such cases, and all that I could do under the circumstances was to drain the common duct for a length of time, whereas had the gall bladder been present a cholecystenterostomy would have been easy and recovery more perfect.

In ordinary cases of cholelithiasis, cholecystotomy with drainage of the gall bladder is a very safe and efficient operation, and if the ducts are cleared there need be no fear of fistula or of recurrence of gall stones. Seeing that cholecystotomy has led to such good results, both immediate and remote, in the surgery of gall stones, the operation should not be too hastily condemned and replaced by cholecystectomy as a routine procedure. Although my experience is that cholecystectomy, though a more prolonged operation than simple drainage of the gall bladder, can with due care and in experienced hands be performed with hardly more immediate risk (in my last 57 cases only one death), and that when the gall bladder is contracted and infected, or inflamed and thickened, or gangrenous, or much dilated, it is better to remove it, yet I feel sure that if cholecystectomy were to become the routine procedure for inexperienced operators, the death-rate from gall-stone operations would be greatly increased. The rate of mortality shown in some of the recent works on gall stones does not reflect credit on the hospitals whose statistics are quoted; the mortality of simple cholecystotomy should not exceed at the most 1 per cent., and will not if due precautions are taken. If, however, these operations are done by inexperienced surgeons who have not taken the trouble to master the technique of the operation and of the after attendance, the mortality will continue to be considerable. But if the mortality of cholecystotomy in inexperienced hands is considerable, what would happen if a consensus of opinion was allowed to go forth that cholecystectomy is the operation that ought always to be performed for gall stones? For every surgeon must acknowledge that it is much more difficult to remove the gall bladder than simply to drain it. I hold that no one ought to do any operation for gall stones who is not fitted by experience and surgical ability to perform choledochotomy, cholecystectomy, cholecystenterostomy, or any of the more serious operations on the bile ducts, as it is frequently impossible to say beforehand what operation may be required.

Since introducing the method of more completely exposing the biliary tracts when operating for gall stones, I find no difficulty in deciding as to the common bile duct being free from concretions or other obstruction—a necessary condition to ascertain before cholecystectomy can be justifiable.

Seeing that recurrence of gall stones after cholecystotomy with efficient drainage is an extremely rare event, that the danger of cholecystotomy in uncomplicated cholelithiasis is almost nil—not 1 per cent. over a large number of cases—that drainage of the bile passages after any gall-stone operation is distinctly advantageous, and that if at some future time it should be necessary to drain the bile passages—say for obstructive jaundice or interstitial pancreatitis—the difficulties would be increased by the absence of a gall bladder, though not by a cholecystotomy, my feeling is very decided that cholecystectomy should not replace the simple operation of cholecystotomy as a routine procedure in operating for gall stones.

Cholecystectomy is indicated in the following conditions:

1. In cancer or other new growth of the gall bladder where the disease is local and limited.
2. In contracted and useless gall bladder the result of repeated attacks of cholecystitis.
3. In dilated or hypertrophied gall bladder resulting from obstruction in the cystic duct.
  - (a) Always, if resulting from stricture.
  - (b) Usually, if resulting from impacted gall stones which may have induced ulceration that will subsequently lead to stricture.
  - (c) Usually, if resulting from kinking of the cystic duct or from adhesions.
4. In phlegmonous or gangrenous cholecystitis.
5. In empyema of the gall bladder.
6. In calcareous degeneration of the gall bladder.
7. In mucous fistula of the gall bladder, the result of stricture or other obstruction of the cystic duct.
8. In gunshot or other serious injuries of the gall bladder or cystic duct.

It is unnecessary in ordinary cholelithiasis, where the gall bladder is not seriously damaged and where the cystic duct is not ulcerated or narrowed by stricture; and it is contraindicated in all cases where the surgeon cannot be certain that the deeper bile passages are free from obstruction, unless at the same time the cystic or common ducts be short-circuited into the intestine.

The conditions for which cholecystectomy may have to be performed may be conveniently divided into simple and malignant; no other classification seems to me necessary or desirable. In the former class the variety of the conditions for which I have performed the operation is considerable—phlegmonous cholecystitis, gangrene, ulceration, hydrops, perforation, adenoma, cystic disease, hour-glass contraction, inflammatory contraction and calcification of the gall bladder, simple tumour, ulceration and stricture of the cystic duct, mucous and suppurating fistulae, rarely biliary fistula, unless at the same time the common duct has been freed from obstruction. In the latter class—cancer, endothelioma and sarcoma of the gall bladder or cystic duct.

In my Bradshawe Lecture at the Royal College of Surgeons of England for 1904 I expressed my views very fully as to the causative relationship between gall stones and cancer of the gall bladder and bile ducts, and gave my reasons for believing that biliary concretions are the chief determining cause of malignant disease of the biliary passages; increased experience only confirms in my mind the views I then held.

The practical conclusions which I feel confidence in urging—both from my own experience and that of others—are, that as there is an undoubted relationship between cholelithiasis and cancer of the gall bladder and ducts, and as gall stones produce characteristic symptoms, and are therefore as a rule easily diagnosed, and since they can be removed in the early stages before serious complications have supervened with less than 1 per cent. of risk, the preventive treatment for cancer of the gall bladder is obviously removal of the source of irritation. So impressed am I with the importance of this view, that although I know the symptoms of gall stones, which frequently depend on the associated catarrh, can often be relieved for a time by general treatment (though the gall stones producing the catarrh cannot be removed by medicine), yet I consider it wise to recommend their early removal by the simple operation of cholecystotomy, because the symptoms, even if temporarily relieved, will be likely to recur and lead to cancer or to other complications.

REFERENCE.

- 1 *Proceedings of the Royal Society*, vol. xlvii.

ANASTOMOSIS BETWEEN THE COMMON BILE DUCT AND THE DUODENUM FOR OBSTRUCTIVE JAUNDICE.*

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TAKING all the facts of the following case into consideration, I believe that the patient has been suffering from chronic pancreatitis with complete occlusion of the duodenal opening of the common bile duct. His recovery after the ducts had been so blocked that all trace of bile had disappeared from their contents is remarkable.

A male, aged 66, was admitted to the Royal Victoria Hospital, Belfast, under the care of Sir William Whittle, on May 12th, 1906, suffering from jaundice and loss of flesh. His previous history was good, and there was no record of any illness whatever since childhood.

History and Diagnosis.

The present affection began suddenly on April 20th, when the patient's friends noticed that he was jaundiced. He states that at the same time his motions became pale in colour, and his urine dark coloured. He complained of no pain, and beyond the fact that he was jaundiced, he felt quite well. During the next few weeks he lost almost 2 st. in weight, his colour deepened, and his urine became darker. On admission, patient was found to be a well-nourished man, 11 st. 11 lb. in weight. The skin was dark yellow, and the conjunctiva deeply

* Read before the Ulster Branch of the British Medical Association

tinged. The urine was a deep greenish-yellow colour, and contained bile and a small quantity of albumen. The motions were almost white in colour. The liver was found to be enlarged, the lower edge projecting about a fingerbreadth below the costal margin in the mammary line. A large pear-shaped tumour—the distended gall bladder—could be felt on the right side, in the line of the tip of the ninth costal cartilage, extending from the liver almost to the level of the umbilicus. Its lower end could be felt to move with respiration. Patient remained in the medical wards under treatment for more than three weeks, but his progress was not satisfactory. He lost almost a stone in weight, and his jaundice became so deep that his face was almost a bronze colour. At this period I saw him with Sir William Whitla and Dr. Walton Browne, and we came to the conclusion that the case was probably one of tumour of the head of the pancreas obstructing the common bile duct, and recommended an exploratory operation. The diagnosis lay between chronic pancreatitis and carcinoma. The absence of pain and the distension of the gall bladder were against gall stone. The most probable cause was thought to be carcinoma of the head of the pancreas or of the common bile duct near its termination. No tumour, except the distended gall bladder, could be felt.

Operation.

With a view to operation the patient had four doses of calcium chloride, 15 grains every four hours, the day preceding the operation. On June 6th, 1906, a hard pillow having been placed under patient's back, a vertical incision, 5 in. long, was made over the most prominent part of the tumour and the abdominal cavity opened. The gall bladder was found to be distended so as to be rather larger than a goose's egg. There were no adhesions. The liver was enlarged and was dark purple in colour. It was firm in consistence. The peritoneal cavity having been shut off with large gauze pads, the gall bladder was opened, and a large quantity of clear glairy fluid escaped. Three small black mulberry-shaped calculi were fished out of the gall bladder, which was now in a collapsed condition. No stones were discoverable by palpation in the cystic duct. On the under surface of the right lobe of the liver was found an irregular whitish scar about the size of a sixpence. On drawing the liver upwards a hugely dilated common bile duct was brought to view, and on tracing this down it was found to lead to a hard mass in the position of the head of the pancreas. Several smaller nodules, thought to be enlarged glands, could be felt extending towards the foramen of Winslow. The dilated duct was almost as large as a piece of small intestine. An attempt was made to empty it by massaging its contents through the cystic duct towards the gall bladder, but without success, owing to some difficulty at the neck of the gall bladder, the nature of which I was unable to determine. Accordingly, I decided to drain the common duct by anastomosing it with the first part of the duodenum. This was accomplished with some difficulty, on account of its deep position, by means of a small Murphy button, using fine silk for the purse-string sutures and several reinforcing Lambert stitches to prevent possible leakage. Before placing the female portion of the button in the duct an incision was made into the latter and a large quantity of glairy fluid with no trace of bile in it was quickly mopped up. The finger could be introduced into the duct and passed up into cavities in the liver corresponding with the dilated hepatic ducts. To facilitate manipulation of the parts it was found necessary to make a transverse incision at right angles to the upper end of the original wound in an inward direction. The button having been satisfactorily adjusted, the abdominal cavity was mopped dry and a stab puncture was made in the loin to provide drainage. A split rubber tube with a gauze core was passed through the opening so made. It will be seen later that this puncture gave serious trouble, on account, I believe, of a small vessel having been wounded, which commenced to bleed after the patient had recovered from the shock of the operation. The wound in the gall bladder was sutured to the peritoneum and transversalis fascia and the viscous was drained by a rubber tube led from its interior to a sterilized bottle. The abdominal wound was closed with through-and-through sutures of silkworm gut, and the patient was returned to bed, having stood the operation well.

After-History.

He recovered from the chloroform without sickness and had no pain. A small quantity of bile flowed from the gall bladder a few hours after the operation. On June 9th, however, that is on the fourth day after operation, patient became collapsed, with distended abdomen, quick weak pulse running up to 120, cold clammy extremities, face cyanosed and lips anaemic. He vomited a clear sour-smelling fluid at frequent intervals, regurgitating it with very little effort. He had no pain. His bowels had moved several times since the operation. Strychnine hypodermically was administered and he was transfused with saline and a little adrenalin. As a result of these remedies he rallied somewhat, but his condition was still grave. Next day he passed a large quantity of flatus and immediately began to improve. His pulse fell to 96 and his abdomen became flat. He was fed on small quantities of albumen water, raisin-tea and raw meat juice. On June 13th his urine began to clear and on the 15th bile was seen in the motions. The tube was removed from the gall

bladder on the twelfth day as very little bile was coming through. At no time did the quantity reach $\frac{3}{4}$ in, and latterly had varied from $\frac{3}{8}$ ss to $\frac{3}{4}$ j, in the twenty-four hours.

On June 22nd patient had severe haemorrhage from the lumbar wound, with difficulty controlled by packing with adrenalin. A discharge of dark blood in large quantities took place for several weeks and became septic, thus retarding his recovery. Probably the small vessel which had been wounded bled into the abdominal cavity and gave rise to a haematocoele, which subsequently discharged through the lumbar wound. The button was passed on June 29th, more than three weeks after the operation, and at about this time the gall-bladder fistula closed. The jaundice did not entirely disappear until nearly a month after the operation. His convalescence was still further disturbed by an attack of cystitis, which was not due to catheterization, the patient having been able from the first to pass urine without assistance. He also had a bed sore, which gave trouble, but he was finally discharged in comparatively good health on August 2nd, 1906. His weight at this time was 10 st. 8 lb.

Two months later I heard from Dr. Davison of Ballymena, who was looking after him, that a small abscess had burst over the position of the gall bladder, giving exit to a curdy fluid. This I presumed to be a reopening of the gall-bladder fistula. This healed in a short time, and has remained sound up to the present date. I had the opportunity of examining the patient five months after his operation; I found him in good health and spirits, having put on flesh, his weight now being 11 st. 4 lb. The gall bladder is still palpable, and will, I believe, again discharge through the original fistula. The reason for this I am unable to discover.

The Mayo Brothers have reported 4 cases of this nature. All died within four days.

The operation which I have described is called by the cumbersome name of "choledochenterostomy," and is hardly mentioned in works on operative surgery. Mayo Robson² reports 3 cases. In the first the cystic duct was united to the colon by a decalcified bone bobbin on account of a biliary fistula. Jaundice recurred after some months. In the second the dilated cystic duct was connected to the small bowel by means of a Murphy button for the relief of a biliary fistula. This case completely recovered. In the third case the dilated cystic duct was connected to the duodenum by a Murphy button. This patient died on the fifth day.

He refers to successful cases under the care of Sprengel, Kiedal, and Swain.

Mayo³ describes a case in which he implanted the common duct into the duodenum by suture. A wick drain was placed close to the suture line. The removal of the drain disturbed the line of union and caused a fistula, from which the patient died at the end of the eighth week. The same surgeon describes a second case in which he implanted a dilated hepatic duct into the duodenum by simple suture, with a successful result. These cases of Mayo demonstrated the feasibility of union between the common or hepatic duct and the duodenum at a spot where the latter is covered by peritoneum.

REFERENCES.

¹ *Amer. Jour. Med. Sciences*, March, 1906. ² *Diseases of the Gall Bladder and Bile Ducts*, p. 296. ³ *Annals of Surgery*, July, 1906.

OLD ideas die slowly, and none more slowly than those as to the etiology of malaria. As a rule nowadays it is the old-time non-medical resident from the West Coast of Africa that lays down the law on the subject; but we have received a reprint from the *New York Medical Journal* for August 17th, 1907, of a paper by a Dr. Braddock, entitled "Some Notes on Malarial Fever as Seen in the Jungle," a study of which carries one back to twenty years ago. It is difficult to realize that we are living in 1907 when we read that it is "a fact that persons can and do contract malarial fever when there are no mosquitos to give it to them," and that "it is also certain that a person can acquire malarial fever if he obeys certain natural laws, and which Kipling might call the laws of the jungle." Again: "If a dozen men are working in the tin mines, surveying, or prospecting in the jungle, those who do not change their clothing when wet, who drink unboiled water, and who sleep on the ground, all of the mosquito nets in the world will not save from fever, while those who use the mosquito-curtain and obey the law of the jungle can travel through the country of ghosts and laugh them to scorn." It would probably be useless to point out to Dr. Braddock that his first class already have the parasites in their blood, and that the damp and other factors only stir them up to activity. The examples quoted are sufficient; further comment is unnecessary.