house surgeon, Dr. Skinner, to close up the abdomen, and will have a cadaver brought in here on which I will do a cholecystenterostomy and other operations with the button.

In every operation for approximation of the viscera, certain conditions are necessary for success. First, we must have a permanent and accurate apposition of surfaces. Second, we must have this apposition maintained for a sufficient length of time to have adhesion produced. Third, the adhesion must be maintained for a sufficient length of time to have a definite union take place. Fourth, if the operation be on the intestinal tract, we must have an opening sufficiently large for the immediate passage of the contents of the canal. Fifth, we must have an opening that will remain patulous as long as the patient lives. Sixth, the operation should be performed in the shortest time possible. When we have accomplished all of these, we will have fulfilled all of the indications for visceral approximation. In intestinal obstruction—we will take gangrenous hernia, for example—we must remove at the time of the operation the necrotic portion of the intestine; we must unite the living portions and produce a perfect apposition. We must have this apposition kept up sufficiently long for adhesions to form and for organic union to take place.

Contraction was one of the first and most forcible arguments brought against the button, but this objection has been entirely over-ruled, and clinical observations now support the theoretical position taken by me in my first publication of this method, i. e., post-mortem examinations and examinations of cases where the approximation has persisted for a long period of time, show that the opening in intestinal approximations does not contract, but on the contrary enlarges.

In the operation of cholecystenterostomy, will the opening continue to remain as large as that made by the button? No; it will contract, or may even close. If the occluded

duct be opened subsequently and the bile allowed to pass, i. e., if the artificial opening is not used by nature, it will contract. It will diminish from a peculiar contraction—not a contraction in the scar but from a contraction of the entire gall bladder. In this operation a line of union has been formed after which there is an opening one-half inch or more in diameter. If this were to remain patulous, the contents of the intestine would pass into the gall bladder and might possibly be a source of danger to the patient. As soon as the tension on the gall bladder is removed, it will contract until after a few months nothing but a duct or sinus remains. If the freedom of the passage of the common duct were re-established, or, in the cystic duct occlusion, if the freedom of the duct were re-established, we might finally have a complete occlusion of the artificial opening; then there would be a gradual dilation of the gall bladder and a re-establishment of the natural conditions.

If contraction occurs in cholecystenterostomy, will it not occur in intestinal approximation? No; here contraction does not occur on account of the cicatricial deposit at the line of union. We have here a drawing representing the gall bladder and the wall of the intestine. How does the line of union take place? How is that union formed? By a pressure atrophy process producing an edge to edge union of the wall of the gall bladder to the wall of the intestine. What happens when pressure atrophy of the walls of an approximated surface is produced? I will make a drawing of an intestine united end-to-end with the button. When the button is placed in position you can see that there is a constant pressure on the tissues between the margins. We would have a lateral apposition if the intestine were cut off at once, but in pressure atrophy it is not cut off at once. The first tissue to give way under pressure is the peritoneum. It is the most vascular, and therefore the most rapid to slough and regenerate. As soon as it gives way, we have a union of the peritoneum edge-to-edge, as shown in microscopic examination. The muscular coat gives way next; this unites with the muscle on the opposite side. Finally the tunica propria gives way and unites with the tunica propria on the opposite side. Direct edge-to-edge union of similar histo-

logical tissues takes place, then we have a regeneration of the normal tissue across the line of union. This is a well-established histological law. The distance over which it will regenerate varies with the tissues. Here the ends of the different tissues are separated but a very slight distance from each other. After the sloughing process is complete, we find here this condition: that there is a union of similar kinds of tissues; that there is a regeneration, normal tissue filling up the space. *When this is the case, there is no connective tissue formation, and therefore no contraction can result.*

We have had cases where specimens were obtained six, eight or nine months after the operation, and in each and every case the opening found was larger than the button used in the operation. This was particularly true of lateral approximation, and completely explodes the oft-repeated statement that the opening made with the button is not sufficiently large for lateral approximation. How does this occur? From the fact that when we put in the suture, we draw in more of the tissues than would be represented by the circumference of the button. As soon as the sloughing process is complete, it retracts and leaves a larger opening than at first. We at first considered it necessary to use as large a button as possible in this approximation, because we were afraid contraction would take place; still, my theory was that it would not, and that theory has been supported by results.

It is necessary that pressure atrophy should take place slowly, because if it takes place too rapidly, the union may not form sufficiently strong to retain the ends in apposition, and a leakage might occur. For this reason the button is constructed in a certain way. The edges of all the buttons are round; the surface is smooth and round. When I put down this pressure cup, we have again a surface that is smooth and round.

Here is an improperly constructed button put on the market by an Eastern firm, which I am certain no one but an operator of extraordinary skill could insert, and this very fact has saved me from many unhappy reports. The spring cup should be put around the male portion of the cylinder; his is the long cylinder that passes through beyond the sur-

face 1-16 of an inch to the opposite side. That 1-16 of an inch is taken up by tissues, that gives space to tie the tissues above the cup. No man can draw the wall of any viscus around the cylinder if the spring cup is put on the female portion of the cylinder. That is the redeeming part of it, because it makes it next to impossible to insert this improperly constructed button. It is an imitation button. Notice that the outer edge is the highest point of the surface; that means when pressure atrophy is taking place, the greatest pressure takes place at the outer edge of the button, and the tissue is not brought in apposition. When such a button is inserted, there is danger of leakage at the edge. I have requested the Eastern firm to call in all the buttons of this make, and I entreat you to be very careful to see that the buttons you obtain are properly made. Not only is the edge of the spring cup sharp, but the edge of the surface with which it comes in apposition, in this defective button, is sharp. The firm is now making a perfect button.

#### CHOLECYSTENTEROSTOMY DEMONSTRATION ON CADAVER.

I make the same incision that I made on the patient. Right under the ninth costal cartilage is the gall bladder. When it is not contracted it comes right into the field of operation. The next thing to determine is where is the duodenum. Slide the hand over the stomach. After securing the stomach pass down onto the duodenum. The first thing to do is to insert the puckering suture into the duodenum. In inserting the needle, always insert it from you, not towards you; otherwise, when you tie your suture, you have the knot over on the opposite side of the forceps and button and cannot see what you are doing. I have taken two stitches into the intestine, both with one insertion of the needle. I pass back, keeping one-fourth of an inch from the first sutures and parallel to them, including about the same portion of the tissue. I now insert the button. You notice the opening stretches about half an inch when grasped with the forceps. Always make the opening smaller than the button.

Is the bile septic? Healthy bile is not septic. Where we have suppuration of the gall bladder or a gangrene of the mucous membrane, we have a septic secretion which we

must be careful to protect the abdominal cavity against by packing the abdominal opening with gauze at the time of inserting the sutures. As soon as you have opened the gall bladder, and the bile has passed away, remove the packing and prepare for insertion of the button. I have to assist me in retaining the gall bladder in the field my special forceps for taking hold of its neck. (Fig 5.) By means of this forceps I

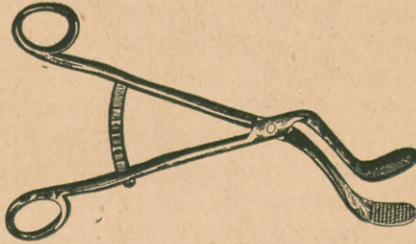


Fig. 5

can hold the gall bladder without any interference with my work. A straight forceps would be in the way. Pass the needle down a little to the side of the fundus in this manner. Use a round, curved needle, armed with as heavy a silk suture as possible; this will prevent the bile from escaping through the opening made by the needle, while performing the operation. Here I hold a loop of the suture to prevent it from being cut when making the incision between the two rows of sutures. There are only two stitches taken each way (Fig. 6). Now we are ready for the incision and insertion of the button into the gall bladder. What portion of the button shall we insert into the gall bladder? It is a matter of indifference; I make it a rule to insert the male portion of the button which has the spring cup into the thinnest viscus as well as the one which I can bring most readily into the field. With the gall bladder in this position, in this case, I will put the forceps on the female portion and insert that into the gall bladder.

As soon as I make an incision into the gall bladder, there will be a flow of bile. Before the incision is made the abdomen is protected by gauze sponges on which the bile will escape. Be careful not to cut the suture. Should you do so, put in another puckering string which will only take half a minute.

Have the assistant take hold of one angle of the opening with the tissue forceps. You take hold of the other in



Fig. 6

same manner. In inserting the button, turn it on its edge and then rotate it slightly. If the opening is not large enough, keep stretching it until the button slips in, as it is always best to have it a snug fit. Pass the forceps to the assistant, who is careful not to let go while you are tying the suture. The suture is then cut off close to the knot. The gall bladder part of the operation is now completed. Now draw up the intestine, and have the assistant hold it while you place the button in position. Have the puckering string inserted the same as in the gall bladder, and separate the suture a little, being careful not to cut it when making the opening into the bowel. The opening into the bowel is now ready. With forceps hold the angles of the wound as in the gall bladder. I want to call your attention to the method of inserting the male portion of the button, i. e., the half with the spring cup. The spring cup should be compressed to a level with the bowl of the button and grasped as shown in fig. 7. A light Bilioth forceps is the best for this purpose. Now I separate the opening and commence the same process of insertion, rotating the button slightly. I now let go of the rim of the button and grasp the cylinder, being careful not to catch the spring, as that would break it. Should you make the opening too long, you

can bring it in by an additional stitch, drawing the opening within the clasp of the button.

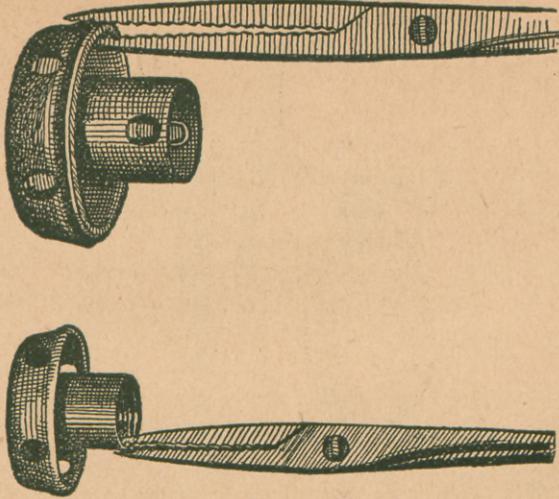


Fig. 7

The next point is that of placing the cylinders in apposition for approximation. The assistant continues to hold on to the forceps until I have a perfect hold. You notice the doctor takes off the forceps after he swings the button around and brings the cylinders in direct apposition. Put them in straight after getting them to face each other. There is ample time. Slowly press the button together and see if there is protrusion of mucous membrane anywhere before completely closing it; if so, press it into the button. Press the button firmly together. You see here there is not the slightest traction. The serous surface of the gall bladder rests directly on the serous surface of the duodenum. Sponge off the bowel, take off the forceps, and the operation is completed.

#### END-TO-END APPROXIMATION.

The end-to-end approximation is the one you will be called upon to do more frequently than any other operation with the button. You will have cases of strangulated hernia; you will have cases of bullet wounds of the intestine demanding immediate treatment; you will have cases of in-

testinal obstruction requiring re-section. End-to-end approximation for these conditions is the ideal treatment.

Let us suppose we have here ten inches of gangrenous intestine. Take the artery forceps in which you have clasped a double ligature, pass it through the portion of the mesentery which you desire to ligate, i.e., the portion which supplies blood to the necrotic segment. Tie the ligature on each side of the position where the mesentery is to be cut off. Cut the mesentery. The mesentery for ten to twelve inches of intestine can be taken in one ligature. You can then re-sect the bowel after one of two methods—either you can cut off the bowel and insert the puckering string, as shown in fig. 8 control the fæces with

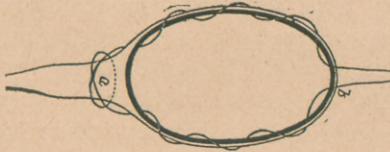


Fig. 8

the assistance of the intestinal compression forceps, fig. 9,



Fig. 9

which are very convenient in this operation, as they dispense with the assistance of two hands, or you can put in the suture first, and subsequently cut off the bowel. I prefer putting in the suture first, because there is no escape of fæces during the time it is being inserted. We will now get ready for its insertion. Pass in a round needle, taking up three or four stitches at once until you come down to the mesentery attachment. Divide the mesentery up to the wall of the bowel. Here is a double layer of peritoneum on either side of the mesentery, making a triangle with the wall of the bowel. Pass the needle through both layers of the mesen-

tery to the opposite side just below the margin of the bowel and draw it out. Here is a triangle not covered with peritoneum. Pass the needle back through the opening in the mesentery, re-insert it again in the same manner, embracing both layers of the peritoneum, and bring it out on the other side. Now notice what happens when I draw this thread tight. In place of having a space not covered with peritoneum it rolls the peritoneum of the mesentery over and makes what is known as a top-stitch. Take three stitches on the opposite side to the position where the suture was started. This completes the suture in one end. The other end is treated in the same manner. We are now ready for making the re-section of the bowel at this point. Press the faeces out of the way, take off the clamps on this portion and make the re-section with scissors, being careful not to cut the puckering string. Insert half of the button. The other end is cut off in a similar manner and the other half of the button inserted. Bring the cylinders in apposition and prepare to close them. If the mucous membrane protrudes considerably, trim it off with the scissors; gradually press the button together, pressing in the mucous membrane all the way around if necessary with the point of the scissors before the button is completely closed. Close the button firmly so that there is an apposition of serous surfaces over the entire circumference; the approximated surfaces may be scarified with the point of the needle to advantage, as it hastens union. Close the opening in the mesentery with one stitch. If the tissues have been materially soiled during the operation it is well to put a gauze drain on either side of the bowel at the position of approximation. This must be allowed to remain at least eight days. I do not irrigate the abdomen; as I believe it does more harm than good.

#### LATERAL APPROXIMATION.

I will now make a lateral approximation and it does not need description, as the technique is exactly the same as that of cholecystenterostomy, except that two portions of bowel are used instead of gall bladder and bowel. The lateral approximation is, of all operations with the button, the easiest to perform. The objections raised to it, that the opening was not sufficiently large and would contract are

completely overthrown by clinical experience, as post-mortem examinations and post-operative examinations both show that the opening enlarges in place of contracting, disposing of one of the "orthodox" precepts of lateral approximations. End to side approximation of either the large or small intestine is easily performed. The suture is inserted in the end of the bowel the same as for end-to-end approximation and in the side of the intestine the same as for lateral approximation and the button is pressed together. The end-to-end of the large intestine is easily performed with button No. 3 and button No. 4, with an elongated cylinder, is used for re-sections of the rectum with end-to-end approximation. Dr. Bacon uses size No. 3 for his lateral approximation of the rectum.

The mechanics have finally succeeded in making the buttons of aluminum, and I prefer them, as in some cases they may be used to advantage.

When the button is not voided by the fifteenth day, digital examination of the rectum should be made, as it may be retained just inside of the sphincter.

Gentlemen, I thank you for your attention.

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## MURPHY'S BUTTON.

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For a century and more surgery has been busy with means for uniting peritoneal surfaces, and especially for suturing the hollow viscera. Even in the days when abdominal surgery was "without form and void" there was a constant, restless activity in the matter of intestinal sutures; and the monotony of repeated failure was occasionally disturbed by some revolutionary method which was to bring fortune at last.

It was as long ago as 1780 that Ramdohr first successfully united the human bowel by suture after complete division. It was in 1812 that Benjamin Travers published the results of his acute and masterly "Enquiry into the Processes of Nature in Repairing Injuries of the Intestine." Since these times surgical literature has been oppressed by countless methods of uniting bowel, and by an interminable variety of intestinal stitch. These show that imagery and fatuous invention are not necessarily foreign to the surgical mind.

Many of the published methods are ingenious; the majority are bad; a large proportion are merely curious. At the present day the simple suture of Lembert remains as almost the sole desirable survivor.

With the development of abdominal surgery the need of means for the secure and speedy union of hollow viscera became more pressing. Suturing was found to be slow and tedious, and liable to failure. A large proportion of the patients in need of these forms of abdominal operation were not able to stand extended procedures. Attention was of necessity directed to mechanical means of simplifying the suture or of supplanting it. In the search of such means surgical invention has run riot; and the hybrid products of that invention can scarcely be exceeded for variety and strangeness.

First there came cylinders made of the trachea of an animal, or of oiled cardboard, or of decalcified bone, or of dried gut. With these have to be ranked divers plugs made of dough, tallow, or isinglass. The bone plates of Dr. Senn

appeared to offer a partial solution of the problem; but they did not meet the actual need, nor stem the torrent of invention. The bewildered surgical world has had presented to it discs of turnip, plates of wood, rings of catgut, bobbins of nearly every known material, clamps without stint, and other apparatus which may be conveniently classed as miscellaneous. Each machine was brought forward as the last effort in the direction of human perfection, and to each was attached the certifying label of a successful case. None of these appliances, however, satisfied the practical surgeon.

Among the later productions was a brazen "button" of strange appearance, invented by Dr. Murphy, of Chicago. Of all the appliances brought before the notice of an eager but confused profession, this appeared to be one of the most improbable. It sought to effect an opening between one hollow viscus and another by producing gangrene from pressure. The whole spirit of the machine seemed to be directly opposed to those principles which had become articles of the surgeon's creed. No approximating sutures were used; and, indeed, no orthodox ceremonial was observed. As time passed by, it became evident that this strange-looking instrument was not to be condemned because it was unorthodox, and that there was method in its apparent madness. Although Murphy's button may be merely the first step towards the operation of perfection, it has been already shown that better results have been obtained with it than with any other appliance employed up to the present time.

The two points of greatest value about the button are these: it is very readily applied and its application involves the expenditure of but a few minutes. The one point against it is this: that it may occasionally be retained in the upper of the two viscera between which a communication has been established. The cicatrix produced by the button does not contract. The appliance is admirably adapted for effecting union after resection of intestine. Not a single case has been recorded in which the button caused obstruction; nor has the sloughing produced by the button been found to extend.

Dr. Murphy, in a recent paper (*Lancet*, April 27, 1895),

gives an analysis of the reported cases treated by the button up to the present time.

It will be said that all successful cases are published, but that a like publicity is not accorded to all unsuccessful cases. This objection, however, applies to most abdominal operations, and has had to be overruled or ignored in estimating the risks of all recently introduced measures.

As the record stands, no procedure yet made known has been attended with so great a degree of success as has the measure now under discussion.

Gastro-enterostomy for malignant disease shows twenty-seven cases, with nine deaths. Four of the patients died of exhaustion, two from imperfect operation, and three from peritonitis due to infection at the time of the operation. Five deaths, therefore, out of the nine were due to preventable causes.

In the performance of cholecystenterostomy the button has been pre-eminently successful. Dr. Murphy's list deals with thirty-eight cases, with only one death. No other single method has shown such results.

It is, however, in the carrying out of intestinal approximation that the button has been of the greatest value, because the conditions dealt with by that measure have up to the present been among the least satisfactory in surgery.

The recorded examples include twelve cases of resection of gangrenous bowel in hernia, with two deaths; fourteen cases of resection in intestinal obstruction, with one death; and nine cases of resection for fæcal fistula, with no death.

In all, forty-eight cases of resection for non-malignant conditions are referred to, and of these only three died.

Thirty cases of resection of intestine for malignant disease are given, with seven deaths.

In all these instances of resection the divided bowel is united end to end by means of the button.

It is evident that much may be expected from the button in excision of the rectum; and possibly in excision of the pylorus, should that measure assume a recognized position among the rational operations of surgery.

I might conclude this paper by detailing three illustrative cases which have recently occurred in my own practice.

CASE 1. *Intestinal anastomosis for cancer of the colon.*—

The patient in this instance was a lady, aged fifty-one, who was under the care of Dr. Jollye, of Larrimore Square. The operation was performed on January 28th, 1895. For some months previous the patient had been the subject of digestive disturbances, and had had increasing difficulty with her bowels.

For nearly four weeks before the operation her symptoms had become very distressing. There was almost constant colic, with distension of the abdomen and sickness, and on several occasions the manifestations were those of actual obstruction.

The patient was losing flesh and strength. The bowels scarcely responded to daily enemata, and aperients were no longer tolerated. The physical signs and symptoms pointed to a stricture low down in the colon of the left side. This was the diagnosis given by Dr. Jollye and myself at a consultation held a week before the operation.

On January 28th, assisted by Dr. Jollye, I opened the abdomen in the median line, and at once discovered an epitheliomatous stricture situated at the point of junction of the descending colon and the sigmoid flexure.

I established an anastomosis between the transverse colon and the sigmoid flexure, using the medium-sized button. The operation did not occupy more than fifteen minutes.

The patient's recovery was rapid and uneventful. The bowels acted on the sixth day, and the button was passed on the eighth day. At the present date (May 14th) Dr. Jollye reports that the patient is "very well indeed." She has gained flesh, and enjoys her food more than she has for years. The epithelioma remains, but the patient has been spared the misery of a colotomy wound.

CASE 2. *Gastro-enterostomy in a case of obstruction of the pylorus.*—A man, aged fifty, was admitted into the London Hospital in January of the present year with symptoms of obstruction at the pylorus.

The gastric symptoms had been prominent for nine months. I operated upon the patient on January 26th. For seven days before the operation the patient had been

troubled with almost incessant vomiting. He was greatly emaciated and very weak, and was in a most unfavorable condition for any operation.

It was at his urgent request that an attempt at relief was made.

On opening the abdomen I discovered a mass of malignant disease occupying the head of the pancreas and blocking up the pyloric end of the duodenum. The stomach and a coil of jejunum were brought into position, and a gastro-enterostomy carried out by means of Murphy's button. The time occupied by the operation, after the two viscera were brought into position, was eight minutes.

The patient was relieved by the operation, but never recovered from the profound state of exhaustion into which he had fallen. He survived two days. A *post-mortem* revealed the button still held securely in position. There was no peritonitis and no effusion at the site of the anastomosis, and the junction was perfectly watertight. It is safe to say that this patient could have survived no operation of any but brief duration. Had a gastro-enterostomy by suturing been attempted, I believe the patient would have died on the operating table.

CASE 3. *Gastro-enterostomy for cancer of the pylorus.*—

The patient, a woman of forty-eight, was admitted into my wards on April 18th. She stated that she had had pain after food for fourteen years. For the last seven years she had had an attack of vomiting about once a week. Lately this vomiting had become very copious. Hæmatemesis had been reported on two occasions—viz., six years ago and four weeks ago. The patient was emaciated, and the stomach was much dilated. She had latterly complained of almost constant pain in the abdomen. I opened the abdomen on April 19th and discovered the pylorus occupied by a carcinomatous mass about the size of a hen's egg. The commencement of the jejunum was brought into position, and a gastro-enterostomy carried out by means of Murphy's button. The operation was of the simplest possible character.

The patient's recovery was rapid and without complication. She has had no vomiting since the operation. On May 10th she was up and eating solid food, and expressed herself as feeling more comfortable than she had for many years.



