

Baltimore, and in twenty-four hours the characteristic swelling occurred. This was allowed to progress at the room temperature for four days, when the distension was enormous. The gas was then collected over water through a canula and found to contain CO_2 hydrogen and a trace of H_2S .

It burned with a very white, bright flame, resembling, although not so intense, the flame of acetylene gas.

I believe that this is the first case reported in which the infection in all probability entered the tissue through the throat and without history of an abrasion or lesion of the epithelium.

DISCUSSION.

DR. L. HEKTOEN, Chicago—In connection with this interesting case I would refer to one in which the infection took place through a transfusion puncture of the skin in the submammary region. Spreading emphysema appeared and after death a general infection of the *Bacillus aerogenes capsulatus* was demonstrated.

DR. LOUIS LEROY, Nashville, Tenn.—The bichlorid treatment was carried on in this case for a number of days without effect. In the experiments with animals peroxid of hydrogen seemed to stop the process almost within a day. I believe that further observations on the reaction of the pus in such infections will prove of value.

INFECTION OF THE GALL BLADDER AND BILIARY DUCT CONTENTS.*

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A little more than a decade ago, if a surgeon opened an abdomen for suspected gallstones and did not find them he was most fortunate if the medical finger of derision for diagnostic failure was not pointed at him—gallstones were considered a disease *per se*.

The nomenclature of gallstones, as it has been and is used, is incorrect. It is not important that we should give the anatomy in detail of the liver, and especially of its system of biliary plumbing. A healthy gall bladder should have tonicity and when well filled it should touch the abdominal peritoneum in front, that portion of the liver posteriorly, the duodenum colon, the stomach and pylorus—all of which are in close proximity.

In the healthy subject, the gall bladder can be artificially anastomosed to the stomach, colon and duodenum. Such has been accomplished in neglected cases by no other effort than that of Nature. As the results of infection, we can justly consider such as serious complications, rather than successes. It is important that the family physician appreciates this, along with knowing that the surgeon is competent to do better work, and for this have better results, if he is consulted as to when is the best time for operating.

The simplest procedure of the list suggested for the relief of the infection under consideration, in more than the majority of cases, is cholecystostomy, which consists in opening the abdomen directly over the gall bladder, incising the bladder, cleaning it out and stitching the edges into the small abdominal incision, leaving a temporary sinus for the escape of the secretions of the liver, until it appears certain that that organ has resumed its normal function and has free drainage through the common duct. If a secondary operation is demanded, one can readily and easily reopen the gall bladder that had been purposely attached into the abdominal incision.

* Read at the Fifty-fourth Annual Session of the American Medical Association, in the Section on Obstetrics and Diseases of Women, and approved for publication by the Executive Committee: Drs. A. Palmer Dudley, H. P. Newman and J. H. Carstens.

In those cases in which the gall bladder has been distended from empyema, it is gratifying to know how they will contract after they have once been drained. Postmortems show clearly the relationship of those organs adhered in closest proximity to the gall bladder and its ducts—for the bile stain present comes from exosmosis. It is claimed that three-fourths of the cases in which gallstones result occur in women. The work of the surgeons does not find that these cases are more frequently found among those of the higher walks of life following sedentary habits. Precipitation, or the result of bile infection, can give a solitary calculus or hundreds of calculi; numbers do not add to the gravity of any case. The germ theory has been well established. The typhoid and colon bacillus are recognized as the greater microbial elements to be dreaded; more especially the colon bacillus.

Experiment has demonstrated that aseptic foreign bodies within the gall bladder, floating in healthy bile, are not exciters of inflammation. It has been further demonstrated that the gall bladder and its contents can be infected by the typhoid and colon bacillus, necessitating a cholecystotomy, and the cystic duct remain free from infection and still perform its function.

It is in this class of cases that rupture of the gall bladder occurs. With the inflammation extending to the cystic and common duct, we can have the biliary colic attacks that so often have been credited to the passage of calculi through the common duct. We have an illustration in the attacks of appendicular colic in which there is no foreign body present. In those distended gall bladders that come from such a redundancy of tissue, there is residual bile, which of its weight causes flexion of the gall bladder at the cystic end.

The cystic and common duct may be healthy and yet fail to carry off these gall-bladder contents. This stagnant bile can easily become infected by the microbes passing through the walls of the colon, duodenum and portal vein through the gall-bladder walls, attacking the bile. This explains how a serious gall-bladder infection can be present while the cystic and common duct remain patent, or partially so. The patient may succumb to septicemia before Nature can effect an anastomosis of the gall bladder to the duodenum or colon. The adhesions to the proximal tissues are numerous and make formidable the doing of any subsequent operation on the gall bladder or its ducts, as in trying to relieve the distressing symptoms that so often arise. The residual bile results from the redundant tissue of the anteflexed gall bladder, which is lacking in contractile power. The contents are especially liable to infection.

We find many contracted and flexed gall bladders held firm in a bed of adhesions, causing pain and discomfort to the patient. Freeing these adhesions and correcting the flexion often effects a cure. The precipitation of the salts of infected bile can be found in the biliary ducts and in the hepatic cells.

It is not the over-extended gall bladder, and the one which may be readily felt through the thin abdominal wall, that is so badly in need of the prompt surgical intervention, as much as it is the infected and tense gall bladder with localized pain with loss of strength, a low grade of fever, accelerated pulse, and with more or less sallowness of the skin. The localized tenderness is brought out by a deep, firm pressure over the gall bladder by one of the middle fingers, causing a sickening pain. We have pinhole ruptures occurring in the gall

bladder, cystic and common duct, with the possibility of hepatic and perihepatic abscesses to follow.

Jaundice is a serious complication in those cases that are to undergo a surgical operation. Bile reabsorbed is a formidable poison, acting, as it does on the heart and kidneys. It is much more poisonous than urine. Fatal secondary hemorrhage in cholemic subjects has resulted fatally following a simple abdominal section. In these cases midoperative hemorrhages are not always readily controlled. Rupture of the gall bladder has followed an attack of vomiting. Roth, Schroeder and Schloth made 10,866 necropsies, finding biliary fistulæ forty-three times. Courvoisier reports 539 fistulas; 184 between the bile ducts and the abdominal wall, 108 between bile ducts and duodenum, ninety-three between the gall bladder and the duodenum, twelve between the gall bladder and the stomach, fifty between the bile ducts and the colon, and forty between the gall bladder and the colon. These reports lead us to think that biliary fistulas are not so common as the profession in general have been led to suppose.

The sudden escape of a portion of the contents of an empyemic gall bladder means rapid infection of the peritoneum.

Dr. Barker, Bellvue, Ky., tells of a case in which the tip of the gall bladder was shot away from a healthy subject. Bile poured out freely through the abdominal wound, and with it soon came one large gallstone. The wound was packed and kept clean, and the patient recovered.

In infected gall bladders it is well to make the incision directly over the gall bladder, and after failing to dislodge the stone downward and into the duodenum by the probe, or upward and into the gall bladder by upward pressure of the finger, it is better to incise the duodenum, exposing the common duct opening into the same and, after careful dilating, pass a probe into and through the common duct; pushing, if possible, the calculi up into the cystic duct, or, better, into the gall bladder for extraction from above through the incision by means of the alligator forceps. Any calculi located in the cystic or common duct acting as a ball valve, so graphically described by the late Christian Fenger, can be drawn out through the incised gall bladder by means of the forceps.

With early diagnosis of infection of the contents of the gall bladder—in which the tenderness over the same does not disappear along with the fever, accelerated pulse, lethargy, loss of flesh and strength—a cholecystostomy will relieve these patients better and more satisfactorily than efforts at medication can possibly do.

The early diagnosis of biliary infection is not difficult. With a careful consideration of the principles laid down it is as easy as that of appendicitis. With an early diagnosis these cholecystostomies may be successfully performed under local anesthesia. If difficult complications should arise, general anesthesia may be resorted to in order to complete the operation.

The laity must understand, through the family physician, that it is not a harmless disease, and that this optimistic view that is held is most dangerous to many valuable lives. Those cases that are said to recover from medication are so rare, comparatively, as to be unfortunate for those cases that come after. The liver is the largest secreting organ within the body; its secretions are the most abused in health, the most neglected in disease.

DISCUSSION.

DR. L. H. DUNNING, Indianapolis—I think we all agree that empyema of the gall bladder frequently results in speedy death if drainage is not obtained. But it is a question how far the operation should be carried and how much should be done in severe cases associated with stone in the common duct. These patients are poor subjects for surgical work, and in the majority of instances, if there is an impacted stone in the common duct, or dilated portion of the duct, there is intermittent jaundice; so that we have added to the dangers of shock those of septicemia and secondary hemorrhage. These dangers must be taken into account in every gall-bladder operation. From the picture the essayist has drawn I would advocate in all instances the attempt to remove the stone from the common duct. But if we have a patient greatly exhausted from septicemia and very much jaundiced, either intermittent or permanent, with a stone in the common duct, we will do well in many instances if we content ourselves by draining the gall bladder, because 75 to 80 per cent. of our patients will die if we go beyond that simple procedure. As to cases in which we feel justified in doing something, where there is a stone in the common duct, I would not like to accept in an unqualified manner the technic given by the essayist. I would hesitate to add to the danger of exhaustion the danger of opening the duodenum. I do not believe that we will often find this necessary. If we can not move the stone upward or downward by manipulation it will, in the majority of instances, be better to open the common duct. If the stone is in the middle of the duct or near the duodenum we will have better results if we incise the common duct and remove the stone, which can be done very quickly, and then resort to the method of Kerr—drainage of the hepatic duct by insertion of a tube. These cases have a mortality somewhere between 75 and 85 per cent. even in the hands of such masters as Kerr and Robson. I have found that by simply draining the gall bladder the signs of septicemia pass away, the patient partially regains his health, and the mortality is then only about 10 per cent. Therefore, in these severe cases I advocate two operations: 1. Opening and draining the gall bladder. 2. After the patient has regained health reopening the abdomen and removing the stone from the common duct.

DR. C. V. THIENHAUS, Milwaukee, Wis.—I would like to defend the duodenal route in impaction of gallstones in the common duct. The transduodenal route does not come into question when the stone lies in the upper or in the middle portion of this duct, but it does when the stone is impacted near the papilla or in the so-called retroduodenal portion of the common duct. I do not see any reason, as I have pointed out,¹ why, when a stone protrudes at the papilla and is almost in the duodenum, or when it lies impacted in the retroduodenal portion of the common duct, where it is very difficult to reach from the middle portion, we should not for these cases use the natural and more easily to be performed transduodenal route. I operated on one case in this manner in which a stone was so firmly impacted in the retroduodenal portion that even after opening the duodenum and making a large incision into its posterior wall, it was difficult to dig it out of its diverticulum. After removing the impacted stone three other stones lying higher up in the common duct could easily be stripped down into the duodenum and removed. The woman is perfectly well now and gained 67 pounds since the operation, which was performed 15 months ago. For this class of cases I can heartily recommend McBurney's transduodenal route.

DR. S. S. HALDERMAN, Portsmouth, Ohio—In the early history it is not always possible to make a diagnosis. The pain is not pathognomonic. I have been very much in doubt at times, owing to the age of the patient, whether there was a malignant trouble or a benign disease of the gall bladder. In cases of contracted gall bladder in which there are but one or two stones, and in which there has been more or less irritation going on for some time without severe attacks of such hepatic colic as accompanies the passage of smaller stones through the duct, I have come to the conclusion that an ex-

1. "The Transduodenal Route, etc.," *Annals of Surgery*, December, 1902.

ploratory incision is demanded for the safety of the patient. When there is a distended gall bladder in cancer of the pylorus pressing on the gall ducts and obstructing that organ, by draining the gall bladder one can make a patient very comfortable, and, in fact, prolong his life. In a recent case I made an incision and found malignant disease. I drained the gall bladder and the patient lived three or four months with comfort. She had been taking very large doses of opium for the terrible pain, but after the operation she abandoned it.

DR. H. O. MARCY, Boston—The question of vital importance is how and when to make the diagnosis, rather than the question of operative details. The most lamentable feature of the whole matter is the failure of the general practitioner to recognize these conditions early and bring them to operative procedure early. If we could make an emphasis in this direction we would do a much greater service to the public than by confining ourselves to the technic of the operation. It is true that we ourselves were blunderers. I was the first to remove stone from the common duct, and yet that was almost an accidental condition. But the unfortunate thing was that the patient had been allowed to go on to the risk of life before operation. Let the general practitioner study his cases of obscure gall-bladder disease and not think that when he has biliary obstruction and an extreme case of jaundice that that is the time to consult.

DR. A. PALMER DUDLEY, New York—In cases of empyema of the gall bladder, or of systemic infection, I aspirate the gall bladder, having first grasped it with two pairs of fine forceps so that it can not collapse and get beyond my reach. After aspirating the gall bladder, before opening it, we are able to make a more perfect diagnosis of the condition existing in the bladder. Then I refill that gall bladder with a 1-500 formalin solution. I have been using formalin in infection for a long time, and have found it to be a thorough germicide. One can wash out the bladder and aspirate as many times as one pleases until one has a thoroughly aseptic bladder before one opens it to remove the stones. In cases such as Dr. Ricketts described I agree with him. I believe it safer to fasten that bladder up and drain it than to do a radical operation. In many cases a radical operation may seem better for the patient, but with the patient thoroughly saturated with bile, the vessels engorged with bile, there is no contractile power in them. There is no power to form a good plug in such a vessel and the danger of hemorrhage is great.

DR. EDWIN RICKETTS—The emergencies bother us more than anything else in operating. It has been well said that the essential treatment of cases in which the stone is in the common duct is along the line of prophylaxis, a procedure which I advocate, for then we will not have the stone in the common duct. One point I want to impress is that there is never a stone in the common duct, but that there have been symptoms long before that that the family physician should recognize and treat by prophylaxis. That prophylaxis is draining of the gall bladder. Washing out the gall bladder with formalin is a good suggestion. The greater number of cases of malignancy occur after the age of 50, but there are quite a few cases of infected gall bladders at 30 and some before 20, and wherever you find an infection I do not see why the general rule of surgery should be reversed and that is, turn out the infection. And yet the gall bladder is the last organ from which the suggestion for drainage should come. Dr. Goelet knows of the pressure on the kidney by a damming back of the urine, causing a hydronephrosis. Is there a surgeon who would hesitate to remove a stone in the urinary bladder, no matter how small? We are beginning to better understand the importance of infection. Delay under these circumstances has caused more deaths than all the surgical experimentation on the bile ducts. Infection of the gall bladder is a bad thing. These are unpromising cases; bad cases to work on. It is far better to handle these cases in the line of prevention than to operate when the gall bladder is full of pus. The importance of not delaying has been demonstrated time and again, and it has been so impressed on me that I now do this work as I outlined it in my paper, and I fear no criticism.

SARCOMATOUS TRANSFORMATION OF MYOMATA.*

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This report includes several cases of myomata where sarcomatous changes have occurred. From the num-

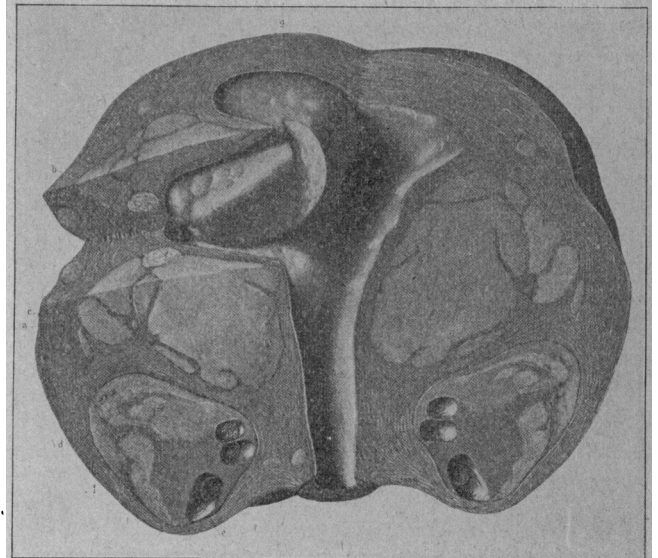


Fig. 1.—Probable sarcomatous transformation of a myoma, also discrete myomatous or sarcomatous nodules in the same uterus. At g is a typical submucous myoma. At c one of the sarcomatous nodules, while at d is a transition from the myomatous muscle into sarcoma. Fig. 2 is from the same case.

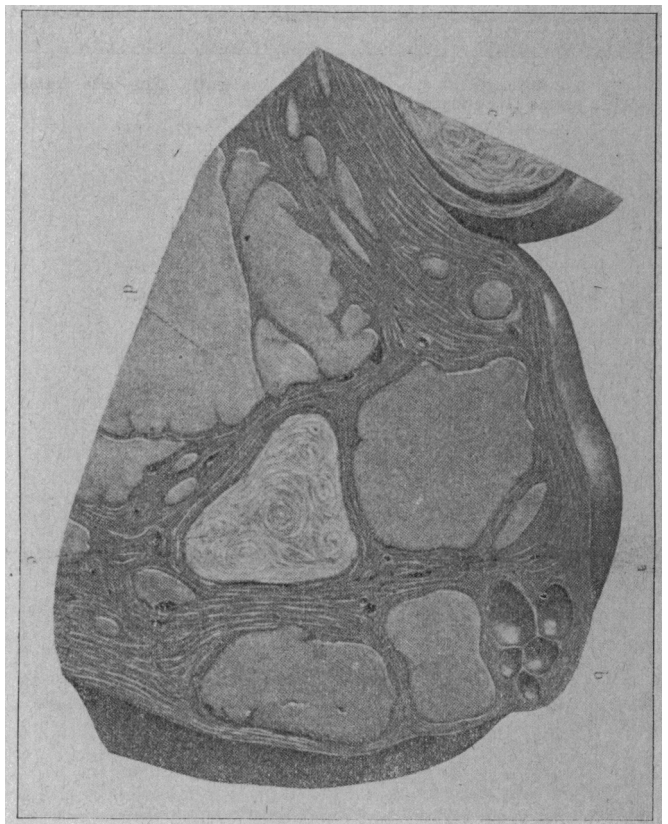


Fig. 2.—Association of myoma and sarcoma in the same uterus. The myomatous nodules are very easily differentiated from the homogeneous sarcomatous ones.

ber of cases recorded it is evident that the disease is more frequent than heretofore suspected. The sarcoma usually develops in one of several myomata and may

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