LECTURES ON THE SURGICAL ASPECT OF HEPATIC ABSCCESS.

Delivered at the Hospital for Consumption and Diseases of the Chest, Brompton.

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LECTURE I.

IT is needless to tell as you are connected with this institution that the chest contains many more organs than the student of anatomy is disposed to put into it. You must cut off the trunk at the level of the third lumbar vertebra—that is, at an inch above the umbilicus—to include everything that is enclosed between the thoracic parietes; and think what a range this will give you. The stomach and spleen, the liver and the kidneys, the transverse colon and the duodenum, to say nothing of the aorta and the vena cava, the pancreas and the bodies of the vertebrae, and other more obscure and puzzling structures. We are much too apt to look at the body as consisting of distinct anatomical regions, and, while we are devoting our attention to one, to miss what is going on in the adjoining one. To illustrate my meaning, let me recall a case that occurred to me not long ago, in which a most able surgeon had been directing his attention to the abdomen in the search for a spinal abscess, and a distinguished physician to the chest in a supplementary search after the cause of the patient's trouble, which was pain in the back and palpitation apparently of the heart. I saw the patient, who, by the way, was the subject of old hip disease, casually, and was on the point of missing, as they had done, the cause of the trouble, when, as he was about to dress, he pointed out to me that his flutterings were just at the margin of his ribs; and thus, by a mere piece of good fortune, I was able to discover that they were caused by a large aortic aneurysm. But this is not all; the chest often contains morbid products which have made their way up or down from quite distant parts. Thus, a pericæcal abscess may burst into either pleura, and an abscess starting from the cervical vertebrae may, in the same way, enter the mediastinum or the pleura. I need therefore offer no apology for introducing to your notice the subject of abscess of the liver, the symptoms of which are in very many cases more or less thoracic. If I were to apologise, it would be on different grounds. It may seem presumption for any London surgeon to treat of this matter, because, even with exceptional advantages, none of us can have a very large experience of it, at least as compared with our *confères* in tropical countries. I have, however, had rather unusual opportunities, chiefly because of the friendship of Sir Joseph Fayrer, to which I owe many of the facts I propose to bring before you, and to whose kindness and knowledge of the subject I desire hereby to bear testimony. I would also apologise for disregarding the methodical manner of the textbook, and adopting a somewhat disjointed style—illustrating what is said by the cases that have, from time to time, come under my notice.

In the first place, then, I must clear the way by getting rid of one form of hepatic abscess which was very familiar to us in my student days, and which then, at all events, was as common in this country as it is in the tropics, though its cause was usually different—I mean *multiple pyæmic abscess*. This form is often much less easy to diagnose than the single abscess, and is generally not amenable to surgical treatment, or, if this be attempted, it is unsuccessful. In hot countries it is not infrequently the result, or, at all events, the concomitant of dysentery, or some other ulceration of the bowel. In this country it may arise from the same cause, but it more generally depends upon an abscess in connection with the cæcum, or upon any wound giving rise to pyæmia; and there is a rare condition that might almost be included under this head—namely, suppurative inflammation of the portal vein, or pylephlebitis, about which also a word or two must be said. I will first give examples of the old-fashioned pyæmic abscess.

CASE I.—E. J., a married woman, aged 54, was admitted into University College Hospital, November 20th, 1874, on account of two deep wounds at the inner side of the lower end of the left forearm, produced by putting her hand through a window some

days before. She was previously healthy. A diffuse cellulitis set in, accompanied by suppuration, for which incisions were made, and all was progressing favourably, the temperature being under 100° F., though the pulse was rapid for more than a week. Then came on the following train of symptoms.

November 28th. First rigor with a temperature of 104°.

November 30th. Second rigor. Basic râles on both sides; a little harsh breathing, but no alteration in percussion sounds.

December 1st. Third rigor, with a temperature of 105.8°. The tongue was brown and dry.

December 2nd. A slight rigor, No. 4. A crop of herpes labialis made its appearance, and the patient was noticed to be very sallow. Very likely she was slightly jaundiced.

December 3rd. Rigor No. 5, also slight. Delirium set in and tracheal râles were heard. Dr. Roberts diagnosed bronchitis, but could discover no pneumonia. Severe pain at the hypochondrium was complained of.

December 4th. The delirium continued, and the patient gradually sank and died.

At the *post-mortem* examination, extensive recent adhesions were found in the right pleura, and from twelve to twenty embolic abscesses in the right lung; but the left lung and pleura were healthy. The liver was large, and weighed seventy-two ounces. It contained a very large number of abscesses; so many indeed, that it was impossible to slice it across without opening more than one of them. Their capacity varied from a few minims to one or two drachms, and their contents consisted of bright yellow pus. There was an old deep scar on the surface of the liver. No joint was involved in the original mischief, and no phlebitis was discovered. The symptoms here were simply those of acute embolic pyæmia, and there was nothing to direct attention to the liver, except the sallow colour, which is almost always present in pyæmia, and the hypochondriac pain on the last day. The pus, it will be observed, was bright yellow. This I think may be taken as a very typical example of the condition under discussion.

The next case is of the same nature; but here there was nothing at all to draw the attention to the liver, except that it was enlarged; and, as the patient was obviously the subject of amyloid disease, this fact was of little importance.

CASE II.—E. H., aged 9, came into University College Hospital, August 20th, 1873. She was highly tubercular in appearance, and had a marked tubercular history. From the age of two years she had had chronic hip-joint disease, which had suppurated and left sinuses. She was in the hospital for eight months, and during this time she submitted to a series of operations for the removal of the dead bone, culminating in excision of the hip-joint. She had a varying temperature, but one almost always of a hectic type, and she suffered from one attack, if not two, of erysipelas and died at last exhausted—the climax being hastened by diarrhoea. She had no rigors. *Post mortem* the liver was found to be very large, extending three inches below the ribs in the nipple line and markedly amyloid. Throughout its substance were numerous abscesses, the largest of which contained perhaps a drachm of yellow pus. There were also numerous pyæmic abscesses in the lungs, especially the left, and some were also found in the right kidney. No clots were found in the veins either of this or the former case; and yet it is almost certain that they were present at the seats of the original mischief.

The presumed mechanical cause for embolic abscesses in the liver and other viscera than the lungs is that septic clots escape into the venous circulation from softening thrombi in the veins at the seat of the primary mischief and are arrested in the lungs, where they give rise to the well-known conical patches of pulmonary apoplexy, followed by gangrene, round which suppuration is set up. Some of the original septic clots, however, it is supposed, may be so minute as to pass through the lungs and thus enter the *arterial* systemic circulation; or fresh ones may be formed in the pulmonary veins and thus be launched upon the same course. These then may stick in any of the systemic capillaries; but why this arrest should so frequently occur in the viscera, and so seldom in the muscles and cellular tissue the mechanical theory is unable to explain.

But there are other ways in which embolic hepatic abscesses may perhaps be caused. The late Dr. Wooldridge has shown¹ that the injection into the jugular vein of a dog of a special proteid substance obtained from various tissues (particularly the thymus gland) will cause clotting in the portal vein, the extent of the

¹ *Transactions of the Pathological Society of London*, vol. xxix, p. 421.

clotting depending upon the amount of the fluid used. These infarctions are hæmorrhagic, and do not result in suppuration, but it is conceivable that in cases of pyæmia such a material may be the cause of infarctions which, under such circumstances, are extremely likely to become the seats of suppuration. It is moreover not necessary that the emboli should reach the liver by means of the hepatic artery, as there are two feeders for the hepatic capillaries; and in cases of multiple abscess following dysentery and typhilitis, and in cases of *fistula in ano*, etc., we may look to the tributaries of the portal vein itself for the local source of mischief. It appears to be certain also that thrombosis and subsequent suppuration may occur in the hepatic veins or their tributaries.

Pylephlebitis suppurativa is a rare disease, and very difficult of diagnosis; but, as it is not unlikely that a surgeon's opinion may be asked when it is present, it is right to give a brief outline of it in this connection. It almost always depends upon suppurative inflammation in the parts where the portal vein originates, but it may depend upon a variety of causes. Frerichs gives them under the following heads: 1. Traumatic—there is a solitary case on record of a fish bone penetrating the stomach, and entering the portal vein. 2. Ulcerative processes in the intestinal canal and stomach; the most common locality being the vermiform appendix, and less frequently the rectum. 3. Abscesses of the spleen opening into the portal vein. 4. Suppuration in the mesentery and the mesenteric glands. 5. Abscesses in the liver, and diseases of the bile ducts; gall stones. 6. Inflammations of Glisson's capsule. The symptoms are usually preceded by those of the disease or injury upon which it depends, such, for example, as typhilitis. The special symptoms consist of pain in the epigastrium, the right or left hypochondrium, the cæcal or the umbilical region. Then follow rigors, usually frequently repeated at more or less irregular intervals. The liver and spleen are enlarged and tender, and slight or severe jaundice occurs. The stools are either loose, copious, and bilious, or there may be constipation. Then should follow the ordinary symptoms of peritonitis, the temperature usually becoming hectic, and at last there is delirium and death. Ascites does not appear to be frequent, though it is the rule in plastic thrombosis of the portal vein; but distension of the abdominal veins has been observed. In Dr. Wooldridge's experiments no ascites occurred, however extensive the thrombosis was. The disease, which appears to be absolutely hopeless, may run its course in a fortnight, but usually lasts from five to six weeks. Sometimes in addition to these symptoms are superadded those caused by the development of metastatic abscesses in other parts of the body. After death the liver is, in the majority of cases (three quarters), found to be enlarged on account of abscesses in its interior; but, if there be none, the size is unaltered. The portal vein is occupied by clots which are more or less broken down into the condition of pus. The characters of the spleen resemble those of the liver. I did not have the chance of making the necropsy myself in the two cases which are to follow; but the symptoms of them are so remarkably like those which have been described by writers upon this question as at all events to justify a short description of them.

CASE III.—On August 31st, 1889, I saw for the first time a member of our own profession, aged nearly 50, who had suffered for some years from obscure pains at the epigastrium, accompanied or followed by intestinal colic, which had been diagnosed as neuralgic, but which, it is possible, might have originated from trouble in the gall bladder, for it is well known that intestinal colic is often the most marked symptom of both biliary and renal calculi. Whilst taking his holiday in Scotland, about a month before, he was seized with a pain which, as far as we could learn, started somewhat in the same manner as on former occasions, but which led up to what appeared to be an attack of typhilitis. As this, however, did not subside, but began to be accompanied by rigors, he returned to his home in the midlands. The rigors continued and became more severe, occurring usually twice a day for a fortnight or more, when they ceased; but only to be replaced by periodical rises of temperature, accompanied by most of the unpleasant symptoms usually associated with a rigor. During this time the pain extended up into the right hypochondrium and epigastrium, and these regions became excessively tender; and ultimately an indefinite dulness showed itself below the margin of the ribs, and there were signs of compression of the base of the right lung. The patient became slightly jaundiced, and rapidly lost flesh, and passed into a somnolent and occasionally semidelirious state. A few days before I saw him an exploring needle had been passed through a lower intercostal space in the

right back, but only blood had escaped into the syringe. The abdomen was distended. The bowels acted, the stools being clayey and unformed at first, often in small lumps: later they contained more bile and were more formed. There was some vomiting, at first of undigested food, and later of bilious material. The tongue was dry and brown, and there was an erythematous rash on the wrists and ankles and some other parts of the body. At this time there appeared nothing for the surgeon to do, but a week later, September 6th, as the dulness had increased, it was thought right to make an incision at the upper end of the right *linea semilunaris*, but this only led down to a large collection of dark blood clot, which was apparently shut off in this part of the peritoneum. No good followed, and on September 25th the patient died, eight weeks from the onset of the illness. The temperature towards the end lost its hectic type, but remained constantly high, 101° to 102.5°, reaching 104° two days before death, when there was a rigor.

At the necropsy, the liver was found to be universally covered by recent adhesions and creamy lymph, and contained numerous abscesses, varying in size from that of a shot corn to cavities containing two drachms. It was studded through with them. No clots, suppurative or adhesive, were observed in the portal vein. The gall bladder could not be found, though a careful search was made for it. The cavity which had contained the clot communicated with the peritoneum by an opening of the size of the finger. There was a large abscess in the spleen close to the hilus, and the splenic substance was very soft and diffident. The intestines were matted together, and there were abscesses in the mesenteric glands; one being just below the pancreas. There was an abscess under the iliac fascia on the right side, about the length of the finger, extending down to the pubes, possibly connected with the appendix, which was blackened, but intact. There were recent adhesions in the right pleura, but no abscesses in the lungs. There is therefore no actual evidence that this was a case of suppurative pylephlebitis, but as the branches of the portal vein were not slit up, the evidence is not conclusive against it; for it is well known that the clots are sometimes only found in the smaller branches of the vein. It reads almost exactly like some of those quoted by Frerichs, with the curious additional symptom of the peritoneal hæmorrhage, for which I am unable to account, though it is worthy of notice that Dr. Wooldridge frequently, in the course of his experiments, observed subperitoneal hæmorrhage on the gall bladder, the contents of which, in one case, were very tenacious colourless mucus, which, he says, if it had entered the common duct would infallibly have produced jaundice.

CASE IV.—The next case is more obscure, and it is possible that some mischief about the gall bladder may have been at the bottom of the trouble. I saw the patient on August 18th, 1888, with Drs. Forman and Whitelaw, of Stoke Newington. He was a barman, aged 19, and his illness began on June 2nd with diarrhoea of typhoid type, and pain and tenderness over the cæcum. After three days' treatment this subsided, but on June 16th he hurried home, and immediately he felt ill and had a rigor, and pain and tenderness came on at the *scrobiculus cordis*, and continued till the time of our consultation, but the old cæcal tenderness did not return. The rigors persisted generally (as in the last case) twice daily for five weeks, and were followed by profuse sweating, the temperature being of a hectic type. Rapid emaciation ensued. The belly became distended with fluid, and there was dulness at both bases. The bowels were sometimes loose, sometimes bound, motions always offensive.

The patient was seen by Dr. Bruce, and the diagnosis suggested (though the case was admittedly most obscure) of subdiaphragmatic abscess, which I was asked, if I saw my way to do so, to open. I did not, however, see what was to be done beyond ascertaining the fact that there was serous fluid and not pus in the peritoneum and in both pleura, and so he was left alone, and he lingered till the beginning of September, three months after the commencement of his illness, death occurring at last from hæmorrhage into the stomach, which, it will be observed, is one of the recognised symptoms of plugging of the portal vein.

At the necropsy, it was found that the lungs reached no lower than the fourth rib, so great was the pressure from below, but there was only a slight excess of fluid in the pleura and the pericardium, and nothing else abnormal in the thorax. On cutting into the liver, however, Dr. Forman found a large abscess on the under surface, containing about half a pint of matter about the consistence and appearance of French mustard. The liver tissue was intensely congested, and resembled that of the spleen; it was

throughout studded with tiny collections of ordinary looking pus. The gall bladder was empty and shrunken, and the abscess was in a direct line with it. The abdomen contained about a gallon of fluid. All the other organs were healthy. A gummos-looking clot was noticed in the portal vein, which, in fact, was filled by it; so this, I have little doubt, was a case of the sort under discussion.

I have nothing further to say about the relation of the bile ducts to hepatic abscess beyond this: Mere obstruction of the bile duct does not give rise to suppuration, but if ulceration have occurred from the passage of a gall stone either along the ducts or directly from the gall bladder into the intestine, it may produce an abscess, either by causing extensive suppurative phlebitis of the portal vein, or by starting the process in the smaller vessels, and so originating what might be called a local pyæmia of the liver. It is also possible that, in cases where a stone has been impacted, and has caused ulceration, the ducts may become distended with pus, and the extension of a purulent collection thus formed may give rise to a genuine abscess of the liver.

Of the diagnosis of so-called *tropical abscess* of the liver, it is quite unfitting that I should speak, even if I were able to do so. In talking to people who have been in India and other countries where malarial troubles are common, one cannot help being struck with the fact that some will say that they have suffered from one form of malaria, others from another, others again describing two or more distinct kinds. Some, again, will say that they have had attacks of liver, others not; but almost all of them who have abscess of the liver have at one time or another had something of the malarial nature. One is led to conclude that the tropical abscesses are of two sorts; one the multiple which appears to be of the pyæmic kind we have just been considering. The other, which is usually, though not quite invariably, single, is apparently the most advanced stage of the attacks of hepatitis to which reference has been made. What part dysentery plays in the history of hepatic abscess has been the subject of much discussion, some maintaining that it is the cause, others the result, and others merely an accidental concomitant. Certain it is that many people who have abscess of the liver have never had dysentery, and it is of course well known that only a very small proportion of patients with dysentery ever develop liver abscess. I think it may be equally certainly stated that, if a patient with abscess of the liver be passing dysenteric stools, or much mucous discharge with the motions, the chance of his recovery, when the pus is evacuated, is very much diminished. I said that surgical treatment of a case of multiple abscess was very hopeless, and I will now give an example of a bad case of this kind to illustrate my meaning. Unfortunately it is impossible to do much more than hazard a guess as to whether any particular case is single or multiple.

CASE V.—E. S., a Bohemian Jew, aged 36, had been resident in Kimberley for eight years, and had enjoyed good health there, without fever or dysentery; but he developed intermittent fever on his way home at Madeira, in July, 1883, and this continued for two weeks after his return to Germany. It was then absent for three months, but returned in April, 1884, accompanied by pain in the right lobe of the liver, and this continued with slight intermissions till May 7th. The patient was attended by Dr. Dunbar Walker, of Notting Hill, and had seen Sir Wm. Gull and Sir Joseph Fayrer. By this time the liver reached down to the umbilicus, and an abscess was obviously pointing at the epigastrium. He was stout, flabby, of a muddy colour, with a foul tongue and a weak pulse, and a temperature varying from normal in the morning to 102° or 103° in the afternoon. I opened the abscess, after ascertaining the presence of adhesions, and evacuated about half a pint of disagreeably smelling yellow pus. There was a good deal of bleeding. The temperature was normal for all the next day—but on this day only; it afterwards began to rise in the afternoon, the patient always becoming much worse at this time of day; and by the 17th it had again a range of from normal to 103°. The pulse was weak and rapid, 110 to 150. The tongue coated and dry, though he continued to take milk. The bowels acted freely and the motions were plentifully bilious, but the abdomen was distended with gas. Thus, though the abscess behaved quite well, the discharge being sweet and small in amount, we felt sure he had another. Accordingly, on the 11th, a week after the first operation, at Sir Joseph Fayrer's suggestion, I first punctured the liver just below the ribs, a little outside the first opening, and failing to find pus at three inches, I passed the needle through the seventh or eighth space at the lower part of the axilla and drew out three or four ounces of yellow pus, from a depth of four inches. The wound

was then enlarged, and using the cannula as a guide, dressing-forceps and the finger were passed into the abscess. This caused terrific hæmorrhage, and I was obliged (in the weak state of the patient) to plug the wound. Two days later I removed the plug and introduced a long tube, which appeared to drain the abscess satisfactorily for a time. But the general state showed no improvement, and ten days later a fine trocar was passed deeply through the lateral wound and evacuated a quantity of pus, probably a third abscess, though this is not quite certain. But none of these evacuations did the patient the slightest good, and on June 3rd, nearly five weeks after the first operation, he died, and though we could not obtain a *post-mortem* examination I have no doubt that his liver was riddled through with abscesses.

CASE VI.—I have had another case: An Indian officer, Major L., aged about 40, whom I saw with Sir Joseph Fayrer and Mr. Leedham, in which the evacuation of the abscess gave the patient no relief; but this case was complicated with diarrhoea, and the discharge from it was unusually profuse. He was very thin and emaciated at the time of the operation, March 16th, 1886, and he lived only a fortnight, having become much more emaciated before death. I can only record this as an unsuccessful case without being able to account for it, except on the theory of its being one of multiple abscess.

I will try now to draw a picture of the subject of a tropical hepatic abscess as it will be seen by an English surgeon. The patient will probably be a man (I have only met with one case in a female), and he will probably have been resident in India or some tropical country. It may be, however, that he will have contracted his disease during a casual visit, as happened with Case V., or with a young American whom I saw this year, and to whom I will refer later, who was travelling round the world, and was taken ill at Colombo. He will be sallow, partly from combined æmia and mild icterus, and partly from the bronzing which is caused by the burning tropical suns. Rarely will there be yellow jaundice; I have only seen one case, that referred to by Sir Joseph Fayrer in his book on tropical diseases, p. 193. He will be thin and anxious looking, and walking slowly as if in pain, but though his limbs and face will have fallen away, the abdomen will be full and more or less motionless. The tongue will be pale and furred, and the extremities tending to be cold and clammy. The liver will probably be enlarged, perhaps considerably, but sometimes scarcely extending below the ribs; but he is sure to say that he has been told that at one time it was very large. There will most likely be a prominence, either at the epigastrium or a little to the right, or else in the lower part of the right axilla. If in the latter situation, the dulness will almost certainly be raised, and the intercostal spaces slightly bulged; but when the patient lies on his left side, a position he is sure to find excessively disagreeable, both the bulging and the increased dulness will diminish or disappear. This, however, will not be so marked if the abscess be actually pointing through the ribs; and in this case the tenderness will be superficial. But, if the matter should be at some depth from the surface, it may require considerable pressure to elicit any tenderness at all. His appetite will be very capricious, and his temper too; he will be languid in his movements, and look as if he were sick to death of the struggle for life. The bowels will, in most cases, be confined, but this is not certain, and the motions will probably be pale. The temperature will be slightly raised, but in some cases will be considerably above the normal. The urine will be scanty and high coloured. This is only intended as a general description to which there are, no doubt, many exceptions, and it is possibly very different from one that would be given by an Indian surgeon who sees this disease in its earlier stages. The surgeon would probably be asked to explore such a liver with the aspirator, and now let me interpose a word of warning, lest anyone should fall into a mistake which I once made.

CASE VII.—I was asked to puncture the liver of a young man who had been in South America, and who had much the appearance of my supposititious patient; but he had a well-marked hectic temperature, and the tenderness of his very large liver was very diffuse. He had also a large and tender spleen. He had been examined by several physicians, but somehow attention had not been paid to the fact that he had frequent nose-bleeding, spongy gums, and had had petechial spots upon his legs. I introduced a needle in the two usual situations mentioned above, but found nothing, and in a few hours he was dead of hæmorrhage into his peritoneum. I need not say that he was the subject of leucocythæmia; nor, I hope, that, in considering any subsequent cases, this

one has always held a prominent place in my mind. It should, however, be added, that a puncture of the liver, if there be no adhesions, is never free from danger from this cause. A large vessel wounded near the surface of the liver may, in a healthy subject, give rise to fatal hæmorrhage, and thus, though considering the great rarity of the occurrence we must not be deterred from doing it, I think it behoves us not to speak too lightly of the performance to the patient or to his friends.

It has been often asserted that, in cases of suspected liver abscess, mere puncture of the liver has been followed by a sudden improvement of the symptoms; and in the face of the numerous cases, and the facts that similar results have followed puncture of an inflamed testicle, or of a painful kidney, it would be unwise carelessly to deny the possible causal relation of the two phenomena.

CASE VIII.—I once was attending a man aged about 30, who was a great drinker, and who had considerable hepatic enlargement and tenderness. The most tender spot was decidedly prominent at the epigastrium and I thought fluctuated, so I introduced the needle of an aspirator (I will not say into the liver, but certainly through the abdominal wall) and drew off, to my surprise, a few ounces of clear serum. From that moment the patient began to mend, and rapidly recovered from his urgent symptoms. What was the nature of his trouble I cannot say—perhaps a localised serous peritonitis.

Supposing pus to have been discovered, there can be no doubt that the best plan is to give exit to it at once by making a hole large enough to admit the finger and afterwards a drainage tube of the same size. Most likely, if the abscess form a prominent swelling, and almost certainly if the skin be reddened, the surface of the liver will be adherent to the abdominal walls; and, if the liver dulness in the axilla be markedly increased upwards, it is probable that the lower part of the pleura will have been obliterated by adhesive inflammation, but it is not safe in any case to assume the presence of these adhesions. It is therefore wise if the incision is to be made in front, to cut down very cautiously through the abdominal wall and to ascertain the state of the case. If no adhesions be met with it is not difficult by means of a full-curved needle held in a needle-holder (Hagedorn's is very good) to pass a series of stitches through the parietal peritoneum and pretty deeply into the substance of the liver. The stitches should be in a double row, they may be from one-half to three quarters of an inch long, and should overlap one another. I did this in one case (Case XVI.) in which the abscess was so near the surface that a drop or two of pus escaped when the stitches were being put in, but good adhesions formed as I unfortunately had the opportunity of seeing *post mortem*. If the abscess be pointing at the side, the incision should be below the normal line of the pleura if possible (roughly not more than two inches above the margin of the ribs in the mid-axillary line). But if it be made higher we must keep a look out for two serous cavities—the pleura and the peritoneum. If the pleura be opened it will be necessary to stitch the diaphragm to the costal pleura as I once did in a case which will be described later on (Case XVIII.). It would no doubt be very difficult to stitch the liver to the diaphragm in this situation, but I have no doubt it might be done, and ought to be done, but the opening in the chest-wall would have to be even larger than in the case I have mentioned.

I do not think that the escape of a little pus into the peritoneum would of necessity prove fatal. I expect it sometimes actually happens, as I believe that the precautions I am recommending are very often omitted. But there can be no doubt that such a contamination should be avoided. Liver pus is presumably as irritating as the contents of a hydatid cyst, and though our dread of interfering with the peritoneum is gradually diminishing, we should not think of admitting this to it under any avoidable circumstances. I always consider that this occurred in the case of an enormous abscess which I opened through one of the lower intercostal spaces (Case XII.). Immediately on recovering from the anæsthetic the patient complained of acute pain on the left side of the abdomen, and he continued to have great abdominal pain, much distension, and almost constant vomiting for some days, though there was little or no rise of temperature.

The most convenient form of tube, I think is the flanged tube, such as we use for empyema; and it should be, as I said, in most cases as large as the finger, and of a sufficient length to go well into the cavity—three or four inches, or even longer. For trouble is very often met with afterwards from the fact of the tube being pushed

out, or the track becoming oblique. I know of no way to guard against this obliquity of the opening, because it is impossible to calculate in what way the contraction of the liver, which is sure to be very considerable, and which varies in proportion to the size of the abscess, will take place. The tube is often pushed out by the deep part of the wall coming in contact with the superficial long before the proper time has come for its removal. As a rule the tube should not be taken out till the discharge has almost stopped. But I have known a case (Case XII.) where a very copious colourless discharge continued for a long time, and was at last stopped by very materially shortening the tube and then removing it.

The sort of dressing which it is best to employ is not very easy to determine. It must certainly be antiseptic. I have found, in my last two cases, Sir J. Lister's new cyanide of mercury gauze answer admirably. If this be not at hand, there is nothing better than carbolic acid gauze. The alembroth gauze or any soluble preparation of mercury must on no account be employed. I am not sure that it may not have an evil effect on the liver, and it is certain to result in irritation of the skin, and indeed this is a difficult thing to avoid, whatever antiseptic be used. If the discharge be at all copious, the dressing must be very extensive and will very likely want changing within a few hours. Afterwards the frequency of changing will depend altogether on the amount of the discharge. The necessity of keeping the tube in until the discharge is very much reduced was well shown in the following case.

CASE IX.—Mr. W., a young lawyer, had contracted in India a tropical abscess situated deeply in the liver, which had been opened through an intercostal space some time before I saw him at the desire of Sir J. Fayrer. The tube had been shortened to about two inches, and occupied only the outer end of a sinus nearly six inches long. The patient suffered constantly from a hectic temperature with daily great elevation. He had constant diarrhoea, and a most capricious appetite and temper. I introduced a series of straight bougies, of gradually increasing size, into the sinus, until it was large enough to admit a fair sized flanged drainage tube, thus ensuring a satisfactory escape for the matter. The diet was also very rigidly limited. He immediately lost his hectic temperature, the diarrhoea soon stopped, the appetite improved, and he made a good recovery, although the abscess had of course become septic. This is the right and only way of dealing with such cases.

The character of the pus met with at the first opening varies considerably; sometimes it is plain creamy pus, but often it is chocolate coloured. Afterwards it is most common, if the abscess be kept really aseptic, not to have any more true pus formed; but the discharge consists of two materials: a thick tenacious dark morone-coloured or more or less bile-stained mass of mucus, mixed with clots of blood, which is found on the dressings immediately round the wound; while, further away, the dressing is soaked with a copious thin fluid, sometimes quite colourless, sometimes slightly, sometimes deeply, bile-stained. But as I have hinted above, there is occasionally a considerable discharge of actual bile, which may come on at first or during the process of cure, and which may gradually diminish, or may suddenly come to a conclusion.

In making the first incision, if any considerable depth of liver tissue have to be traversed, very free hæmorrhage is likely to occur, as happens in the case of incisions made into the kidney. This must be treated by plugging the wound with the finger for a minute or two, when, in all probability, it will cease; but, if this be not the case, a plug of antiseptic material must be left in for a day or two. This hæmorrhage, when it is seen for the first time is truly alarming, but it need give rise to no anxiety.

At Sir Joseph Fayrer's suggestion I have had made an instrument for aiding in the opening of deep liver abscesses, which I have previously shown here in a lecture on abscess of the lung. It consists of a trochar either sharp or blunt, which, as well as the corresponding cannula, is grooved upon one side. This is to be plunged into the abscess, and then a fine pair of dressing forceps is to be run along the groove, and the track is to be widened by expanding the blades; or, if thought safe, a bistoury may be employed for this purpose.

MEDICAL MAGISTRATE.—The Lord Chancellor has added the name of Alexander G. Davey, M.D., etc., Fellow of the Sanitary Institute, to the Commission of the Peace for the borough of Ryde.