Cases of liver and gall-duct surgery / by John D. Malcolm.

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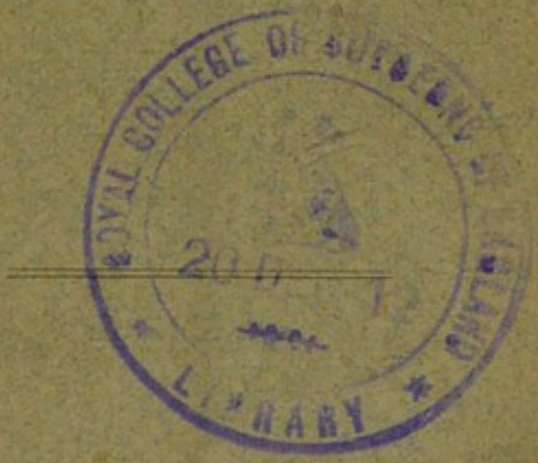

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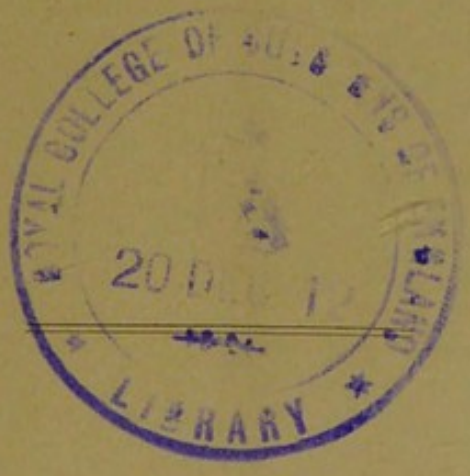

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CASES OF LIVER AND GALL-DUCT SURGERY.

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In this paper I propose to relate in detail the histories of all the cases of disease of the liver or of the gall-ducts on which I have operated. The cases consist of three in which exploratory incisions were made, two operated on for hydatids, and three in which gall-stones were extracted. The three patients on whom I performed exploratory operations died from the progress of diseases which it was impossible to cure by surgical means, but the operations did not, directly or indirctly, bring about or even hasten the fatal results. The other patients are alive now.

Case 1. *Exploration; nature of disease not discovered.*—The first of the exploratory operations was performed on a woman 45 years of age, whose family history gave no assistance in diagnosis. She said that a soft tumour had been taken out of her lower jaw 18 years before I saw her, but I have not been able to get any account of this operation. She had suffered from bilious attacks for ten years at almost every menstrual period; the severity of these attacks had, however, been much less for two or three years. A swelling in the abdomen was first noticed in February, 1891, and it had grown considerably before she was admitted to the Samaritan Free Hospital in the following May. At that time there was a slight yellow discoloration of the skin and conjunctivæ. In the right loin there was a solid, smooth tumour, with a rounded outline, fairly movable and not tender, extending from the costal margin to close to the pubes and beyond the edge of the rectus muscle on the left side. It stood out prominently from the rest of the abdominal surface in front. The growth was believed to be connected with the liver, but no definite diagnosis was made. As it was growing rapidly, an exploratory operation was performed on June 16th. The tumour was found to consist of a rounded swelling of the upper part of the liver, the gland being so displaced and twisted that the abnormal enlargement presented anteriorly. There was no hardness and no irregularity of outline in the growth, and, except for the alteration of shape, the surface of the organ appeared to be quite healthy. By passing the finger below the liver I found that the anterior border of the gland was of normal shape, but was directed downwards and slightly backwards, so that it had not been palpable before the abdomen was opened. It seemed as if the whole liver had been displaced downwards and twisted on its axis by something growing in or behind the upper and posterior part of it. I plunged a trocar and cannula deeply into the thickest part of the gland. The instrument appeared to pass through

soft tissues of uniform consistence, and when the trocar was withdrawn nothing but blood escaped. The hæmorrhage was very free, spouting a foot and a half to two feet into the air, and continuing after the cannula was withdrawn, so that I feared it might go on to a dangerous extent. It did not seem as if anything more could be done in the way of curing the patient, and I therefore applied sponge-pressure to the puncture opening and inserted the sutures in the external wound. By the time these were in place the hæmorrhage had almost ceased, and I closed the wound without any anxiety on this point. There was no trouble during convalescence. The patient went home on July 6th, her swelling continued to enlarge, and she died on October 8th of the same year. There was no *post-mortem* examination, and I did not see the patient after she went home, but, as far as I can gather, death was due to asthenia, and no definite diagnosis was made.

The operation in this case was most unsatisfactory in that no benefit resulted, and I did not even find out the exact nature of the disease. The fact that there was no *post-mortem* examination leaves the case permanently an obscure one, but I think some light may be thrown on the matter by the following history. On November 30th, 1894, I saw a woman 38 years of age in consultation with Dr. Malcolm Mackintosh, of Clapham Common. She was suffering from abdominal distension and pain, sickness, and frequent profuse evacuations of the bowels, the stools consisting almost entirely of watery mucus. There was some slight fever, but no jaundice and no renal or heart disease. The patient had borne three children, the third being eleven months old The symptoms, which had developed very rapidly, suggested the possibility of some pelvic mischief causing irritation of the rectum, but after a careful examination I could find no explanation of the condition of the patient in her pelvis. The liver was very much enlarged, the anterior border of the right lobe being quite free, soft, and natural to palpation, but displaced downwards nearly as low as the anterior superior iliac spines. Owing to the distension I could not define the left lobe by palpation, but percussion showed that it also was enlarged. No definite diagnosis was made, but I thought the mischief was due to something in or above the liver, which was pushing its lower border, and especially the right lobe, downwards. Treatment was directed to relieving the distension and supporting the strength of the patient, and sometimes the flatulence dispersed, the abdomen becoming flat, but a tendency to tympanitis continued to the last. The progress of the case continued to be very rapid, and about a week after I had seen the patient Dr. Mackintosh discovered distinct nodules on the surface of the left lobe of the liver, and was able to make an exact diagnosis. The patient died a month after my visit, on January 1st, 1895. After death Dr. Mackintosh obtained permission to examine the body, and found a moderately hard carcinoma, which seemed to have originated on the under surface of the liver in the region of the portal fissure. There were cancerous nodules scattered through the whole organ; but these were more numerous in the left lobe, fewer and apparently of more recent development on the right side. Dr. Mackintosh attributed the profuse discharge of mucus from the bowel to congestion of the intestine from pressure on the portal vein, a view with which I fully agree. No cancer was found in any other part of the body.

There is a considerable resemblance clinically between this case and that of the patient whose abdomen I explored, as above related; and if we accept the view that pressure on the portal vein was the cause of the

exhausting discharge in Dr. Mackintosh's case, it is obvious that a tumour more deeply placed in the liver substance might have led to a more prolonged illness, and might have induced death without yielding any signs by which a positive diagnosis could be made during the life of the patient, as in the first case.

Case 2. *Exploration; malignant disease of the liver.*—My second exploratory operation was performed on a patient about 60 years of age, who was under the care of Mr. Evans, of Clapham Common. She had suffered from pain in the neighbourhood of the gall-bladder with liver symptoms of many years' duration, and Dr. George Harley had seen her and had advised that an exploratory operation should be performed. When I saw the patient on January 22nd, 1892, she was emaciated and intensely jaundiced. The liver edge was somewhat lower than it normally should have been, and immediately below it, in the position of the fundus of the gall-bladder, there were two very hard substances, about the size of hazel-nuts, which lay close to the abdominal wall and exhibited some mobility on each other. They felt very like two calculi in the gall-bladder. I made an incision through the abdominal wall just large enough to admit my finger, and on examining the parts I found that the two hard substances were growths standing out from the lower surface of the liver close to its anterior border, and that there were many nodules scattered over this surface as far as my finger could reach. The upper surface showed no irregularity of outline. The gall-bladder was not distended. As the disease was evidently malignant, I at once sewed up the wound. The operation gave rise to little disturbance, and the incision healed without trouble, but the patient became gradually weaker and died of asthenia on March 5th, six weeks and a day after the operation. When I had examined the parts with my finger inside the abdomen in this case, I at once observed that calculi in a gall-bladder could not have remained in position close behind the abdominal wall without being fixed in some way, and there had been no evidence of distension of the gall-bladder or of any condition that would place and firmly hold two calculi fixed in the fundus.

Case 3. *Exploration; malignant disease of the pancreas and duodenum.*—A third case on which I operated may be regarded as one of exploration of the gall-ducts. The patient had intense jaundice and a large ovarian tumour which prevented any satisfactory examination of the hepatic region. I removed an apparently simple ovarian cystoma, and found that the patient had also a malignant growth of the pancreas. There was no trouble from the operation, but the patient died five weeks after from asthenia, and at the necropsy it was found that the pancreatic tumour involved the descending portion of the duodenum, which was converted into a tube of cancerous tissue so thin in parts that it appeared to be just on the point of bursting. (The case is fully reported in the 'Lancet' of September 8th, 1894.)

Case 4. *Three operations for hydatids of liver and of sub-peritoneal connective tissue.*—My first case of hydatids was sent to the Samaritan Free Hospital in November, 1890, by Mr. Starling, of Charlton. The patient, who was then 33 years of age, complained of having "lumps" in the upper part of her abdomen, and said that she had suffered from crampy pains in the bowels from time to time for 16

years. These pains had become more frequent and more severe, and she had first noticed the tumours when she was carrying a child that was born two years before I saw her; but two years before that time Mr. Power, of East India Road, who attended her in her first confinement, told her that she had a tumour, for which he recommended her to seek treatment in some hospital. On examination I found an oval mass at the back of the abdominal cavity, a little below the position of the left kidney, somewhat movable, but too small and deeply placed to allow of an opinion being formed as to the presence or absence of fluctuation in it. A little to the right of the normal position of the gall-bladder there was another tumour, rather larger than the first, attached to the lower surface of the liver and distinctly fluctuating. After the patient had been under observation for some weeks a third tumour was discovered a little to the left of the middle line and fixed to the lower edge of the liver by a band-like attachment about half an inch long. All these swellings rapidly increased in size, and in February, 1891, the left one was rather larger than a healthy kidney; the right was nearly round and measured 4 inches in diameter. On percussion it exhibited the peculiar thrill of a hydatid cyst. The more central growth measured about 2½ inches from above downwards and about 2 inches across. The liver dulness began at the level of the nipple above. Immediately below this point an absolutely dull note was elicited for 9 inches, as far as the lower border of the largest swelling, the patient being rather a small woman. To the right and left of this swelling the liver dulness was lower than normal, but the note was resonant over the two smaller tumours. The whole abdomen was slightly distended. At the back the liver dulness was absolute for 1½ inches above the border of the ribs on the left side, and the upper border of the dull area as it crossed over to the right passed gently upwards and round to the nipple line in front. The uterus was anteflexed, and there was some endometritis. I thought I could feel both ovaries, of about the usual size and in their proper positions, but somewhat tender to palpation. The patient said she seldom had any cough or expectoration. At the right apex there were some crepitations heard on auscultation, but otherwise the lungs were normal. The apex beat of the heart was displaced upwards and to the left, but the cardiac sounds were normal, and the pulse was fairly strong, beating 84 to the minute. The action of the bowels required to be assisted by medicine, and the patient was thin and losing flesh, but except for the conditions related she seemed to be a healthy woman. The kidney action was good. There was nothing in the patient's history to show how she had become infected by hydatids; she had lived in Woolwich all her life, and said she had never had anything to do with dogs or animals of any kind. Her husband was a waterman.

I operated on February 17th, 1891, making an incision in the middle line of the upper part of the abdomen. After exploring the parts, I first removed the growth from the left loin. It lay in the connective tissue behind the peritoneum, its connections being easily separated except posteriorly, where they were more dense and much more vascular, so that numerous vessels required to be ligatured, although I did not tie them until the end of the operation, in the hope that pressure by forceps might arrest the bleeding. I attempted to remove the cyst unopened, but I had to use a good deal of force, and it unfortunately burst. There was little of the contents spilled over the peritoneum, however, because the sac was ruptured by considerable pressure, and the fluid was in great measure, if

not entirely, discharged outwards. The tumour consisted of a single sac, having the characteristic lining of membranous tissue formed by the parasite, surrounded by the usual adventitious fibrous capsule developed by the host. It contained no daughter cysts. I next took out the smaller of the cysts below the liver. It seemed to be outside this organ, but connected with it by a kind of pedicle, which I tied as I would tie the attachment of an ovarian tumour. This hydatid contained daughter cysts. The largest of the tumours was in the liver substance. I cut into it and removed much fluid and numerous daughter cysts, taking great care to keep the peritoneum clean by means of sponges packed round the opening. When I had removed most of the contents of this cavity I again explored the abdomen and found that there was a chain of hydatids running backwards along the lower surface of the left lobe of the liver Some of these I enucleated, but the manipulation became more difficult as I had to follow the cysts deeper, and when the patient had been about three hours on the table I felt compelled to desist from further attempts. It was obvious that there were more cysts in various parts of the peritoneum, and that there were other cysts in the liver substance. A very long time would have been necessary to deal with them all, and the patient's condition did not warrant a continuance of the operation. I was, however, able to separate two of the chain of hydatids at which I was working without opening either of them. I washed out the empty cyst cavity in the liver with iodine and water, sewed its opening to the opening in the abdominal wall so as to make a sinus, and closed the rest of the incision in the usual way. Two drainage-tubes were passed through the sinus into the cavity, and the wound was dressed with a large quantity of carbolic gauze. The patient was on the operating table nearly three hours and a quarter. She quickly recovered from the chloroform, and convalescence took place without causing any serious anxiety. The temperature rose to 103·6° F. in the vagina and the pulse to 120 twenty-four hours after the operation. The temperature then fell and fluctuated between 99·6° and 101° for three weeks, after which time it was below 100° and the pulse was below 90. There was some difficulty with the bowels during the first nine days; but afterwards they moved freely, and the patient then had only to contend with the weakness natural after such an operation and with some bronchitis. The discharge from the wound was never very copious, but the incision did not completely heal for nearly three months, although long before this the patient had gained strength and put on flesh, and was able to get about freely. She left the hospital in the eleventh week after the operation. She remained under my observation, and soon after she went home the upper part of the right side of the abdomen began to enlarge again, and there was much colicky pain in the abdomen, especially after food. The bowels still required to be assisted by laxatives, but they acted better than before the operation. Menstruation was regular.

The patient was readmitted to hospital on November 20th, 1891, nine months after the first operation. The right costal margin was then much more prominent than the left, the greatest measurement from the spine to the middle line in front being 17½ inches on the right side, and 16 inches at the same level on the left. The scar was very wide at the part where the tubes had been, and was dragged considerably to the right of the middle line. To the left of the scar, and close to the costal margin, there was a rounded swelling measuring about 2½ inches across and standing out about an inch from the surface of the

abdomen. To the right there was a large, smooth, rounded swelling reaching well down towards the pelvis and filling the whole of the right side. These swellings exhibited the thrill on percussion that is characteristic of hydatids ; they were evidently in, or closely connected to, the liver, and they were dull on percussion except at their lower margins, which were rounded and partially overlapped by the intestines. Above the costal margin the percussion note was absolutely dull as high as the level of the nipple in front, and was impaired up to the second intercostal space on the right side. The absolute dulness behind was bounded above by a line crossing the middle line at the level of the spine of the sixth dorsal vertebra, and gradually curving downwards on the left. The lungs were very greatly compressed, and there was considerable cyanosis, but I detected no signs of active lung disease, and although there was a slight cough there was no expectoration. The heart's action was fairly good, the pulse usually beating 72 times to the minute. The apex beat was felt 6½ inches from the middle line in the fifth interspace. The temperature was normal or sub-normal. In the right side of the pelvis a small tumour was felt by bimanual examination, exactly resembling an ovarian tumour and about the size of an orange. On December 2nd I carefully opened the abdomen by removing the old scar. After freeing some omental adhesions I exposed the smaller and more prominent cyst. This I aspirated, laid open, and cleared out in the same way as I had treated the liver cyst at the first operation. It contained numerous daughter cysts. When all was clear I made a careful examination of the abdomen and found a number of small tumours low down in the pelvis. I counted five. Leaving them I returned to the liver and cut into the large cyst on its inner side, where it bulged into the one already opened. A very great quantity of fluid and daughter cysts was removed, but the bulk was not measured, as much of it was caught in towels and thrown aside. The size of this cavity may be estimated by the fact that after it was partially collapsed my sponge forceps, which measure 8½ inches beyond the handles, did not reach a large part of the upper and posterior boundaries of the sac. It was with much difficulty that I got the parasitic sac of the main hydatid cyst away. This was very thick and firm, and would not fold up sufficiently to come through the opening until I had many times seized it and brought away small pieces. At last I succeeded in removing the bulk of it in one mass, but many small pieces were afterwards washed away with iodine and water. When the cyst was thus partially cleared the patient was so blue and collapsed that it was out of the question to attempt to remove the other tumours. I therefore sewed the opening in the liver to that in the abdominal wall, and closed the incision, draining the liver cavity and dressing the wound as at the first operation. This second operation lasted an hour and a half. The temperature rose to 102° on the day following the operation and again on the fifth day, the pulse on the first of these occasions being 120 and on the second 96. The respirations were not counted above 32 to the minute. There was an occasional cough and considerable dyspnœa, but very little expectoration, or other evidence of bronchitis. The lung resonance quickly increased, and there was marked tenderness on percussion over the upper surface of the liver for some days. The cyanosis and breathlessness disappeared very gradually, and the feebleness, which was extreme for more than a fortnight, was also slowly recovered from. The bowels again gave a good deal of trouble for a little more than a week, but when they acted freely the patient gained strength more

quickly. The discharge from the liver was very profuse, and at times it contained a great deal of bile. Hydatid membranes escaped in considerable quantity at first, and later at intervals, the last observed coming away on February 13th, 1892, two months and eleven days after the operation. On the twenty-fifth day the drainage tubes, which had already been considerably shortened, were taken out and cleaned. The longest measured 10 inches. They were gradually shortened, and on January 20th one tube was removed. On March 18th there was only one small tube remaining, which measured 2½ inches in length. On March 3rd the patient was allowed to get up, but the wound was still discharging a large quantity of fluid, which was now of a thin, serous character. She went home on April 2nd, four and a half months after the operation. The wound continued to discharge very freely till about Christmas, 1892. About the beginning of December the quantity of discharge began to diminish and the wound healed very quickly and has given no trouble since; it had been open over 13 months. When the wound healed the patient was about three months advanced in pregnancy, and I am inclined to think that the upward pressure caused by the enlarging uterus facilitated the healing of the wound. After the patient went home she had much colicky pain in the abdomen, but she said she felt better while carrying her last child than in either of her other pregnancies. After the child was born the patient became weaker and thinner and had more pain, and on examination from time to time it was evident that the pelvic tumours were increasing in size.

The patient was readmitted on March 6th, 1894. At this time, except for the presence of the cicatrix, the abdomen was quite normal on inspection, but on palpation I mapped out three very tender rounded swellings in the right side, the lowest being close to the pelvis; the highest was the largest and was the size of a small orange. The whole abdomen was resonant on percussion, and the liver dulness began at the level of the fifth rib and ceased a little above the costal margin below. By combined vaginal and abdominal examination I found that there were several cysts in the pelvis, but I was not able to say how many. The lungs were resonant everywhere, but the respiratory sounds were not nearly so free on the right side as on the left, and the patient now frequently suffered from bronchitis. On March 12th, two years and three months after the second operation, I again opened the abdomen, making the incision on this occasion below the umbilicus. The three tumours in the right loin and four in the pelvis were brought out and enucleated. Each consisted of a hydatid membrane, containing very little fluid, but full of collapsed daughter cysts and enveloped in an adventitious fibrous capsule. They were attached to subperitoneal connective tissue and to neighbouring structures. A fifth cyst in the pelvis was so closely connected with the back of the cervix uteri that I cleaned it out and drained it as I had treated the sacs in the liver. The cysts removed varied in size from that of a large orange to that of a duck's egg. Before closing the wound I examined the lower surface of the liver and found some more hydatids under the left lobe, evidently the remains of the chain I had felt at the first operation, but they had considerably enlarged. It was impossible to manipulate these through the incision already made, and I therefore cut directly down on them by a vertical incision a little to the left of the middle line and close to the ribs. Three hydatids were removed from close to the lower surface of the liver, two being about the size of duck's eggs and one the size of a sparrow's egg. The liver seemed to be of fairly normal shape and freely movable, having only

loose adhesions to the scar, the upper end of which was considerably below the lower edge of the liver. Through these loose adhesions I felt a hard nodule which I thought was another small hydatid, but it was enveloped in adherent omentum, and as the operation was already a long one, I thought it unwise to begin what might be a very troublesome and prolonged enucleation. This operation lasted over three hours, but it was not such a severe proceeding as either of the other two, and the patient was not so ill afterwards. During convalescence the highest temperature was 100·8° F. on the fourth day, and the highest pulse was 96 on the second day. The patient was almost free from fever and practically well after ten days, but there was a discharging sinus till June, when the wound finally healed. On leaving the hospital early in June the patient went to a convalescent home for a few weeks, and was very well while there ; but after going to her own home she was for long troubled by a cough, sometimes accompanied by considerable expectoration. On October 25th she came to see me on account of a small hernia at the lower end of the incision below the umbilicus. This had been noticed for five weeks, and was no doubt due to the persistent cough. The lungs were not dull on percussion anywhere, but the liver dulness was somewhat higher than it should have been on the right side posteriorly, and the respiratory murmur was everywhere very feeble. There were very few crepitations or râles, and at this time there was little expectoration.

I again saw the patient on February 21st, 1895. She then complained of severe pains in the region of the liver, which had continued for about seven weeks and were very bad during the prolonged frost, but had been rather better since the weather became milder. On examination I found the abdomen quite flat ; the incisions measured 3½ inches, 3 inches, and 2¼ inches respectively, in the order in which they were made. The patient's cough had been much less frequent, and the hernia, which had been supported by a pad, was smaller and caused little trouble. The liver near the middle line was very tender to percussion and palpation. Through the scar of the second operation I could feel a hard nodule about the size of a bean, which seemed to be the chief seat of tenderness, and I have no doubt this was the hard substance I had felt at the end of the last operation. The liver seemed to be smaller than normal in front, but its dull area extended rather higher than usual behind. The lungs had greatly improved, and, except at the right base behind, the air everywhere entered them freely. Since the severe pain in the liver region began some eight weeks previously the patient said she had lost flesh, and she was very thin. It seemed as if some cyst were developing in or below the liver. I hope to keep the patient under observation, and if there is any further development, I trust that I may be permitted to communicate the sequel.

Case 5. *Operation for hydatids in a child 5½ years old.*—This case was that of a child 5½ years of age, whose father's father had died from cancer, and whose mother's sister had died from an internal tumour after middle life. The child was one of six—two older and three younger, all being very healthy and strong. A lump in the upper part of the patient's abdomen had been noticed for two years. It was gradually increasing in size and seemed to be the cause of attacks of pain by which the child was occasionally seized. She was under the care of Mr. Soffe, of Harling, in Norfolk, and Dr. Benjafield, of Lower Edmonton, had seen her with him.

As the diagnosis was obscure, Dr. Benjafield brought the patient to consult Mr. Knowsley Thornton, who expressed the opinion that the swelling was a hydatid tumour, and it was arranged that I should operate. When I saw the child there was a tense rounded prominence on the front of the liver, measuring about 2 inches in diameter, and its central part being behind the upper portion of the right rectus muscle. It exhibited a distinct hydatid thrill on percussion. The outline of the liver dulness was not altered, but it was rather lower than is usual even in a child. The patient was the daughter of a farmer who kept and bred dogs, and this child was particularly fond of them, and was especially pleased when playing with the puppies, which are often infested with tapeworms. The child was brought to lodgings near my house, and on April 21st, 1892, assisted by Dr. Benjafield, I cut down upon the swelling, opened a hydatid about the size of an orange, and removed the lining capsule and the daughter cysts. I found that there was a slightly smaller cyst above and close to the first. This was opened and cleaned out through the cavity of the first. On examining the parts around I found a large number of small growths scattered apparently irregularly over the peritoneum. They were about the size of hazel nuts, and I supposed them to be hydatid cysts. Three of them were very slightly attached to the omentum and were removed. I did not cut into these growths for some months, and when I did I found that they were lymphatic glands. They were very large glands, even for a child, and I was then under the impression that lymphatic glands were not to be found in the omentum. I was, of course, prepared to find hydatid cysts in the subperitoneal connective tissue by the conditions I had observed in the case last related. The opening in the liver was secured to the abdominal incision and the sacs were drained by rubber tubing. During convalescence there was little trouble except from the fractiousness of a somewhat spoilt child. The temperature, taken in the groin, and the pulse rose respectively to 102·6° F. and 120 on the second day after the operation. By the end of a week they were down to 97·6° and 96. On the ninth day the temperature rose to 103·2° and the pulse to 120 without any cause that I could discover. The drainage-tubes had been removed, washed, and reinserted some days before, and the bowels had also been moved freely before this time. By the tenth morning the temperature was again down to 97·6°, the pulse to 96, and a temperature of 99° was the highest recorded after this until the child had gone home. The drainage-tubes were gradually shortened, and the patient left London five weeks after the operation, on May 25th. The tube was then about an inch long, and it was finally removed a week later, but the wound did not completely heal till the beginning of August. By this time the child had grown much stronger and stouter, but a short time after the wound healed she complained of much pain in the abdomen and of feeling sick. There was some swelling round the scar, and the abdomen was very hard, but there was little if any tympanites. The patient vomited at times, was disinclined for food and lost flesh, and her temperature rose as high as 102°. Dr. Benjafield saw her with Mr. Soffe, and opium and belladonna were administered, with hot applications locally. On September 13th Dr. Benjafield reported a steady fall of temperature, relief of pain, and improvement of appetite. The attack passed off without further trouble, the patient soon grew fat and strong again, and she has had no trouble since. Lately, two years and ten months after the operation, the child's mother wrote that she is "perfectly well and strong, and never has an ache or a pain." The cause

of the attack of fever and pain four months after the operation in this case is obscure. I am inclined to think that as the child grew stronger the adhesions of the liver to the abdominal wall became gradually weaker by the constant movements of the parts on each other, and that the liver finally broke loose by a rapid rupture of the remaining adhesions. If this explanation is correct, the child's liver is probably as free now as if there had been no operation.

Case 6. *Operation for* 789 *stones in the gall-bladder.*—The first patient on whom I operated for gall-stones had consulted Dr. Stephen Mackenzie and Mr. Knowsley Thornton, both of whom had diagnosed the presence of calculi and had recommended operative treatment. The patient was admitted to the Samaritan Free Hospital under my care on June 20th, 1892. She was a healthy, strong woman 58 years of age, but had suffered from frequently recurring attacks of pain in the region of the gall-bladder for three years. These attacks began with a very severe one, lasting a week, but not accompanied by sickness or jaundice. A year later, in July, 1890, there was another severe attack, with sickness, jaundice, and clay-coloured stools. The condition of the urine was not noted. This attack ceased suddenly, and after it two small calculi were passed by stool. The patient was free from pain for some months, and then had frequent slight attacks with varying intervals. In February, 1892, she had intense pain for a day and a night, ending, as most of the attacks had done, suddenly. After this the patient never felt well, having always a sense of discomfort and often a dull aching in the hepatic region. Jaundice had only been present on one occasion. There was nothing that seemed to bear on the patient's condition in her family history. She came of a healthy stock, and except for the conditions described and for constipation her own health was excellent. On examination by inspection and by percussion there was nothing abnormal in the abdomen, and by palpation I could not detect any enlargement of the gall-bladder, but in its situation there was some tenderness which varied from time to time, being sometimes diffused over a considerable area, and sometimes hardly present at all. There was always one tender spot on deep palpation, and I judged that this was about the situation of the common bile-duct or cystic duct. The patient wished to go to visit a son in a part of Canada where she would be out of the way of medical assistance, and this was taken into consideration in advising her to submit to operation. On July 12th, 1892, I cut down upon the gall-bladder and found it enlarged but flaccid. On grasping it between my fingers I could bring its opposite sides together, and here and there I could feel and catch hold of a small stone. The impression I got was that there were very few calculi, but when I had drawn off about an ounce of bile by means of an aspirator, I found that there was a very large number of stones in the bladder. I made an incision in the fundus and cleared out the contents of the gall-bladder by means of forceps, a lithotomy scoop, and sponges. The opening in the gall-bladder was fixed by silk sutures to the abdominal wound so as to make a fistula. The rest of the incision was secured in the usual way, and the gall-bladder was drained by means of a rubber tube. Of course, great care was taken to prevent fouling of the peritoneum. There were 789 stones collected and counted. The largest was broken. It measured about three-quarters of an inch in its longest diameter, and was of irregularly rounded shape. The greater part of the stones were smaller than a split pea, many were smaller than hemp seeds,

and the total bulk in fluid measure when they were dried and well shaken down was a little over an ounce. Besides those counted there were innumerable very small calculi which came freely through the aspirating needle and were seen as mere specks in the bile. Convalescence was very smooth. The temperature rose to 101° F. before midnight of the day of operation, and it was never above 100° in the vagina after the second day. The highest pulse was 80. There was at first a copious discharge of bile, but after a fortnight it diminished greatly. The tube was removed on the twenty-fifth day. There was very little discharge after this, and the patient went home a month after the operation ; but it was about three weeks longer before the wound finally healed. The patient gradually regained her strength. I last saw her at the end of August, 1893, 13 months after the operation. She was then about to start for Canada, having been detained by the illness and death of a son, which had entailed on her much work and worry, but there had been no recurrence of gall-stone symptoms. [Since this paper was read I have heard from the patient that she continues well.]

Case 7. *Operation for gall-stones.*—The next case was that of one of Mr. Alban Doran's patients, but he has kindly permitted me to record it here, as I had charge of the case and performed an operation on the patient during his temporary absence. "A woman, aged 42 years, a widow, came under my care at the Samaritan Free Hospital in October, 1893. She was a laundress, tall and once strong. On August 4th, 1893, she lifted an unusually heavy basket of linen. Three days later she was seized with abdominal pains, vomiting, and sweating. There was no jaundice. After resting three weeks in bed she went to work. Early in September another attack of pain came on, without sickness. Dr. Nias and Mr. Arathoon attended her at the Marylebone General Dispensary. She recovered from the pain, and I saw her on October 10th. There was a swelling in the region of the gall-bladder. On October 14th a severe attack of pain occurred. On the 19th the patient was admitted. An attack occurred on October 22nd. The swelling grew larger, and the skin over it became reddened. In a few days the pain went away, but the redness increased, and the integuments were œdematous. I suspected obstruction of the gall-ducts. Mr. Knowsley Thornton, who kindly examined the patient, was of a similar opinion, though he thought that possibly the swelling might be an inflamed hydatid cyst. On November 7th I, assisted by Mr. Malcolm, made an exploratory incision along the outer border of the right rectus over the middle of the swelling. I found under the muscular layers an irregular cavity containing pus, clots, and shreds of broken-down tissue. There was hardness behind the cavity. A pocket trocar and cannula was thrust into the hard surface, but nothing oozed out nor did the trocar touch anything that felt like a calculus. I then believed that the cavity might represent an abscess in the abdominal walls, developed early in August after a bruise from a heavy clothes-basket. I washed out the cavity with iodine water and drained it. I did so, believing that if the disease was simple abscess it would thus be cured ; if it were more than abscess further operation could be more safely undertaken when the cavity was rendered aseptic. For a few days the patient seemed to be better. I then, on account of severe indisposition, left her in Mr. Malcolm's charge."* At this time the patient was not jaundiced. The abscess gradually contracted until

* Mr. Doran has kindly written for me the portions in inverted commas.

only a sinus remained, but this showed no tendency to heal, and a thin mucous fluid oozed up from the bottom of the wound. On examining the parts towards the end of November I discovered that I could pass a probe through the wound into the gall-bladder, which was evidently full of stones. It was arranged that I should remove them, and on December 2nd I enlarged the opening upwards and extracted a number of stones, but, when I had removed all I could find, no bile escaped. It was evident that if I did nothing more the secretion from the gall-bladder would prevent the closing of the fistula, and but little, if any, good would result from the operation. I therefore made a free incision upwards and downwards about 3½ inches long, opening the peritoneum, separating the adhesions of the bladder to the abdominal wall, and cutting out the track of the fistula. It was still impossible to handle the gall-bladder because the omentum and transverse colon were adherent to it and to the lower surface of the liver. These adhesions were also separated until I could manipulate the gall-bladder freely. By means of the fingers outside the bladder, and a finger or instrument in it, I found and extracted some more stones, making 134 in all. The smallest of these was about a quarter of an inch in its longest diameter; most of them were rather larger than this, and three or four measured half an inch across; one large one was broken. Still no bile escaped, and although I explored thoroughly all the under surface of the liver and the parts along the course of the ducts I could not find any other stones. I was, therefore, reluctantly compelled to close the wound, the gall-bladder being fixed and drained as in the previous case. In this instance I also inserted a glass drainage-tube into the right loin pouch of the peritoneal cavity to remove quickly any discharge from the divided adhesions. Very little serum escaped through this tube, and it was removed 40 hours after the operation. The highest temperature after operation was 101° F. on the first day, the pulse did not rise above 100, and the fever quickly subsided. There was very little discharge from the gall-bladder at first, but after the third day it increased and was distinctly tinged with bile. On the sixth day some fragments of stone escaped, and on the ninth day the dressings were soaked with bile. On the tenth day another piece of stone, nearly as large as a pea, was found in one of the drainage-tubes, but now no bile escaped; and after this there was never more than a tinge of bile occasionally in the discharge, which was again scanty. Mr. Doran resumed the charge of the case on December 19th, and "the patient was discharged in the middle of January, 1894, with a fistula. She called on me occasionally. She was readmitted in May. As the fistula had not closed, and as a hard body could be felt by the probe and the attacks of pain continued, I operated on May 26th, assisted by Mr. Malcolm. First I passed a long probe up the fistula. The patient was well under chloroform, yet I could not feel anything like a calculus, though two days before I had made the probe touch a body which felt precisely like a gall-stone. I opened the upper part of the old cicatrix and cut through the fistula in the parietes. After cautious probing I found that the gall-bladder could be entered. By means of a probe-pointed hernia knife the fistulous opening was enlarged. The finger could be then passed into the fundus of the gall-bladder, which was found to be just below the level of the fistula. Therefore I cut upwards to the extent of an inch and a half. Then I passed in my right forefinger and felt a small stone. By manipulation it was extracted. Then I passed a child's lithotomy sound and found the cystic duct dilated with calculi. I pressed my fingers on

the parietes immediately over the upper end of the wound and pushed the stones forward into the gall-bladder. They were then extracted with long-handled forceps. They were two in number, one an eighth of an inch in its longest diameter, the other over half an inch and much faceted. I then passed the lithotomy sound 4 inches up the bladder and duct, reckoning from the wound on the surface of the bladder. After deliberate exploration no calculi could be felt. A stout red rubber tube was placed in the bladder, the thick edges of the wound were united with silkworm gut sutures, but the walls of the gall-bladder were not included in the sutures as they adhered firmly to the parietes. The wound was dressed with alembroth gauze ; towels covered externally by a mackintosh were placed over the part and round the right flank. The operation was concluded at 10.35 a.m. Free oozing took place ; at 7.20 p.m. it was simply sanious, but at 9 p.m. bright green bile escaped. At 9 a.m. on May 27th much yellow bile came away. On the morning of the 28th the temperature reached its highest, 100·2° in the axilla ; a very free discharge of bile occurred ; the patient then declared that she was at last absolutely free from pain. After the 29th the temperature fell to normal. On June 16th the patient left the hospital ; the fistula had closed. On July 17th I saw her ; she was in good health ; there was neither pallor nor jaundice, nor swelling in the region of the gall-bladder. On October 19th she had a severe attack of pain, followed by jaundice next day. On the 24th I saw her ; the jaundice was passing off. The fistula remained closed. Early in December I saw her again ; she had felt local pain on the day before. On December 28th the patient was seized with severe pain in the region of the gall-bladder ; next day her friends noticed that she was deeply jaundiced. On January 1st, 1895, she felt better and came to see me at the hospital. The conjunctivæ were yellow. No enlargement of the gall-bladder could be detected. A few days later she was attacked with bronchitis and was laid up nearly a month. There was much local pain all the time. After getting up and working for a few days she felt a sharp attack of pain ; no jaundice was observed, and the suffering soon passed off. On February 21st I saw her again. She had grown thinner, but her complexion and appearance were healthier than at any other time since she had been under treatment. On June 15th, 1895, she visited the hospital in excellent health, free from jaundice and pain. The fistula remained closed."

At the last operation Mr. Doran suggested that the large stone he removed might have come down the hepatic duct after my operation, and it seems to me almost impossible that a stone of irregularly rounded shape, and more than half an inch in diameter, could have been passed over in the thorough examination which I made if it were anywhere outside the liver. Moreover, it would appear from the history that other stones had been left after Mr. Doran's last operation. There is also evidence to support the view that the bile ducts may be dilated within the liver substance and may form a receptacle for calculi. Mr. Knowsley Thornton has put on record a case in which he removed over 400 stones from a cavity in the liver close to its anterior surface—a cavity which from its situation must have been a dilatation of a comparatively small duct. On the other hand, in the case under consideration it is obvious that from the commencement of the patient's illness until the bile flowed freely from the wound after Mr. Doran's last operation the chief trouble was due to obstruction of the cystic duct, and that during the whole of that time there was only occasional obstruction of the hepatic or common

bile-ducts. There seems to me to be a considerable weight of evidence in favour of the view that when the patient lifted the heavy basket in August, 1893, the big calculus which Mr. Doran removed at the third operation was forced into, and became jammed with others in the cystic duct, and that I failed to discover them. The difficulty in this case is not unique, for from what I know of other men's work there can be no doubt that stones of considerable size may quickly pass down the hepatic duct, or that they may be hidden away in corners of the ducts in a most extraordinary manner.

Case 8. *Operation for four gall-stones found respectively in the gall-bladder and in the cystic, hepatic, and common ducts.*—The last of these cases was that of a woman who was under the care of Dr. Tresilian, of Enfield, and she sought advice mainly on account of yellowness of the skin. She was 28 years of age, had been married nearly five years, and had no children. Early in 1892 she had had an attack of pain in the region of the gall-bladder, lasting a few hours, accompanied by slight jaundice, and followed by discomfort for a week. She got quite well, and remained so till December 11th, 1893, when she had another and more severe attack of pain lasting three days. This was accompanied by jaundice, the absence of bile from the stools, and its presence in the urine. These symptoms did not pass off, and the patient began to lose flesh. In January, 1894, there was another attack of pain followed by a constant aching in the hepatic region. The patient was admitted to the Samaritan Free Hospital on February 12th. Constipation was then extreme, but a stool passed the day before the operation, although very pale, was not absolutely devoid of bile. The gall-bladder was felt distended and tender, and the liver dulness was slightly enlarged. The patient was not a strong woman; she said she had had rheumatic fever four times, and there was a slight, harsh systolic aortic murmur. Otherwise she seemed fairly healthy, but was of nervous type. Her mother was supposed to have shown symptoms of gall-stones. On February 17th I opened the abdomen over the gall-bladder. There was no adhesion to the abdominal wall, but the omentum was extensively adherent around the gall-bladder. After separating the adhesions I opened the bladder. It contained no bile, but about an ounce of white secretion and two stones. The first of these was barrel-shaped, with a facet at each end, although there was no sign of a stone having been placed in front of it. Probably before the ducts became occluded, when the gall-bladder was liable to distend and collapse, this stone occasionally changed its position, sometimes one end and sometimes the other being opposed to the deeper calculus. The second calculus was of a similar shape, but its inner end had two facets on it, and was therefore somewhat wedge-shaped. These stones were removed with the greatest ease. After I had sponged out the fluid in the gall-bladder I passed a finger into it, and by manipulation with the fingers of the other hand in the peritoneal cavity I felt two openings very far back in the cavity of the bladder, and could touch a stone in each, whilst outside the bladder I could define these. I judged that my finger was in the dilated cystic duct, the curves of which had been to a great extent straightened, and that I felt one stone in the hepatic duct and one in the common bile duct, both these stones being of elongated shape. I attempted to remove the lower one, but it was necessary first to dilate the opening. In endeavouring to pass a forceps into the duct I suddenly found that I was able to push its

closed blades a considerable distance onwards, and after this I could not find the stone. A careful examination failed to show any sign of rupture of the duct, and therefore I presume that the stone was pushed into the bowel. It was never found in the stools although carefully watched for, but possibly it was broken up by the forceps into small fragments. I next endeavoured to get out the upper stone, but although I could feel the lower end of it distinctly, I failed by any means that I tried to extract it until I enlarged the opening upwards with a knife, in doing which I pierced the stone, and it at once broke into many pieces. Almost immediately after the stone broke bile flowed into the bladder, and this facilitated the removal of the fragments. When these had been extracted or pushed out by the fingers in the peritoneal cavity, the fundus of the gall-bladder was sewn to the edge of the external wound, and a drainage-tube was inserted as in the two other cases. In this case also I placed a glass drainage-tube in the loin pouch. Convalescence was uneventful. The highest pulse was 96. The temperature in the vagina rose to 101·4° in the evening of the second day after the operation, but came well down, as low as 99° F., on the fourth day. On the fifth day the patient's condition was satisfactory in every respect. A saline purge was administered in repeated doses, and was followed by sickness, distension, abdominal pain, and a rise of temperature to 101·2°. All attempts to move the bowels by purgatives were stopped, and although the patient vomited a great deal of green fluid, the sickness gradually ceased, the temperature fell, and the pain passed off. On the seventh day some very hard masses of fæces were passed after an enema had been administered, and the bowels gave no further trouble. The glass tube was removed 48 hours after the operation. There was little discharge of bile from the wound at any time, the urine quickly ceased to contain bile, the stools became normal, and the jaundice very slowly disappeared. The patient went home three weeks after the operation, but it was six weeks before the wound healed, and it reopened four times, discharging a little matter and quickly healing again each time. The last occasion was in July. On February 22nd, 1895, more than a year after the operation, the cicatrix was merely a line with a slight pucker at the point where the drainage-tube had been, and was quite free from irritation. The patient had a very sallow complexion, and she said that this was sometimes more obvious than at others. She had had no pain in the region of her liver since the operation, and had been able to do her house-work without trouble. She said that she sometimes felt depressed and lazy, when a purgative would put her all right again. I think there is no doubt that she had been neglecting to attend to the condition of her bowels.

The difficulties illustrated by these cases may be divided into those of diagnosis and those of manipulation.

Difficulties of diagnosis may be insurmountable except after an exploratory operation, and, as in my first case, it may be impossible to make a definite diagnosis even after the abdomen is opened. Such cases must be rare, but the diagnosis between malignant disease and gall-stones is often extremely difficult and is of the utmost importance. The difficulty and the importance of making an exact diagnosis are increased by the fact that the two diseases

are not unfrequently found together, and that there seem to be grounds for believing that the irritation of gall-stones may be the cause of a malignant growth, just as irritation of the lip, rectum, or scrotum, may induce cancer in these parts. If this be a fact, it constitutes a strong argument in favour of a resort to operative treatment in all doubtful cases, and against delay when a definite diagnosis of gall-stones is made, and when the patient is permanently or repeatedly and seriously inconvenienced by them, although life may not seem to be immediately threatened. In favour of operation in these cases, there is also the fact that gall-stones sometimes, by persistent pressure, ulcerate a way through the ducts without giving rise to alarming symptoms until a great deal of mischief has been done.

On the other hand it must not be forgotten that the removal of gall-stones is, or rather may be, a very dangerous proceeding. If the operation were always as simple as in the first case I have related, the surgeon would have little hesitation in recommending the removal of calculi whenever the symptoms were troublesome. There are, however, in these operations not only certain dangers which the patient must undergo in every case of abdominal section, but, if it is difficult to diagnose the existence of gall-stones, it is far more difficult to say in what particular part of the ducts they may be situated, and what particular steps will be necessary for their extraction. Another argument against a too hasty resort to operation is to be found in the fact that a spontaneous cure is not uncommon. A short time ago my colleague, Dr. Amand Routh, asked me to see a woman with a greatly enlarged gall-bladder and symptoms pointing to the presence of a calculus in the cystic duct. We examined the case together and recommended an operation. There was, however, no great urgency, so we sent the patient home, telling her to keep quiet in bed, and she was admitted to hospital a week later. At this time the gall-bladder was not to be felt, and the patient told me that the lump had disappeared on the day after her first visit. Such an experience must have come under the observation of many of the Fellows. Nevertheless, when a patient is seriously ill, and especially if there have been repeated attacks of gall-stone colic, it seems to me unwise to lay any stress on the argument that a spontaneous cure may take place. We cannot possibly tell whether it will or not, and while the patient is waiting for such a possibility, serious mischief may be done.

Difficulties of manipulation are well shown by the hydatid case on which I operated three times, and by the two last gall-stone cases. If it be a fact that gall-stones may come rapidly down from a dilated portion of the ducts in the interior of the liver, it is obvious that the complete removal of them may sometimes be impracticable. The possibility of such a rapid descent of stones from the inner ducts is a strong argument against the practice, advocated by some, of sewing up the wound in the gall-bladder and dropping it back into the peritoneum after the removal of calculi. This is theoretically the most perfect operation, but when the method by the formation of a fistula can be carried out it is safer to adopt that plan.

Concerning the dangers to be avoided, I take it that it would be out of place in this Society to insist on the necessity for the careful use of antiseptic precautions. In liver surgery, unless—as in cases of multiple abscess—when the parts are thoroughly poisoned before the surgeon sees the patient, it is usually possible to avoid septic mischief. The surgery of the liver is also to a great extent free from those dangers of abdominal surgery which are due to irritation and obstruction of the bowels. The gland and its ducts are completely shut off from the more mobile parts of the gut by the disposition of the transverse colon and its mesentery, so that it is usually possible to prevent the small intestine from being exposed to, and, therefore, from the risk of becoming adherent to, raw surfaces, whilst any adhesions of the colon which take place are not likely to interfere with its lumen, and are, therefore, comparatively harmless. I may here point out that these advantages are also obtained in many cases of intra-peritoneal operations for the removal of the kidney, for if this organ be approached from outside the colon, any raw surfaces made are little liable to come in contact with the small intestine.

The disposition of the colon and its mesentery under the liver also makes the drainage of the parts comparatively easy, and thus greatly facilitates treatment by operation. The dangers of septicæmia and the dangers from intestinal troubles, which are constant factors in all abdominal surgery, and which cannot be neglected with impunity, have been completely avoided in the cases I have related.

The danger of hæmorrhage can scarcely be said to be illustrated by these cases, but in the first of them the bleeding from the

puncture wound was really alarming for a time, although I was well acquainted with the fact that small wounds of the liver bleed freely at first and have a tendency to stop spontaneously, or on the application of pressure. I have only once seen a wound of the liver that threatened to continue to bleed to a dangerous extent. It was a tear about an inch long in the edge of the liver made in separating an adhesion to a large tumour of the uterus, and even after sponges had been packed against it during the greater part of a long operation, the hæmorrhage was much too free to be left unheeded, when I was ready to close the wound. With a fine needle I passed a piece of silk three times through the liver substance half an inch from its edge, and at intervals of about a third of an inch. The silk was made firm, but, of course, was not drawn so tight as to tear the liver substance, and the bleeding was at once arrested without any subsequent trouble to the patient, who is now quite well, two years having elapsed since the date of the operation.

The dangers of shock were brought prominently before me by the first case of hydatids that I have related. If I had attempted to remove or clear out all the hydatids I could find at the first operation, there can be little doubt that the patient would have succumbed before I had finished. Nevertheless, I have long been of the opinion recently expressed by König * that, within reasonable limits, a prolonged laparotomy does not necessarily lead to a serious degree of shock—that the danger of death from shock depends more on what is done than on the time taken in doing it. Of course I fully recognise that the condition of the patient is of the utmost importance in this connection, and that at times it may be wise to sacrifice a great deal to speed in operating.

As an illustration of the view advocated, I may point out that in the first case of hydatids above recorded the second operation was by far the most dangerous of the three, although it only occupied about half the time required for either of the other two.

These difficulties and dangers have occurred to me as being those most obviously suggested by the cases I have related, and in conclusion I would suggest the following points for discussion :—

1. The evidences by which we can diagnose gall-stones from cancer.

* 'Centralblatt für Chirurgie,' No. 4, quoted in 'Brit. Med. Journal,' Epitome 1895, vol. i, p. 26.

2. The possibility of gall-stones being overlooked in the ducts, and the possibility of their collecting in the ducts within the liver substance and rapidly descending after other stones have been cleared out of the gall-bladder or lower ducts.
3. The length of time after infection at which a patient may be considered safe from a further development of hydatids.
4. The fact that in the third operation on my first case of hydatids, I removed a number of cysts in which the daughter cysts were shrivelled up as if dead, although the tumours had been growing very recently, and had shown no sign of a diminution in their size immediately before the operation.

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