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INDEX
MEDICUS

THE SURGERY OF

GALL-STONE OBSTRUCTION

BY

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POST-GRADUATE MEDICAL SCHOOL, ETC.

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Reprinted from the MEDICAL RECORD, May 6, 1893

NEW YORK
TROW DIRECTORY, PRINTING AND BOOKBINDING CO.
201-213 EAST TWELFTH STREET
1893

THE SURGERY OF GALL-STONE OBSTRUCTION.¹

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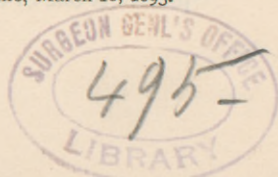
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IT may well be conceded that the management of gall-stone obstruction of the biliary ducts, in the vast majority of cases, is one that interests the practitioner of medicine, and is best left in the hands of the physician rather than the surgeon. It is probable that not one per cent. of patients suffering from gall-stone colic come to a condition that jeopardizes life. The malady is grave often, and tedious. It is complicated by various surgical accidents, ulceration, perforation, septic infection, exhausting fever, profound cholæmia, any and all of which may be ultimately recovered from if we choose to wait. The physician of conservative practice who intelligently watches the wonder-working of nature, stores in his memory scores of cases of gall stone colic where, even after repeated and profound illnesses, the patients have convalesced to perfect and enduring health. We must all acknowledge, however, that when the grave forms of obstruction ensue, our responsibilities in delay increase with each day's demonstration that surgery is prepared to cope with the evil we are watching.

The picture of the parts in trouble that presents itself to the mind of the observer at the onset of an attack is not a uniform one. Diagnosis is by no means simple, less so for the mild cases than for those more pronounced. One sees many forms of gastralgia, dyspepsia, pleurody-

¹ Paper read before the Academy of Medicine, March 16, 1893.



nia, colic from colon distention, and other recurrent discomforts that closely resemble the gall-stone colic when very small stones are passed. The diagnosis rests with an associated group of symptoms, rather than physical signs, to wit: pain and constricted feeling behind the right hypochondrium, rather than in the abdomen, nausea, tenderness to pressure, absence of fever and of intestinal distention. There is very rarely jaundice, and the illness is over in a few hours.

The picture of such cases comprises the obstruction of the ducts by stones only a little larger than the ducts, and which are easily moved on by peristalsis. When we remember that statistics show that one in ten of those who reach middle life are known to have gall-stone, we are the more ready to believe that the larger proportion of cases of brief spasmodic attacks of pain in the anterior hepatic region are due to light gall-stone attacks. Yet we may be deceived by the absence of jaundice and a lull in the acute symptoms into thinking the stone had passed, whereas it has only become permanently lodged in the cystic duct. In this condition a group of cases will be found showing a picture of pretty uniform type. The cystic duct becomes blocked permanently about as often as the common duct. If a stone no larger than a white bean excites inflammation enough in the duct to produce ulceration a cicatricial stenosis ensues which prevents the stone moving either way. Other stones remaining in the gall-bladder beget cholecystitis and a copious inflammatory exudation ensues, with tumor and pain.

The fluid is found, after a while, entirely free from bile, either milky or colorless. It may form a large recognizable tumor, which in time may be absorbed, leaving only an atrophied remnant of gall-bladder encysting the incarcerated stones painlessly. But this is not usually the case. Repeated efforts are made to throw out the foreign bodies and correspondingly persistent pain without jaundice brings the patient to the surgeon. This picture is one of the most common and has yielded many

of the most satisfactory results of the recorded operations. I can best illustrate it by a case from my own books.

A young woman of thirty years came under my care with a history of many attacks during ten years, the intervals ranging from two weeks to three months. The severity of the attack had induced morphine habit. Jaundice had sometimes supervened, but not during recent years. She had become emaciated and discouraged. The gall-bladder region was tender on palpation, but no tumor could be felt, even her corset pressure was painful.

On operation, I found the gall-bladder adherent to the stomach by old adhesions. It was not larger than normal, but on section contained a thin, whitish, mucous fluid, and fifty-three small stones. The presence of fluid devoid of color and chemically of bile also in the gall-bladder is always conclusive proof, as in this case, of the obstruction being confined to the cystic duct. My inability to pass a probe through the duct or to feel a stone in it, on palpation was no proof that there was not a small stone there. The patient made a quick recovery with a permanent mucous fistula, from which bile never came. Six months afterward I reopened the abdomen, dissected away the entire gall-bladder, tied a ligature about its duct and found there a small stone incarcerated between two tight strictures, as if it had been lodged there for years.

The patient made an uninterrupted recovery—abandoned the morphine habit, and for four years has maintained robust health, without the least recurrence of pain.

In another case, reported elsewhere, a young married woman came under my care in a condition of grave hectic and debility with a tumor on the right side below the ribs. This had existed six months, with vague colicky pain at first, but never a frank paroxysm. She had never been jaundiced. The mass was tender, hard, and movable. It had been diagnosed a cancer.

I opened the abdomen and found a dense, malignant looking mass as large as one's fist and universally adherent. On cutting into it, I felt that it was even more certainly, from clinical appearance, a cancer. In its centre

was a small amount of muco-pus, scarcely two drachms. No stone could be felt within it, nor on examining the ducts from the mesenteric side. She made an easy convalescence. The hectic disappeared. In six months a sinus remained through which I removed from the remnant of the gall-bladder a solitary gall-stone, the size of a pecan-nut, which had worked back from the cystic duct toward the easiest outlet. A few months later the entire hyperplastic tumor which so resembled a hard cancer had disappeared.

Catheterism or probing of the cystic duct when it has not been dilated by the passage of stones into the common duct is a matter of impossibility in the majority of cases, hence the return flow of bile through the gall-bladder fistula left after operation is often the only proof we can have of the perviousness of the cystic duct. I speak only of the class of cases where obstruction is in this duct alone, as illustrated above. These constitute a considerable part of those demanding surgical relief.

It is not to be wondered at when we consider the extraordinarily tortuous and convoluted anatomy of the canal. Few who have not made a minute dissection of it can realize that there are scores of overlapping valves in the two inches of its course. Terrier and Dally in their admirable study of the question of possible catheterization of this canal have been unable to report success in more than one case in four.

I show an illustration of a normal duct which I hardened in alcohol after distending with alcohol, thus maintaining the most normal relations of the parts as found in life (Fig. 1).

It seems incomprehensible that a stone should ever escape from the gall-bladder, and one does not cease marvelling when he has found large and small stones in every stage of progress through this minute duct. The distensibility of the canal far exceeds that of the parturient passages. Rokitsansky says that a stone even as large as a hen's egg has been known to traverse the entire canal—and be safely delivered into the bowel.

One might think that the gravest cases of gall-stone disease must fall to the class of cases where obstruction has occurred in the common duct and the flow of bile is entirely dammed back into the liver. This is by no means so! The acuteness of the inflammatory onset may menace life at the first attack when the stones have not left the gall-bladder. I have little doubt that the life of the patient whose case I will now narrate was saved by prompt operation.

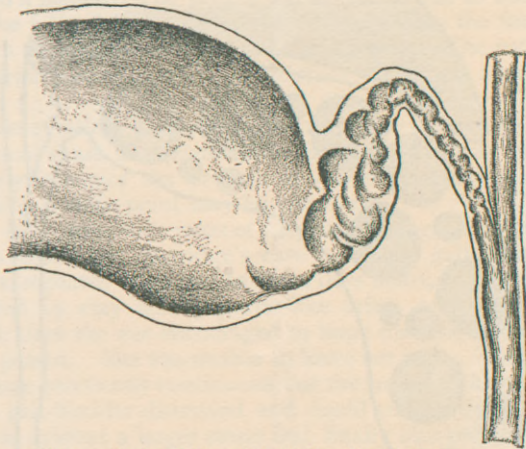


FIG. 1.—Section of Normal Cystic Duct Showing Valves.

Late in the evening of April 26, 1892, I was called to see a lady of about forty by Dr. J. C. Warren. She had never had trouble until two days before when severe colic, vomiting, and purging came on suddenly. For two days the gravity of the symptoms increased and before I saw her had become extremely violent—resisting the quieting action of morphine, freely given by Dr. Warren. When I saw her she was having intense paroxysms of pain, lying with knees drawn up and moving only when forced to vomit. Her condition seemed desperate, her eyes were dark and sunken, pulse poor, and she was evi-

dently approaching collapse. It was impossible to palpate the abdomen, but a full dull area was discerned extending vertically from the liver toward the groin and ending considerably below the navel.

I operated at midnight. The gall-bladder was greatly distended and enlarged downward, resting on the kidney. It was coated with a layer of new lymph, from peritonitis that had already set in, yet her temperature before opera-

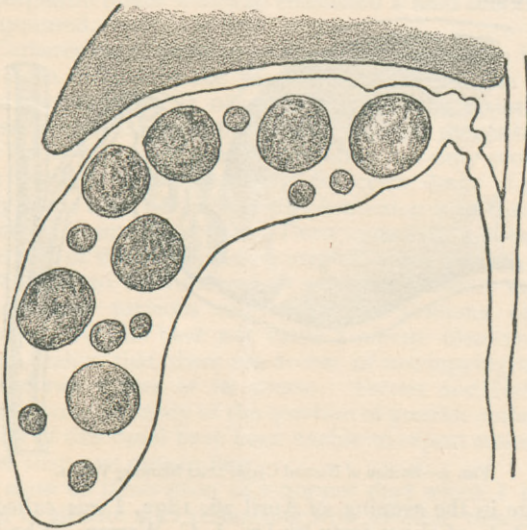


FIG. 2.—Gall-stone Obstruction of Cystic Duct with Acute Distention.

tion was $100\frac{1}{2}^{\circ}$ F. Slipping my fingers into the abdomen I could feel only one stone at the neck of the sac. Protecting the abdomen by thin flat sponges within it, and drawing out the end of the tumor, I incised it, and evacuated a tumbler full of muco-purulent fluid, not bile, though stained with it, and seventeen gall-stones (Fig. 2), eight of them large and remarkably uniform, nine small and also uniform, all spherical, the larger ones three-quarters

of an inch in diameter, the smaller ones one-quarter. One of the largest ones was tightly wedged in the beginning of the cystic duct.

After evacuating the stones, I closed the cut end of the bladder about a syringe and distended the cyst with Thiersch's solution to see whether it could be emptied into the intestine by pressure and thus prove the patulency of the duct. It was impossible to force water through. I therefore sutured the cut end in the wound and established a fistula. The patient's temperature fell to normal on the following day. Bile flowed freely from the fistula, which closed spontaneously in three weeks. The patient has remained in perfect health since then, now nearly a year.

The question of the endurance of the patient to the physical strain of repeated attacks is one that may legitimately influence the surgeon in advising operation. A striking case in point may be cited here.

A lady, sixty-four years of age, had, during four months, been under Dr. Partridge's care for severe gall-stone attacks, repeated from four to seven days apart, each accompanied by clay stools, porter-like urine, and jaundice. Each time she was encouraged to hope that the last stone had passed. She was unable to leave her bed. The pain became practically continuous, but the jaundice cleared up. The gall-bladder distended and could constantly be felt. It was evident a larger stone had finally blocked the cystic duct. On opening the abdomen, the distended viscus could readily be lifted out of the wound. Three good-sized stones were found as shown in Fig. 3. No supuration nor peritonitis had been set up. Two of the stones were tightly wedged in the cystic duct, and were with care worked back into the gall-bladder. The cystic duct was then found permeable to a small bougie which passed into the duodenum. I therefore sewed up the wound in the gall-bladder and, after cleansing, dropped it back into the abdomen.

Recovery was uneventful and she has enjoyed unprecedented health for the two years that have passed.

The grave condition of obstruction of the common duct presents another picture, and one in which the new lines of surgical work have more to do. There is no point of the common duct inaccessible (though it seemed to be until very recently) from which impacted stones have not been removed. It may reasonably be said that, without operation, these cases are almost hopeless.

One must recall that anatomically the common duct is buried in the meshes of the lesser omentum and descends behind the duodenum to which and to the pancreas head

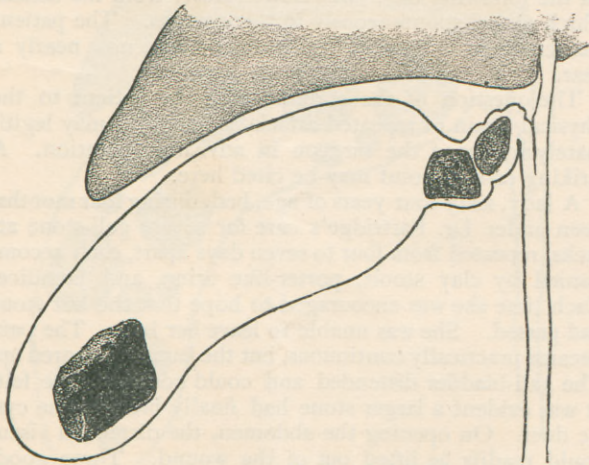


FIG. 3.—Gall-stones Obstructing the Cystic Duct.

it is intimately adherent. Close to it are large veins and beside it the portal itself. Unless distended by a stone it is practically impossible to feel it. When it is distended the duct of the gall-bladder is also apt to be. Such cases are illustrated by Figs. 4 to 6.

Intense cholæmia and its train of constant attendant symptoms makes the diagnosis of obstruction unquestioned. The diagnosis is not always easy, however, between cancerous and gall-stone obstructions.

The main fact, in the absence of tumor, must be the history of paroxysmal pain antedating the usual year or two that would develop a matured cancer. Chronic jaundice without preceding gall-stone colic is most often due to malignancy.



FIG. 4.—Gall-stone Impacted in Common Duct Two and a half Years. Removed by incision of the duct with removal of gall-bladder.

It has been advised by surgical authorities, until very recently, that profound jaundice is in itself a serious drawback to operative work. Accumulated experience now shows that with modern thorough methods the cholæmia is not a drawback to operation.

In the following two cases the most profound jaundice had been constantly present for over two years. In one the blood even had a noticeably slippery feeling from retained bile, yet both made perfect recoveries.

On April 13, 1889, I operated on a lady aged thir-

ty-six, who had gone deeper and deeper in sickness after her first attack of gall-stone colic, two and a half years before. She became almost a black-green, lost thirty pounds, had progressive indigestion and vomiting. She had stools entirely devoid of color and urine like porter. Her paroxysmal pains were "terrible" and petit mal had been recurrent daily for two months. The urine had five per cent. of albumin and some hyaline casts. Palpation failed to discover a gall-bladder. On

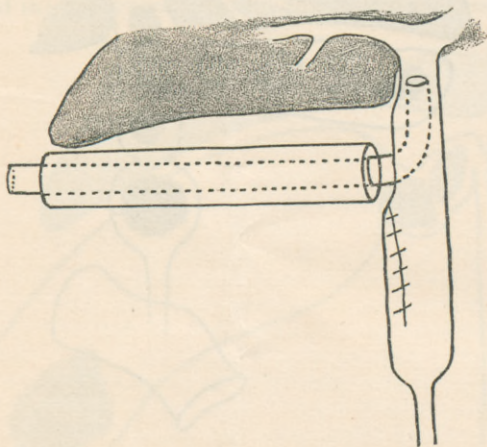


FIG. 5.—Showing Method of Suture and Drainage after Fig. 4.

doing laparotomy I found the gall-bladder buried in adhesions to the stomach, omentum, and colon, but not distended. Several gall-stones were removed from the incised viscus, and a large one found more than half way down the common duct, absolutely immovable (Fig. 4). I cut the common duct open and took out the stone, then removed the damaged gall-bladder and putting a large drain-tube into the hepatic duct sewed up the common duct with fine silk (Fig. 5). Around the drain that emptied the hepatic duct I put a larger one, reaching to

the common junction, and packed in a light iodoform tampon against which intestines would rest and in a few hours form a solid well of lymph, precluding extravasation into the peritoneum. The patient lost all her bile through the tube for five days. The inner tube was removed on the second day and the sinus closed in three weeks.

The patient maintains perfect health to date, having in four years had the felicity of bearing a much-hoped-for boy.

The second typical case of this group I operated upon three months since. The patient was a married woman, referred to me by Dr. Morrison, who had been treating her more than two years for almost weekly attacks of cutting pains and biliary colic. Hypodermics of morphine had always been needed to allay suffering; jaundice and vomiting had become chronic, and the patient a wretched sufferer. There was no tumor of the gall-bladder to be felt.

I operated January 3, 1893 (see Fig. 6). The gall-bladder was tightly adherent to every neighboring organ. When it had been incised dark, tarry bile flowed freely and I removed one large and twenty small calculi. The dilatation of the ducts was wide enough to allow my index finger to ascend into the liver and down the common duct. In the latter a very large stone was found, an inch and a half below the junction, so tightly held between two strictures that it was necessary to introduce a knife and cut the strictures from within, after which I succeeded in liberating the larger stone. The patient made a speedy recovery.

Thus I have given six cases of the gravest phases of gall-stone obstruction, all of which have made perfect recoveries. All were women.

The literature of the cases of free incision of the distended ductus communis choledochus now includes a considerable number where suture of the divided duct has resulted in immediate healing. The recoveries are so uniform that it can be regarded as scarcely more dangerous than opening and draining the gall-bladder. That

it is a more difficult operation to suture a small duct in a deep wound goes without saying, but the operator will find that under the pathological dilatation the walls are thickened, and when the stone is out they are free enough to be easily secured and tightened by stitches. The continuous silk suture is the best.

For the comfort of any who may be forced to leave an

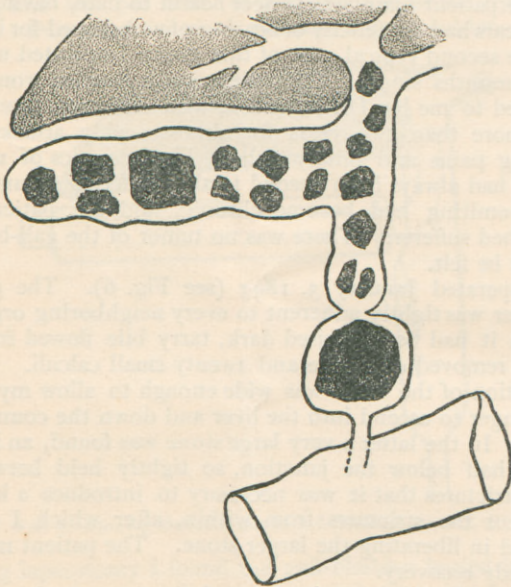


FIG. 6.—Large Gall-stone Two and a half Years in the Common Duct.

incised common duct unsutured it may be quoted that during the past year Bland Sutton removed three stones from the common duct by incision, and left it open, with a tube running down to it. The peritoneum was shut off by adhesions, easily generated around a small gauze tamponade. The bile discharged freely, the wound granulated and healed up in three weeks.

Keen also bored through the head of the pancreas to get at a hard knot of stones in the lower end of the common duct, and leaving it open, drained by a tube. The wound healed kindly without suture.

The lower part of the common duct may occasionally hold the obstructing stone. This is not accessible to the knife applied from the outside of the duct, for the anatomical reason that it is hidden behind the duodenum. There is but one safe and elegant approach, if I may so speak, to it. Such an opportunity was afforded by an obstructing stone in the outlet in a case reported by Dr. McBurney last year, in which he incised the duodenum, released the stone, sutured the duodenal cut, and saved the patient.

This method of searching the duodenal end of the duct I afterward attempted in a case of what proved to be malignant obstruction. As there was no stone in the duct to mark its position, it was impossible for me to identify it. It satisfied me, nevertheless, that the intestinal wound, which healed most perfectly, is an innocent addition to the surgical interference, if it be properly sutured.

Cholelithotrixy, or crushing the stone in its duct, either by digital pressure only or by dressing-forceps shielded with rubber tubing, has had a dozen demonstrations of its utility in soft stones, since first used by Tait. Robson and Courvoisier have advocated and practised it, with only one recorded death, and that one not proven as due to the bruised duct. Marriott reported a recovery after crushing a large hard stone through the cystic duct-walls, by rubber-padded forceps, after he had vainly tried to break it up by needles. The fragments of stone have in all cases passed off spontaneously, with a slight colic, in a few hours.

The method should never be lost sight of, as it is more often available than cutting, and it may yet hold a high rank. Its present record justifies its being used where one or two moderate-sized stones are found, especially in inaccessible places. Free incision is now recognized as

so safe and successful a method that any substitute for it, except for emergency, does not represent the best surgery.

One new method has entered the field to dispute for preference with the two just mentioned. That is, the formation of an anastomosis between the gall-bladder and the bowel, that the discharge may be directly into the bowel when the duct is obstructed irremediably.

To unite the gall-bladder to the bowel by the suturing method of lateral anastomosis is a quickly accomplished and admirable procedure. The use of vegetable or bone plates of Senn has few advocates for use in the gall-bladder. Chevassé used the plates of bone to unite the gall-bladder and small intestine, but got a combined biliary and fecal fistula, which, nevertheless, soon healed and allowed the bile to flow into the bowel.

The preferred method of suture has been by a double row of Lembert stitches around the free incisions in the opposing viscera. It takes but fifteen minutes to do it well.

Murphy, of Chicago, has lately advocated and used successfully in three cases a simple device, the simplest that has yet been offered for speedily making anastomosis. (See *MEDICAL RECORD*, December 10, 1892, p. 665.) He uses two metallic buttons, shaped like mushrooms, with hollow stems, fitting one into the other; one button is inserted through a slit made into each of the opposing viscera and sutured there; the stems remaining outside are pressed together and lock between the edges of the buttons the involved bowel and gall-bladder walls. The tight pressure causes sloughing of the included circle in a few days, and sets up adhesive union of the two edges.

Murphy used this device three times in the human subject with perfect success. The buttons were voided in due time and the bile flowed into the bowel. Each of the cases seems to have been one where the stones might have been removed and the natural channels cleared up, without attempting to establish an anastomotic opening where the calculi could escape into the bowel, as they did after the buttons had sloughed out.

Ingenious and successful as this method is, of quickly establishing a new channel for the bile into the intestine, it seems to me a retrograde step in surgical work to sacrifice the perfection of work for the sake of a brief and usually unnecessary saving of time.

Dr. Murphy operated in one case in eleven, and in another in twenty-one minutes, but paid no regard to how obstructing stones in the common duct were going to be helped to escape.

The operation of anastomosis between the gall-bladder and intestine was first done by Von Winiwarter in 1880; again by others in 1887-89, and since, in about twenty recorded cases, and has grown in favor as regards safety and utility.

It is a surgical imitation of one of Nature's methods of getting rid of stones by ulceration into the nearest viscus. It has the endorsement of everyone who has tried it—Courvoisier, Terrier, Robson, and others—and seems to be unattended by risk when properly done. The fear that infectious inflammation from intestinal contamination would follow is groundless. The few autopsies that have followed at not very remote dates after operations have shown that a natural-lipped valve forms at the orifice and protects the gall-bladder from regurgitation from the bowel. The greater danger appears to be that cicatricial stenosis of the opening will close it. It is a natural law that inevitably works against the surgeon in this effort. Autopsies show hundreds of scars of adherent gall-bladder and bowel, but very rarely one that has kept open after the stone has ulcerated its way out. What more can we hope for the artificial opening? The only ground is, as far as I can see, in an incision of an inch and a half, which will give permanence.

Richelot, of Paris, operated by a small opening in a case of obliterated common duct, and some months later, the jaundice having recurred, autopsy showed an obliteration of the opening. On the other hand, one case (Mayo Robson's) has survived nearly three years without stenosis. In his case he joined the gall-bladder and the

colon at the hepatic flexure. In two other (Courvoisier's and Chavasse's) most successful cases the colon was used.

It seems to me probable that the colon may be always used with great advantage. The bile has been considered a necessary digestive secretion until of late. It has been shown that patients with chronic fistula pouring out the entire bile-flow often gain weight and health. This would encourage the view that bile is excrementitious, and that we can with advantage let it flow into the alimentary canal low down. The anastomosis is very easily made, and does not involve dragging the small intestine across the colon.

The subject of gall-bladder surgery was a small one when Marion Sims wrote of it first in 1878, only one case having been recorded prior to that, but now it has crept into the field of abdominal surgery with a brilliant record. Robson reports forty operations with two deaths. Tait, Thornton, Courvoisier, Terrier, Czerny, and a score of other names have added their testimony to the safety of the operation and brilliancy of the results.

The records of American surgeons are second to no others. The mortality is not more than five or six per cent. Cases of every shade of interest are being reported, until it seems now that there is almost no complication one may encounter that cannot be met by simple operative principles.

The most grave and irremediable condition is of course cancerous obstruction, and it is here that I believe the field of anastomosis of the gall-bladder and colon will find its great usefulness. Except in that, and in cases of absolute cicatricial stenosis of the common duct, it may be better supplanted by the judicious use of the knife, or of crushing, by which gall-stone obstruction has been so well demonstrated to be safe, no matter what part of the duct is choked.

