favourable the patient may be expected to do well. Usually primary end-to-end anastomosis is the best operation in the small bowel.

Colectomy for cancer is an operation I continue to take much interest in, and I do several cases every year. In previous papers I have explained my method of doing the operation, and the chief object I have in referring to the subject now is to advocate more strongly than ever the advantages of bringing out the ends of the bowel. This year I found myself gaining so much confidence in cases of colectomy that I began to try and do away with the troublesome stages of artificial anus, clamping the spur, and closing the opening. In one case I removed the spur primarily, but left an artificial anus. In another I did end-to-end anastomosis. Both died, though neither were unsuitable subjects for the operation, whilst others in which I brought out the ends were some of them old and feeble, and looked quite unfit to stand such a severe operation; still they went through the various stages, and are now all right. Time cannot be spared this evening to explain fully why the two cases in which I tried to attain a quicker cure should have died. It is sufficient for my present purpose to say that I am satisfied the unfortunate result was due to not bringing out the ends of the bowel as I have been accustomed to do, and as I always intend to do in the future. When this is done, and there is no intestinal obstruction present, the mortality is almost nil; but when primary union is attempted in the large bowel the operation at once becomes dangerous and has a high mortality.

COLOTOMY.

Finally, I should like to say a word about colotomy. Of late, in simple cases without obstruction, I have given up using the tube and suture the bowel at once to the surface, taking care to make a good spur. In such cases this operation seems almost devoid of danger. It makes a good artificial anus if the orifice be small, and with an aluminium mushroom plug retained in position by an elastic belt a left inguinal colotomy is no bar to any ordinary occupation.

Many surgeons have, in my judgement, made a great mistake in entirely giving up the old lumbar operation. In the case of extremely debilitated patients in whom colotomy becomes imperative, the lumbar is a less serious operation than the iliac, because when such patients die from the operation it is nearly always due to the want of good union between the bowel and the surface, a matter of minor importance when the peritoneal cavity has not been opened.

If Amussat's operation on the left side is worth retaining, that on the right is still more valuable, and in my practice has been the means of saving many lives. I do it comparatively frequently in cases of obstruction due to malignant stricture of the large bowel, and I can only recall one case in which it failed. In that I believe (though I had not the opportunity of making certain) that I mistook a twist of the sigmoid for a malignant stricture. It is not a rare thing for a surgeon to be called to cases of obstruction with great meteorism, but in which he cannot do more than decide that the trouble lies somewhere between the caecum and the rectum. Laparotomy in these cases is very fatal, whilst right lumbar colotomy is almost invariably temporarily successful. In a few days, when the abdomen is empty and flat, the exact situation of the disease is usually apparent, and as soon as the patient is fit for the operation it may be safely removed. The original artificial anus gives very little trouble, for it not infrequently heals spontaneously, when the need for it disappears. I wish very strongly to advocate the practice of doing right lumbar colotomy in such cases. It is much less dangerous than opening the caecum in front, even although you may have already made an anterior wound for exploration. It is also less troublesome to the patient, as the faeces are more formed and do not pour away so continuously. Another important point is that the artificial anus is so completely out of the way as not to prejudice the subsequent laparotomy which will probably have to be undertaken to relieve the stricture. Whilst fully appreciating the advantages of inguinal and transverse colotomies in suitable cases, I am satisfied that there is still very good use for both the right and left lumbar operations under the circumstances I have indicated.

There are, gentlemen, other abdominal operations, notably those upon the gall bladder and bile ducts, to which, if time had permitted, I should have liked to refer; but I have already tested your patience sufficiently, and will not longer postpone your adjournment to that lighter and more congenial entertainment which is an important feature of our first reunion after the summer recess.

ON CHOLECYSTECTOMY: THE INDICATIONS AND CONTRAINDICATIONS FOR ITS PERFORMANCE.

By A. W. MAYO ROBSON, D.Sc., F.R.C.S.

OUT of nearly 1,000 operations on the biliary passages, I have performed cholecystectomy 94 times for various diseases. It has been suggested that on physiological, anatomical, and pathological grounds the gall bladder is not only a useless but a dangerous organ, and that when any of its diseases require surgical intervention it should be treated in the summary fashion in which we now deal with the vermiform appendix. My experience does not support these views, and I would urge that it must not be forgotten that gall stones, though usually forming in the gall bladder, may arise in any part of the biliary apparatus, both within and outside the liver. As a matter of fact, I have known gall stones to develop in a dilated common duct on several occasions after cholecystectomy had been performed by various operators; whereas in the very large experience of Mayo, Kehr, and myself, whose aggregate of operations on the gall bladder amount to over 3,000, it has been stated by each separately that the recurrence of gall stones after cholecystectomy is an extremely rare event.

Bile is constantly being formed in the liver at the rate of about 1 oz. an hour, as I proved by a long series of observations some years ago,¹ but it is normally only poured into the intestine after food has been taken and is passing through the pylorus, the sphincter at the orifice of the common duct opening in response to the reflex effect of the stimulus of food passing the pyloric sphincter. In the intervals the gall bladder acts as a reservoir in storing the bile until it is required to neutralize the acid chyme and to help in emulsifying fat. While the bile is in the gall bladder mucus is added to it, and from observations that I made in 1889 I know that the amount of mucus is considerable, 72 c.cm. in twenty-four hours. This serves the purpose of rendering the bile less irritating.

A series of experiments performed by Dr. Flexner demonstrated the fact that if pure bile is injected into the pancreatic ducts it sets up acute pancreatitis, but when bile is mixed with mucus the action is very considerably modified, and when a certain amount of mucus has been added it no longer acts as a serious irritant.

This would seem to prove that the admixture of mucus with bile in the gall bladder may be important; and at the best it is merely an expression of ignorance to say that the gall bladder has no regular purpose to serve.

It is a question whether the loss of the gall bladder does not lead to a dilatation of the common duct, so as to replace to a certain extent the reservoir function of the gall bladder. That this has occurred in some cases I know from personal experience. If this is universal, it seems not unlikely that after cholecystectomy the dilated common and hepatic ducts may ultimately form a reservoir, and in cases of infection concretions may, and in fact do, develop in the dilated common duct. Moreover, if the bile ducts within and outside the liver have to act as reservoirs, there must necessarily be back pressure on the secreting part of the liver, conditions which do not apply when the gall bladder is acting as a bile storer.

Sufficient time has not elapsed to show whether the liver is injuriously affected by this pressure and absorption, as it is only recently that cholecystectomy for almost normal gall bladders has been adopted by some enthusiasts as a routine procedure.

Whether cirrhosis of the liver and the pancreas will result in a certain proportion of cases remains to be seen. That interstitial pancreatitis does at times develop I know by actual experience, as I have had to operate on several

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.

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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 Whitla, 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