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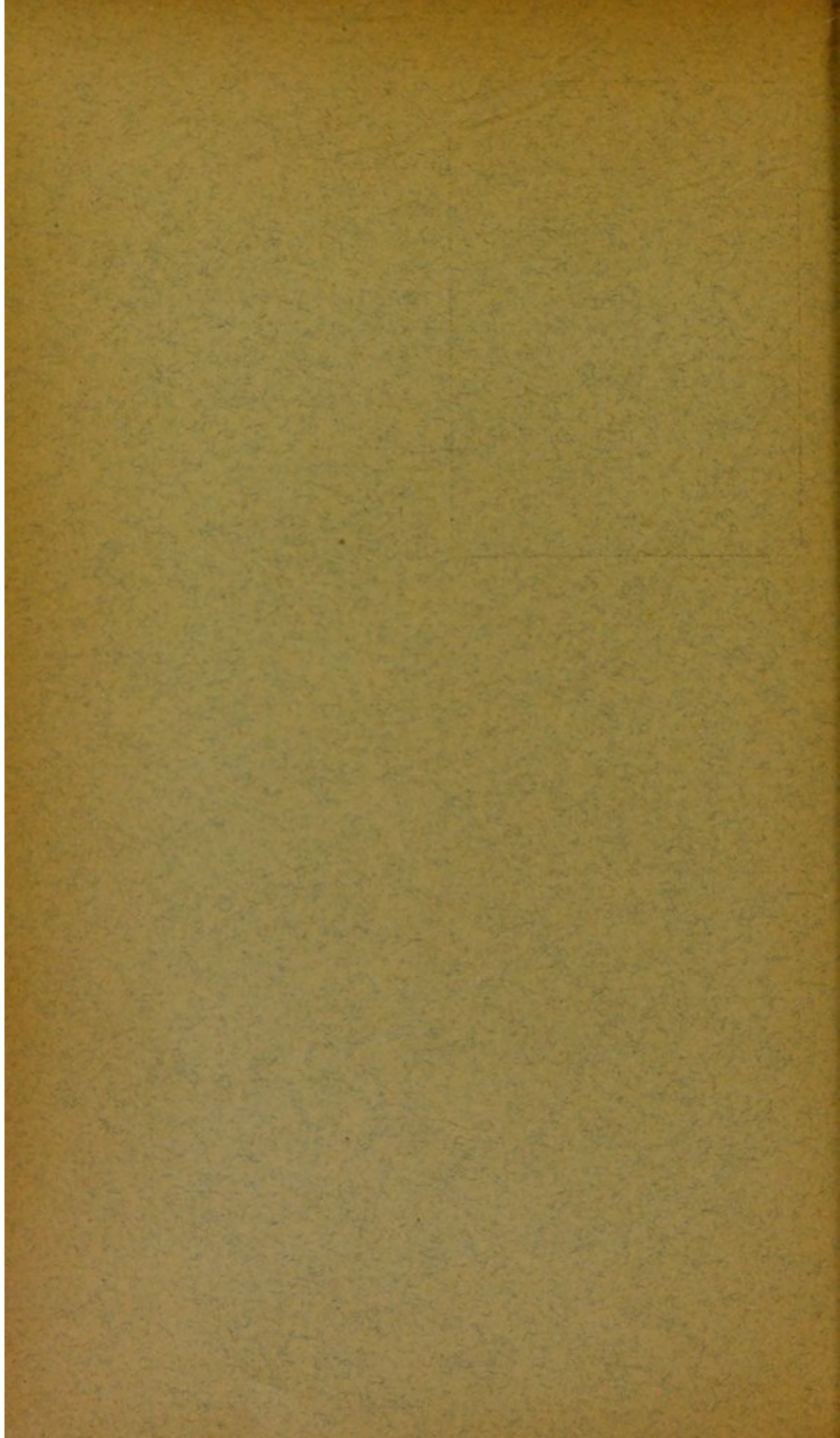
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REPORT OF CASES OF CHOLECYSTOTOMY, WITH SPECIAL REFERENCE TO THE TREATMENT OF CALCULUS LODGING IN THE COMMON DUCT.

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IN presenting this paper as a contribution on the surgery of the gall-ducts, I shall refer somewhat to the surgery of the gall-bladder, yet my chief desire is to get from you a discussion and your views regarding a line of treatment in cases where we find a contracted and perhaps almost obliterated gall-bladder, or where the common cystic or hepatic ducts are entirely closed by lodgment of a calculus, or stenosis from other causes. I take it that most abdominal surgeons are ready to treat, and feel that they are doing quite full justice in treating, a case like the following according to the methods now employed:

CASE I.—Mrs. S. St. O., aged forty, married, native of United States, and by occupation a housewife. Family history good; patient had had all diseases of childhood; first menstruation at fourteen; always regular; married twenty-two years; mother of eleven children; youngest twenty-two months old. First began to feel ill about two years ago. July 12, 1890, patient had a severe pain over region of gall-bladder, and simultaneously a bunch appeared in right side. Pain lasted about four weeks, when she began to improve, but has had repeated attacks at intervals since. Has had sensation of weight in right side since first attack. Appetite poor; continuously jaundiced since about four months ago, which would fade and recur with attacks of colic. In March, 1891, began itching, which was limited to chest. This disappeared for a week, then reappeared on arms, lasting again for a week, and reappeared again in May last, this time being general over every part of body and did not abate.

Physical examination: Fluctuating tumor in the region of the gall-bladder, tender on pressure; pregnancy advanced three months; skin intensely yellow. In view of her constant emaciation, the itching yielding to no treatment, notwithstanding her pregnancy I advised an immediate operation. She was accordingly admitted to the Albany Hospital June 18, 1891, was placed in a private room, and given the usual preparatory treatment for abdominal section.

Operation, June 20th. Vertical incision over gall-bladder, which was stitched to abdominal parietes and opened. Gall-stones, sixty-four in number, removed, varying in size from a hickory-nut to a small pea, and which I here exhibit. Silver probe was passed through the common duct into the

duodenum. Before stitching the gall-bladder in the incision, I examined duct carefully and could not detect any calculus there. Drainage-tube (glass), introduced and packed with iodoform gauze. Abdominal wound closed by silkworm-gut sutures. Bowels moved the third day, normal in color, while before they had been of a whitish appearance. I would say here, that a few days after the operation, and when the stomach seemed to call for it, she was given the best of nourishment. Her weakness, which was quite marked, demanded it, and her good digestion greatly aided her recovery.

Recovery uneventful and uninterrupted. Discharged July 11, 1891, with sinus nearly closed, feeling stronger and looking better than she had for many months. July 25, 1891, she called at my office, saying the sinus had closed a few days after leaving the hospital, that it had remained so for a week, during which time she did not feel so well, that it then began to discharge a whitish secretion, and that she had felt better since. In every other respect she was very much better.

August 14th she came to my office, complaining that the wound had remained closed for a week, and that she did not feel nearly as well in consequence. Dr. Macdonald, my assistant, opened up the wound freely, introduced his fingers into the cavity, and not detecting any foreign substance or hardness placed in a rubber drainage-tube for more permanent drainage. This relieved her very much, but about September 1st she became suddenly jaundiced, which was quite marked on September 6th, when I saw her, and although not suffering any acute pain, yet she has a loss of appetite and feels some of her old symptoms of itching, general weakness, etc. No marked tenderness in the region of the gall-duct. The cavity of the gall-bladder seemed shrunken and the tube forced out occasionally, but drainage has kept up fairly well. She was given a tonic of bicarbonate of soda, taraxacum, and elixir of cinchona, with directions to return again in a week or two for examination.

Undoubtedly this woman suffered from gall-stone colic; that she got her jaundice from obstruction of the duct in consequence of a stone too large to pass is obvious, all of which was relieved by the operation, but there is left, as a result of previous inflammation, a stenosis of the duct.

The operation in such a case is not a difficult one, and beyond a doubt the results are favorable, but is it not true that this very method of operating has deterred us in some instances from pushing ahead and relieving cases where practically no gall-bladder is to be found? In other words, have we not, from fear of peritonitis resulting, and other conditions, been too conservative in attacking our more complicated cases of gall-duct obstruction, such as where we have stenosis, severe adhesions and apparently no gall-bladder present? The intent of this paper is to deal only with those cases where there is an obstruction of the ductus communis choledochus, of the cystic, or of the hepatic ducts from any cause, whatever. The surgery of the biliary bladder and ducts, where the conditions calling for relief lie within the gall-bladder or cystic duct is, as I have said, reasonably well established. Cholecystotomy, with suture of bladder-walls to parietal wound, when the viscus is fairly well developed, is not a serious operation. Primary and secondary opening of the gall-bladder I mention here to emphasize the fact that I believe the latter is always to be condemned for the following reasons:

First: It is necessary always, before the closure of the abdominal wound, that the gall-bladder be opened and emptied, as it is often impossible until then to recognize conditions which will require manipulations not only within the gall-bladder but also within the abdomen.

Second: Prolonged obstruction in the intestinal portion of the common duct may lead to dilatations of it, together with that of the gall-bladder, and the destruction of anatomical outlines. Ideal cholecystotomy, which I have had in mind in leading you on thus far, has doubtless a circumscribed field of application, and is confined to cases where the calculi can be completely removed, and the walls of the gall-bladder and common duct are in a relatively healthy condition, but it is *the* operation. Biliary calculi lying in the common duct, in the hepatic, or at the mouth of the cystic duct, stricture of the ducts from local ulceration (exceedingly rare), or occlusion of them from external causes, as cancer of the pylorus or pancreas, from calculus of the pancreas lying in the last portion of the pancreatic duct, all require treatment for relief beyond either cholecystotomy or cholecystectomy, according to Langenbeck. Let me illustrate a little further:

CASE II.—Mr. J. W., aged fifty-one, English, married, and by occupation a plumber. Habits good, never seriously ill. Two years ago was attacked with a severe pain in right side, under free border of ribs, and extending over region of stomach. At times much jaundiced. Pain occasionally very severe; treated by many physicians and a variety of diagnoses given him. I first saw him in the beginning of December, 1890. He was greatly emaciated and felt very much exhausted constantly. Little appetite; no thirst; bowels somewhat constipated, and stools for the past year have been constantly light in color. Urine scanty, very dark, and on examination contains bile, but no sugar. Is very much troubled all over his body with an intense itching and slight ecchymotic spots. Cannot sleep and is much depressed, although hopeful that an operation of some kind or some form of treatment can be suggested for his relief. On direct examination no tumor can be made out. Liver contracted. Notwithstanding his feeble condition I advised him to submit to abdominal exploration.

Diagnosis: Gall-stone impacted in common duct. He desired a line of treatment first, and that he might consult his family and arrange his business. Accordingly, I placed him upon the most potent tonics. January 12th, 1891, he was admitted to the Albany Hospital, improved in spirits and ready for the operation. He was greatly jaundiced and very anemic. Usual preparatory treatment was given him.

Operation, 11 A. M. January 15th. Usual incision for cholecystotomy. Gall-bladder was found completely contracted, surrounded by adhesions and held under the lower border of the liver. In the common duct, in finding which I was somewhat embarrassed, I found lodged a long, large calculus, which I here exhibit, and which measures in length nearly two inches and in circumference almost an inch. I found that it was impossible to dislodge it forward, or pass it into the duodenum; that to crush it by external force would probably destroy the duct. I could not make use of needles to break it up. Therefore, I was obliged to make an incision through the duct its entire length over the stone, and in this manner remove it. I had placed previously in the wound a flat sponge, and as the duct was opened there escaped upon the sponge a glairy, bile-stained secretion—a teaspoonful or

more. The duct was emptied out, and, as was believed, a probe passed down into the duodenum. I now made an attempt to suture the incision in the common duct, but in consequence of the depth of the wound and the unyielding condition of the parts due to adhesions, I found it to be the most difficult operation possible. Sutures were introduced somewhat after the manner described later.

The operation was a long one, and I was somewhat uncertain as to the thoroughness of the closure. Strips of iodoform gauze were passed down to the bottom of the wound and external incision partially closed. Patient rallied very well from shock. In the evening it was evident there was some escape of bile, as shown by the tampon of iodoform, and the latter was changed. On the morning of the 16th the iodoform was renewed, and then but once after that, as the gauze continued dry, and the parts in excellent, healthy condition. The patient now seemed very hopeful, was hungry, and anxious for food. Milk given him quite freely; stomach in excellent condition. Itching gone; no anodynes required. Had slept well during the night; bowels moved slightly by aid of enema, and then after that two or three times daily; passages at first well formed, later almost fluid, very yellow and offensive. Urine improved in color at once, although scanty. He suffered considerably from flatulence, although there was no distention whatever. No pain on pressure over any part of the abdomen. He slept a good deal of the time, and though he took plenty of food by the stomach, yet owing to his great weakness an attempt was made to feed him twice daily per rectum. This, however, was not very successful. The flatulence was relieved by small doses of carbolic acid. No vomiting at any time. All seemed to be progressing well. Saw him at 9 P.M. the 19th, his pulse was very good, and I felt much encouraged. After midnight he presented symptoms of heart failure; stimulants, digitalis, etc., used, but he died somewhat suddenly 6 A.M. January 20th. No autopsy granted, much to my regret.

CASE III.—Mrs. H. H., aged forty-eight, married, English, housewife by occupation, and mother of several children. For the past two years has suffered a good deal from repeated attacks of biliary colic, and been told her true condition by several physicians who have treated her during the past eighteen months. She has evidently undergone a clear line of medical treatment, but without much benefit. Two years ago she was treated for an acute attack of albuminuria, from which she made a good recovery, but since then has developed her jaundice. Itching, emaciation, pain, and all the symptoms of obstruction of the gall-ducts. Is a lovely woman in disposition, and anxious for an operation or any line of treatment that will afford relief. Says she cannot live on in her present suffering. Her case in many of the symptoms is precisely like Case II. She was admitted to the Albany Hospital, April 20, 1891, for treatment and operation. I desire to say here that all three of these cases had, at my suggestion, first tried large doses of olive oil, but without benefit. After proper preparatory treatment, moving of bowels, etc., and following use of oil with iron and quinine, as well as giving bicarbonate or phosphate of soda and the acid treatments a trial, but without effect except to improve her strength somewhat, the operation was done May 22d. In reviewing the history with the patient a little while before the operation, I learned that about a year previously she had suffered from a well-marked attack of localized peritonitis on the right side.

The usual vertical incision was made and longer than I have generally employed. The gall-bladder, after much searching and the breaking up of many firm adhesions, was found underneath the border of the liver and entirely collapsed. I could not make a successful exposure of the ductus communis owing to the many adhesions. I made a crucial incision of the external wound, used retractors, and by the aid of flat sponges pressed back the viscera, giving a little better view of the surgical landmarks, but the best efforts gave me only the result of feeling what I believed to be a good-sized gall-stone lodged in the intestinal end of the common duct. I made

firm pressure on it with my thumb and finger, and though somewhat uncertain, yet thought I moved it into the duodenum, and that it was partially crushed under my manipulations. Other organs in the neighborhood seemed normal, so far as adhesions would allow of an examination. Wound was closed by interrupted silkworm-gut, no drainage. After the operation and for three days the patient vomited quite freely, at times a decidedly greenish bilious-looking substance. How much this had to do with the further dislodgment of the stone I am not prepared to state. Patient otherwise made an uninterrupted recovery and left the hospital June 7th. Itching was relieved within a few days; stools became normal, something she had not noticed in over a year; urine light in color and appetite more than good. She has gained also in weight.

This case has given me much thought. From the improvement that followed we must have dislodged the stone, but had I not accomplished this, what could have been done? I do not think the case could have been treated by incision, that is in the space allowed: suturing could not have been carried out. Then, again, incising the uncovered duct would have been somewhat dangerous, owing to the close proximity of large vessels that could be observed. A fistulous tract might have been established. Suturing the nearest portion of the small intestine to the cystic end of the common duct might have been a success, and which I would favor in another similar case.

The last two cases illustrate what I wish to bring out: the difficulties of treatment in cases with collapsed gall-bladder and strong, firm adhesions. As in all abdominal work, experience here is of value. It is very necessary the bowels be put in as placid a condition as possible, and that we do not hesitate to make a free external incision, crucial if required, to aid in separating adhesions. Work cautiously, but fearlessly. In view of the many cases of gall-stone obstruction that are known to die either from acute or chronic conditions without operation, we should at present bring our skill to bear in making the operation, when it is performed, as successful as possible in one way or another. Let me state here that I believe it is possible to loosen freely adhesions that have formed in the region of the gall-bladder, and that in all cases of severe traumatism, of whatever nature, we should not hesitate to make free use of the tamponade of iodoform gauze as drainage, or employ the method that has been so clearly recommended by one of our Fellows, Dr. Morris.

In relation to suturing the incisions made into the gall-duct, one of the best papers on the subject is that of Dr. Henry O. Marcy, in his pamphlet, entitled *Relief for Biliary Obstruction*, where the steps for the operation are very clearly defined.

I offer the following notes and abstracts as bearing upon this paper, and for the relief of these conditions:

1. Dislocation of the calculus *en masse* either into the duodenum or into the gall-bladder.

2. Cholelithotripsy, either by crushing through the walls of the duct with padded forceps or fingers, or from within the gall-bladder by means of the needle or fine probe, followed by removal by way of the gall-bladder or intestinal canal.

3. Breaking of the calculi by the introduction of strong needles through the walls of the ducts and subsequent dislodgment of them.

4. Cholecystenterostomy, according to v. Winiwarter, or modifications of it, such as have been suggested by Gaston, of Atlanta, in his elaborate experiments upon dogs.

5. Incision of the gall-ducts and removal of the calculi, with subsequent suture of the incision in the duct.

The application of all these methods, for the treatment of the conditions which we have under consideration, involves the controversion of some notions in surgery which, to my mind, are altogether fallacious. The first, that sutures can never be applied to the gall-bladder and ducts with safety. The first cholecystotomy was followed by suture and recovery, as well as many subsequent ones, notably a series of thirteen by Heusner, elsewhere referred to in this paper. The second notion is that the healthy biliary secretion always, when free in the abdominal cavity, causes peritonitis. This is equally fallacious. The experience of Schuppel, Bostroum, the cases of Paraisse, Sabatier, Thiersch, Heusner, Landerer, and myself are a few of the many demonstrations to the contrary of this dogma. The peritonitis and fatal results of wounds and ruptures of the gall-bladder are not caused by the extravasation of pure bile, but from accompanying injuries, as rupture of the liver, or intestinal canal, and hemorrhage, or from an empyemia of the gall-bladder and the presence of attendant microorganisms.

In order to proceed to a more satisfactory position in the surgery of the gall-ducts we must put these notions behind us, as we have many of the ideas concerning the technique and management of abdominal section. These notions must be placed in experience along with flushing the abdominal cavity with solutions of bichloride of mercury and carbolic acid, treating peritonitis by opium narcosis and the extra-peritoneal treatment of the pedicle in ovariectomy, as well as that other obscure and unthinkable dogma, "When in doubt, drain!"

I believe in a wholesome fear of the peritoneum and of the throwing about our patients every safeguard possible. I should not like to complete an operation, knowing that bile might flow over the intestines in the vicinity of the wound, but I believe that such wounds with proper drainage with glass tubes and iodoform gauze tamponade can be made comparatively safe for the patient—at least much safer than the condition for which the operation was undertaken.

Those cases which present the least difficulties are the ones in which the calculi can be removed *en masse* by pushing them either into the gall-bladder after cholecystotomy (preferable), or into the duodenum. Calculi should not be of large size if introduced into the duodenum, on account of their producing intestinal obstruction later. Fracture or incision and removal from the intestine can be employed. Sprengel (*Verhandlung der Deutschen Gesellschaft für Chirurgie*, 1891) shoved a large calculus into a diverticulum of the dilated duct, supposing it to be the duodenum, without relieving his patient. The danger of tearing the duct across its diameter, as has already occurred, must also be kept in mind, and will necessarily circumscribe its employment. The second procedure, together with the third, may be employed in suitable cases, but the question will always arise between them and the employment of the fifth procedure; that is, incision and removal.

The fourth method of treatment, by establishing a new communication between the biliary ducts and the intestine, must have always a certain utility, especially where it is found that the seat of obstruction (the common duct) is bound down by adhesions, and cannot be made accessible, or perhaps not found at all—the experience of many operators. Then, if a communication is sure between gall-bladder and the liver, a cholecystenterostomy can be performed. Here a modification of Senn's decalcified bone-plates, or the segmented rubber rings, can be employed, and an anastomosis made. By this method I believe the operation will be greatly hastened.

To one doing abdominal work, and especially about to operate upon the gall-bladder or ducts, I would advise a careful perusal of the experiments made by Dr. J. McF. Gaston, of Atlanta, Ga., in a paper entitled, "Experimental Cholecystotomy." (*Atlanta Med. and Surg. Journ.*, 1884.)

In France the operation bearing the name of v. Winiwarter has recently received much attention, and very flattering results have been reported. In pursuing the study of this operation it was of great interest to find the report of an autopsy by Kappeler (*Virchow-Hirsch Jahresberichte*) of a patient dying from other causes, who had fifteen months previously been operated upon according to the operation of v. Winiwarter. The fistula established was about eight feet from the ileo-cecal valve, and over its intestinal orifice had a valve which only permitted the contents of the gall-bladder to pass readily into the intestine, but prohibited the passage of intestinal contents into the gall-bladder. This case is exceedingly interesting, showing that it is not so absolutely necessary to use the duodenum or get so very near the opening of the common duct.

Under the fifth division—that is, incision and suture of the

gall-ducts—we have, I believe, in many cases a method which promises great success, where heretofore such cases have been treated by the establishment of a biliary fistula, which only relieved for a short time. All these patients eventually died; that is, with biliary fistula, apparently not getting entirely well.

It is true that my patient, Case II., died, but there was no peritonitis, and before operation his case was very serious, being already cholemic, with those changes in pulse and heart which accompany this condition. His death may be attributed solely, in my mind, to exhaustion consequent upon this condition prior to the operation. So far as I am able to learn, incision of the common duct has been performed seldom in this country. Marcy refers to it in his last pamphlet. Küster, Kummel, Braun, Rehn, and Heusner, have reported each a case, and Courvoisier three cases.

The technique of the operation, for incision of the common duct, I would refer to as follows:

The usual vertical incision from the tip of the cartilage of the tenth rib is made of sufficient length to permit of free examination. In some cases, for the completion of the operation, it may be necessary to make a transverse incision through the right rectus abdominalis. An incision over the stone in the line of the duct is made. If any considerable fluid is behind it in the duct it had better first be withdrawn by an aspirator, otherwise sponges may be placed so as to protect the surrounding parts, the incision made, and the removal of the stone accomplished. The introduction of the sutures requires great care; a spear-pointed, curved needle, point full, with a round shaft, such as the very finest used for work on the cervix, is most suitable; a good needle-holder, of small pattern, and aseptic sutures of any kind, preferring the iron-dyed, No. 6, is all that is required. The first row of sutures, continuous, are introduced just within the serous coat of the duct, and brought just within the mucous coat, but not involving it; the second series (Lembert) bringing the serous coat into accurate apposition.

The suturing completed, to avoid the extravasation of the fluids, if the stitches should give way, a glass drainage-tube should be introduced (Price's pattern), so that the bottom end rests lightly over the line of the sutures. The tube is then to be surrounded on all sides by iodoform-gauze tampon, the ends of which are left in the abdominal wound. Closing the latter with silkworm-gut sutures ends the operation. One or two silkworm-gut sutures may be introduced and tied in a loop, so that after the removal of the tamponade, after forty-eight hours in favorable cases, they may be tied and the abdominal wound more completely closed.