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The Surgery of the Gall Bladder and Bile Ducts, with Brief Notes of Seventy-eight Cases

READ AT THE ELEVENTH INTERNATIONAL MEDICAL CONGRESS HELD AT ROME, APRIL, 1894

BY

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The Surgery of the Gall Bladder and Bile Ducts, with Brief Notes of Seventy-eight Cases.

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

Honorary Surgeon to the Leeds General Infirmary, Professor of Surgery in the Victoria University, and Member of the Council of the Royal College of Surgeons of England.

In the limited time allowed for a paper it is absolutely impossible to deal fully with such an important subject as that of the diseases of the gall bladder and bile ducts; but fortunately affections of these parts requiring surgical interference can for the most part be considered under the one subject of cholelithiasis, as gall stones are in the greater number of cases the *fons mali*. In a work published by Cassell and Co., London, 1892, I have given detailed histories of forty-one operations on the gall bladder and bile ducts; but since the date mentioned I have operated on about forty cases in addition, and I have now the honour to hand round a printed table of seventy-eight consecutive cases, embodying my personal operative experience of the subject, but at the same time I should remark that my conclusions are based on a much larger number of cases, which I have seen or have been immediately concerned in in consultation with colleagues or other medical friends.

Among the prominent symptoms and complications of cholelithiasis which I have had experience of are:

(1) Spasms or biliary colic without jaundice, the attacks

being repeated at longer or shorter intervals, coming on without apparent cause, usually starting in the epigastrium or under the right ribs, and radiating to the right scapular region or to the shoulder, and often ending in vomiting, which usually gives relief.

(2) Collapse, due to the intensity of the pain, which I have known to cause death without any other complication.

(3) Spasms followed by evanescent icterus.

(4) Pain followed by persistent jaundice and enlargement of the liver, which may give rise to the suspicion of malignant disease, but which may usually be diagnosed from cancer by the presence of

(5) Attacks of pain accompanied by a feeling of chilliness or of rigor, and followed by increased temperature and then by profuse perspiration, the whole attack resembling one of ague.

(6) Distension (hydrops) of the gall bladder without jaundice, ordinarily due to impaction of gall stones in the cystic duct.

(7) If accompanied by persistent jaundice, distension of the gall bladder raises a suspicion of malignant disease, either of the liver, or bile ducts, or of the head of the pancreas.

(8) Ileus due to atony of the bowel, apparently dependent on the pain producing a profound impression on the nerves of the abdomen, leading to enormous distension and to the symptoms and appearance of acute intestinal obstruction.

(9) Acute intestinal obstruction dependent on: (*a*) Paralysis of gut due to local peritonitis in the neighbourhood of the gall bladder. (*b*) Volvulus of small intestine. (*c*) Impaction of large gall stone in some part of the intestine after ulcerating its way from the bile channels into the bowel.

(10) General hæmorrhages, the result of long continued jaundice, either dependent on gall stones alone or on cholelithiasis, associated with malignant disease.

(11) Persistent vomiting, with such serious digestive disturbances as to threaten death from exhaustion.

(12) Localised peritonitis producing adhesions, which may then become a source of trouble even after the gall stones have been got rid of. I believe that nearly every attack of biliary colic is accompanied by adhesive peri-

tonitis, as my experience is that in all cases where there have been characteristic seizures adhesions are found.

(13) Dilatations of stomach dependent on adhesions around the pylorus.

(14) Ulceration of the bile passages establishing a fistula between them and the intestine.

(15) Abscess of the liver.

(16) Localised peritoneal abscess.

(17) Abscess in the abdominal walls.

(18) Fistula at the umbilicus or elsewhere on the surface of the abdomen.

(19) Empyema of the gall bladder.

(20) Suppurative choleangitis.

(21) Septicæmia or pyæmia.

(22) Gangrene of the gall bladder.

(23) Perforative peritonitis due to ulceration or to rupture of the gall bladder or ducts.

(24) Extravasation of bile into the general peritoneal cavity.

(25) Pyelitis of the right side.

(26) Cancer of the gall bladder or of the ducts.

(27) Subphrenic abscess.

(28) Empyema on the right side.

(29) Pneumonia of the lower lobe on the right side.

(30) Chronic invalidism and inability to perform any of the ordinary business or social duties.

A study of the cases in the table handed round will show that where medical means have failed, surgery holds out very good hope of success in nearly every complication of cholelithiasis, if the patient be not too much exhausted to permit of any major operation.

Cases complicated with malignant disease, however, are decidedly unfavourable ones for operation, as will be seen by referring to such cases in the tables. First, because the subjects of cancer are not only as a rule cachetic and worn down by disease before the surgeon is called in, and therefore unfitted to bear the shock of any operation ; but, secondly, because such patients are particularly prone to hæmorrhage at the time of operation, or subsequently, which may be uncontrollable.

I would here take the opportunity of correcting an observation made several years ago in a paper read before the Clinical Society of London, which I have since found to need qualification. I then remarked that there was more

SERIES OF OPERATIONS ON THE GALL BLADDER AND BILE DUCTS.

No.	Name.	Sex.	Age.	Date.	Operation.	Remarks.	Result.	After-History.
1	B. F.	F	33	-6-84	Cholecystotomy	Distended gall bladder; 12 gall stones removed	R	Small mucous fistula persisted; in good health, 1893.
2	H.	,,	22	-7-85	,,	Distended gall bladder; 60 gall stones	,,	Mucous fistula for a time, cured by cholecystectomy; in good health, 1893.
3	V. B.	,,	42	14-1-88	,,	Empyema of gall bladder	,,	Biliary fistula for a time, ultimately quite well and in good health, 1892.
4	E. C.	,,	44	19-3-88	,,	14 gall stones removed	,,	Cured.
5	H. F.	,,	32	2-5-88	,,	42 gall stones removed	,,	,,
6	G. B.	,,	40	14-6-88	,,	Abscess; 2 large gall stones	,,	Cure; no fistula.
7	Mrs. J.	,,	40	9-7-88	,,	Distended gall bladder; 2 large gall stones	,,	Complete recovery and no recurrence.
8	A. H.	,,	42	29-7-88	,,	Slight jaundice; 2 large gall stones	,,	Cure; well 3 years after.
9	S. G.	,,	49	29-8-88	,,	66 gall stones	,,	Complete and permanent recovery; well 5 years after.
10	G. B.	M	50	10-9-88		Intense jaundice; distended gall bladder; cancer of pancreas	D	Ninth day, hæmorrhage.
11	W. T.	,,	42	23-12-88		Deep jaundice; distended gall bladder; cancer of common bile duct	R	Relief for a time; death later from progress of disease.
12	V. B.	F	44	2-3-89	Cholecystenterostomy	Gall bladder united to colon	,,	Quite well, 1893.
13	C.	,,	41	28-3-89	Cholecystotomy	Distended gall bladder; 14 gall stones	,,	Apparent cure.
14	H.	,,	32	2-5-89	,,	Distended gall bladder; 42 gall stones	,,	,, ,,
15	H.	M	55	7-9-89	,	70 gall stones	,,	Quite well, 1894.
16	A. W.	F	41	26-9-89	,,	3 gall stones	,,	When last heard of, well.
17	F.	,,	34	10-10-89	,,	12 gall stones	,,	Quite well when last seen.
18	H.	,,	32	16-1-90	,,	Distended gall bladder; 2 gall stones	,,	,, ,, ,,
19	G. T.	,,	42	14-2-90	,,	1 large gall stone	,,	,, ,, ,,
20	R.	M	50	5-5-90	,,	1 large gall stone	,,	,, ,, ,,
21	S. G.	F	51	14-5-90	Cholecystectomy	Mucous fistula, stricture of cystic duct, following gall stones	,,	Complete and permanent cure; well, 1893.
22	C.	,,	30	3-6-90	Cholecystotomy	Jaundice; stones crushed in common duct	,,	Well, 1894.
23	B. P.	M	29	19-6-90	,,	6 gall stones	,,	Apparent cure; well, 1892.
24	B.	F	42	22-6-90	Exploratory	Jaundice; tumour close to common duct	,,	Perfectly well some months after.
25	J. E.	,,	25	2-9-90	Cholecystotomy	Gall stones in gall bladder; also abscess of liver, containing gall stones (38 in all)	,,	Apparent cure.
26	H.	,,	30	1-11-90	,,	1 gall stone removed, several crushed in ducts	,,	,, ,,
27	H. E.	,,	68	12-11-90	Laparotomy	Gall stone producing volvulus; laparotomy and untwisting volvulus; large gall stone afterwards passed *per anum*	,,	Heard of as well and healthy a year after.
28	E. W.	,,	40	14-11-90	Cholelithotrity	Large gall stone crushed in common duct	,,	Rapid recovery and apparent cure.
29	R.	M	39	29-12-90	Cholecystotomy	Numerous gall stones	,,	Rapid recovery; well, 1893.
30	J. R.	F	45	29-12-90	,,	Cancer of pancreas; intense jaundice; hæmorrhages from nose, bowel, &c.	D	Patient extremely exhausted at time of operation, and probably did not much hasten death.

31	E. W.	F	55	13-1-91	Cholecystotomy	Gall stones crushed in cystic duct	R	Cure.
32	H.M.C.	,,	42	5-2-91	Hepatotomy for gall stones	Cyst of liver due to dilated hepatic duct	,,	Relief; small discharge of bile persisted for a time.
33	T. G.	M	50	17-2-91	Exploratory	Distended gall bladder; 30 oz. fluid removed by aspirator; tumour of head of pancreas	,,	Marked relief; returned home within the month.
34	H.M.C.	F	42	19-3-81	Cholecystotomy	Intense jaundice; gall stone ¾ in. diameter removed from gall bladder	,,	Relief; after returning home at end of month, contracted influenza and had fatal pneumonia.
35	F.	,,	35	26-2-91	,,	Stones crushed in common duct	,,	——
36	J. L.	M	45	5-3-91	,,	Deep jaundice; gall stone crushed in common duct	,,	In 4th week diarrhœa and sudden death apparently from perforation of bowel; nothing abnormal in region of bile ducts.
37	B. S.	F	40	12-3-91	,,	25 gall stones removed and 2 crushed in common duct; jaundice	,,	Apparent cure.
38	H.	,,	32	23-3-91	,,	1 gall stone	,,	,, ,,
39	E. R.	,,	40	2-4-91	Cholelithotrity	Gall bladder not opened; 1 stone size of filbert crushed in cystic duct	,,	No recurrence of symptoms; well, 1894.
40	E. S.	,,	50	7-5-91	,,	5 stones crushed with fingers and forceps	,,	Apparent cure.
41	M.	,,	59	5-12-91	Cholecystotomy	Distended gall bladder; movable right kidney	,,	Good recovery in July, 1893; no recurrence of symptoms.
42	J. R.	,,	51	14-1-92	Exploratory	Solid tumour of gall bladder; thought to be malignant; exploration by needles after abdomen had been opened	,,	Ultimate complete recovery without further treatment.
43	C.	F	44	-2-92	Cholecystotomy	8 gall stones removed from gall bladder, 15 from cystic duct	,,	Cured.
44	J. O.	M	51	3-3-92	,,	Gall stones crushed in cystic duct	,,	,,
45	A. M.	,,	37	-3-92	,,	Jaundice; gall stones removed from gall bladder and cystic duct	,,	Biliary fistula persisted for a time, but ultimately closed, to reopen after another attack of biliary colic followed by jaundice.
46	R.	F	56	15-6-92	,,	Gall stones in bladder and in cystic and common ducts, latter crushed, former removed	,,	Cured.
47	F. T. W.	M	18	6-8-92	Exploratory	Recurrent attacks of pain in hypochondrium; extensive adhesions of gall bladder broken down	,,	Gained 2 stones in weight after operation; well, 1894.
48	A. M.	,	38	6-8-92	Cholecystenterostomy	Dilated cystic duct united to colon by small decalcified bone bobbin	,,	Perfectly well for some months, after which jaundice recurred.
49	T.	F	50	29-9-92	Cholecystotomy	Jaundice; shrunken gall bladder; gall stone in bladder and several in cystic and common ducts crushed	,,	Well, 1893.
50	E.	,,	50	4-10-92	,,	Jaundice; 2 large stones in gall bladder, 1 in common duct removed by scoop	,,	Well, 1893.
51	L. P.	,,	40	12-1-93	,,	6 gall stones from cystic duct; several crushed in common duct	,,	Small biliary fistula persisted, but at times closed; see 65.
52	A. M.	M	—	28-1-93	Choledochotomy	Large gall stone removed from common duct through incision which was afterwards sutured; drainage	D	Fæcal extravasation through small perforation in colon, caused by separating adhesions and unrecognised at time of operation.
53	B.	F	36	24-2-93	Cholecystotomy	6 large stones removed	R	Cured.
54	J. O.	M	51	3-3-93		Contracted gall bladder; numerous stones crushed in common duct	,,	Recovery complete; quite well, 1894.
55	A. C.	F	37	11-3-93	,,	Shrunken gall bladder; 1 stone in cystic duct	,,	Cured; well when last seen.
56	H.	M	50	11-4-93	,,	156 gall stones removed	,,	——

No.	Name.	Sex.	Age.	Date.	Operation.	Remarks.	Result.	After-History.
57	G. T.	F	44	28-4-93	Cholecystectomy	Mucous fistula over gall bladder	R	Perfect recovery ; well, 1894.
58	M. L.	,,	54	5-5-93	Exploratory	Cancer of gall bladder	,,	Wound healed by first intention and patient left apparently relieved.
59	E. B.	,,	44	6-5-93	Cholecystotomy	Contracted gall bladder; 2 stones in cystic duct; crushed	R	Well when last heard of
60	H. G.	,,	40	19-5-93	,,	Gall stone weighing 112 grs. removed from cystic duct	,,	Perfectly well some months subsequently.
61	S. J. R.	,,	35	19-5-93	,,	2 large gall stones in cystic duct	,,	Cured.
62	P. S.	,,	31	25-5-93	,,	Stone crushed in common duct	,,	Quite well when seen some time after.
63	F.	,,	54	6-6-93	,,	Distended gall bladder ; 3 stones removed from cystic duct	,,	——
64	B. B.	M	58	20-6-93	,,	Several large stones in cystic and common ducts; removed crushed	,,	Bronchitis third week, and patient left the infirmary at her own request.
65	L. P.	F	—	31-7-93	Cholecystenterostomy by decalcified bone bobbin	Biliary fistula	,,	Quite well, 1894.
66	J. G.	M	52	24-8-93	Cholecystotomy	Large stone in cystic duct	,,	,, ,, ,,
67	C.	F	35	4-9-93	,,	27 gall stones removed	,,	Well, 1894.
68	B.	,,	40	26-9-93	,,	Distended gall bladder ; 6 stones removed from gall bladder and cystic duct	,,	Perfectly well February, 1894.
69	K. B.	,,	44	22-9-93	,,	Stones in cystic duct and extensive adhesions	,,	Well when last heard of.
70	C.	,,	31	14-11-93	,,	Sinus discharging at umbilicus ; 18 gall stones removed from gall bladder, together with pus and mucus	,,	March, 1894, writes to say very well
71	E. R.	M	56	21-10-93	,,	6 gall stones removed from common duct and several crushed	,,	Cured. Well some months after.
72	M.A.K.	F	30	30-11-93	,,	5 gall stones removed	,,	,, ,, ,, ,,
73	P.	M	49	-12-93	Laparotomy, lavage, and drainage	After symptoms of gall stones for 29 years acute general peritonitis starting over gall bladder. Rupture of bile ducts and extravasation of several pints of bile with pus found at operation	,,	Perfect recovery. Patient well and at business within 2 months.
74	J. G.	,,	39	12-3-94	Laparotomy; separation of adhesions of pylorus to gall bladder	History of cholelithiasis 6 years before ; 5 years history of pain, vomiting, &c.	,,	Gained 2 stones in weight in three months. Apparent cure.
75	W. P.	,,	32	1-4-92	Cholecystotomy	Deep jaundice ; distended gall bladder ; emaciation. No pain. Scirrhus of head of pancreas ?	D	Patient much exhausted and emaciated at time of operation ; almost died under anæsthetic ; death, apparently from shock, on second day.
76	H. C.	F	45	18-2-94	,,	6 gall stones in bladder and 23 in cystic duct	R	March, 1894 ; writes to say "better than for years."
77	L.	,,	32	3-3-94	,,	20 gall stones removed ; gall bladder distended, no jaundice	,,	Recovering and apparently well.
78	E.	,,	35	7-3-94	,,	Distended gall bladder ; 35 gall stones removed ; no jaundice	,,	,, ,, ,,

risk in operating on profoundly jaundiced patients, on account of hæmorrhage. While I still think there is greater risk in operating on such cases, I have found by ample experience that the danger is not simply from the presence of jaundice, but from the presence of jaundice combined with malignant disease; and I feel that I cannot emphasise too strongly the fact that operations undertaken on patients with malignant disease of the head of the pancreas, of the bile ducts, or of the liver, if combined with deep jaundice, are attended with very great risk, and that in such cases the great risk is not compensated for by the slight respite which may be given by establishing a biliary fistula, as recommended by some able surgeons.

It may, however, be worth remarking that, in order to avert the danger of hæmorrhage in jaundiced patients, I have found the administration of chloride of calcium for a few days before operation to make the blood more plastic and to lessen the tendency to bleeding both at the time of operation and subsequently.

For this therapeutic measure I am indebted to Dr. A. E. Wright's researches on the "Coagulability of the Blood," published in the *British Medical Journal* for December 19, 1891. After operation the drug may be continued either by the mouth or by nutrient enemata for some time with advantage. In jaundiced cases I prefer to ligature all bleeding parts, rather than to trust to pressure forceps for hæmostasis. The subject of diagnosis is too important to pass over in a few words, and too long to discuss in a short paper, but I would remark that there are two main points for consideration: First, are gall stones present? Secondly, Is there malignant disease? A careful consideration of the previous history will usually enable the former question to be answered, and especially the history of attacks of "spasms" preceding other complications. The latter question cannot, I believe, be always positively answered, but as a rule the preliminary history of "spasms" of pain preceding the jaundice, and of intermittent pyrexia, with the absence of enlargement of the gall bladder, will point to cholelithiasis.

It may be worth noticing that in all the cases of malignant disease with jaundice on which I have operated the gall bladder formed a perceptible tumour, whereas when the jaundice was dependent on gall stones there was no marked tumour present.

Another diagnostic point worth remarking is that in cholelithiasis there is usually tenderness on pressure over some point between the eighth or ninth costal cartilage and the umbilicus. In three cases the pain in the so-called "spasms" has been referred to the left side, thence radiating to the left scapular region, and in such cases I have found the pylorus adherent to the gall bladder or cystic duct. The so-called diagnostic operations of sounding for gall stones and aspiration of a distended gall bladder I believe to be futile and dangerous, and much better replaced by a small exploratory incision, when treatment can at the same time be carried out if required.

Treatment.—After medical treatment has been fairly tried and failed, I think most surgeons are agreed that surgical measures should be resorted to. While cholecystotomy is generally recognised as the operation to be aimed at in the treatment of affections of the gall bladder or bile ducts, especially in cholelithiasis, it is often impossible to say what operation will have to be done until the abdomen is opened. The indications for operating would seem to me to be as follows:

1. In frequently recurring biliary colic without jaundice, with or without enlargement of the gall bladder.
2. In enlargement of the gall bladder without jaundice, even if unaccompanied by great pain.
3. In persistent jaundice ushered in by pain, and where recurring pains, with or without ague-like paroxysms, render it probable that the cause is gall stones in the common duct.
4. In empyema of the gall bladder.
5. In peritonitis, starting in the right hypochondrium.
6. In abscess around the gall bladder or bile ducts, whether in the liver or under or over it.
7. In some cases where, although the gall stones may have passed, adhesions remain and prove a source of pain and illness.
8. In fistula, mucous or biliary.
9. In certain cases of jaundice, with distended gall bladder dependent on some obstruction in the common duct; but in such cases the increased risk must be borne in mind, as malignant disease will probably be the cause of the obstruction.

Supposing the case to prove a suitable one for cholecyst-

otomy, and the gall bladder and ducts can be cleared without great difficulty by means of forceps within and the fingers outside the ducts, the opening in the gall bladder can be sutured to the aponeurosis, which I think preferable to skin fixation, and drained, which I infinitely prefer to immediate suture of the opening.

But if the ducts cannot be cleared, what may be done?

(*a*) Cholelithotrity or crushing of the gall stones *in situ* by means of the finger and thumb, or by padded forceps, an operation which I have successfully performed on numerous occasions, and which I prefer to the more formidable procedure of incising the ducts or of fixing the gall bladder to the intestine.

(*b*) Choledochotomy, or incising the duct, whether cystic or common, the incision being afterwards sutured, not an easy matter on account of the depth of the parts to be coapted, but which I have found to be best effected by means of a rectangular cleft palate needle. A drainage tube should always be inserted into the right kidney pouch in these cases.

(*c*) Cholecystenterostomy, or the making of an anastomosis between the gall bladder and intestine, easily effected if the gall bladder be dilated, with difficulty performed if the gall bladder be contracted, as is often the case. I have performed this operation three times, with immediate success and recovery in all, and with complete and permanent relief in two. The method I prefer is that by means of my decalcified bone bobbin, which enables the operator to accomplish the anastomosis rapidly, as only two sutures have to be employed.

(*d*) The daily injection of fluids after an interval of some days, through the cholecystotomy opening, which will either soften or dissolve the concretions. For this I have used hot water, a solution of taurocholate of soda, ether, and ether and turpentine, with more or less success; but I think that Dr. Brockbank's suggestion to use an injection of olive oil or a 5 per cent. solution of sapo animalis or oleic acid will be worth more fully trying.

(*e*) Cholecystectomy may be required as a secondary operation in cases of stricture of the cystic duct, the common duct being free. On three occasions in which I have excised the gall bladder, it has been for mucous fistula depending on stricture of the cystic duct following on gall stones, and all the cases were completely and permanently relieved.

Cholecystectomy can seldom be advisable or necessary as a primary operation in gall stones, and extremely rarely possible in malignant disease. In cholecystotomy, where it is impossible to bring the margins of the incised gall bladder into the wound, and where the parietal peritoneum cannot be tucked down to meet the edges of the opening, I have made a tube of the omentum, but in such cases no hesitation need be felt in trusting to a drainage tube, as the peritoneal cavity soon becomes occluded around the drain, and there is little or no tendency to the passage of bile among the viscera, so that a suprapubic drainage opening is quite unnecessary. With very few exceptions I have found a vertical incision along the upper part of the right linea semilunaris to give ample room, but if required I have not hesitated to get further room by a transverse cut in addition.

Suture of peritoneum, aponeurosis, and skin by separate stitches effectually guards against ventral hernia, if the patient be kept recumbent for from 21 to 28 days, and if a firm oval pad be worn under a belt for a few months subsequently.

In all cases strict antiseptic precautions have been observed, and the abdomen has been left as clean and dry as possible.

In conclusion, I would emphasise that with due skill and adequate care operations on the gall bladder and bile ducts are among the most successful of the major operations, but as many of them are extremely difficult, and as it is impossible to say beforehand whether any case may not prove so, I think such surgical work should be undertaken only by those who have had experience in abdominal surgery, and who have witnessed or helped in several operations of this kind. As soon as this is the case we shall cease to witness the varying rates of mortality in the hands of different operators, of from 50 to almost 0 per cent., and shall probably find that, excluding cases of malignant disease associated with jaundice, the all-round mortality will not exceed 5 per cent. I hope the time is not far distant when it will be fully recognised that though cholelithiasis, so far as its causes and its early treatment are concerned, is distinctly a condition for medical treatment, it is both unjust to the patient and unfair to the profession to continue medical treatment until serious complications supervene, or the patient is almost, if not quite, past relief, before the aid of surgery is invoked.