urine. She attended as an out-patient for some time, during which the swelling was noticed to rise and fall more than once. The attacks were brought on by any unusual exertion, and she was seldom a fortnight free from pain.

At the time of her admission the swelling was distinct and easily movable within the abdomen, but it quickly subsided, possibly as the result of the manipulation to which she was subjected, so she was discharged three days later. She was readmitted on May 20th, when the tumour was again very distinct, filling up the left loin and left side of abdomen, fluctuating, and freely movable. She had suffered a great deal of pain since her last admission, chiefly in the back of the left loin.

On May 23rd ether was administered, and I proceeded to expose the kidney by an incision about 5 inches in length below and parallel with the last rib. Since her admission the kidney had again partially emptied itself, so that when it was exposed it was not much distended. The pelvis of the kidney was now thoroughly explored for stone, but no evidence of stone was found. The ureter was next traced down from the pelvis and it was found to narrow suddenly to its normal size opposite the lower end of the kidney. To make a more thorough examination of the organ the kidney was slipped out through the wound, its lengthened pedicle allowing this to be done with ease. We were thus able to see exactly the amount of damage done to the organ and determine how much secreting structure remained. Although the pelvis of the kidney could be invaginated into hollow cavities in all directions, it was evident that there was still a considerable amount of cortical substance left undamaged. I accordingly resolved to replace the kidney and stitch it into its normal position. Five chromicised gut sutures were used to attach the kidney to the muscles. The wound was then closed by wire sutures and a drainage tube inserted at the posterior angle. The temperature after the operation at no time rose so high as 100°, and the patient made an uninterrupted recovery, leaving the hospital with the wound healed just a month after the operation. Since then she has been free from pain, and there has been no evidence of any reaccumulation of fluid in the kidney.

I think we may claim in Case IV to have made a new departure in the treatment of hydronephrosis when due to movable kidney, by which the malady is arrested, the patient relieved from pain, and the organ saved for future service.

Conclusions.

The conclusions to which the study of these and other cases lead are:—

1. That movable kidney is a condition which during displacement may, and often does, lead to hydronephrotic destruction, owing to twisting of the pedicle or pressure of the organ upon its duct.
2. That to avoid such danger and to relieve the patient from pain all such cases should be treated by nephrorrhaphy, which is a simple and safe operation.
3. That even when hydronephrosis has already advanced, cases in which the hydronephrosis is clearly due to the mobility may be cured by nephrorrhaphy, and the remains of the organ saved from further degeneration.

A CONTRIBUTION TO THE TREATMENT OF HEPATIC ABSCESS, WITH CASES.

[By NEIL MACLEOD, M.D. EDIN.,
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THE advantages claimed for the method of operating here set forth are these: Before emptying the abscess a means of estimating the size and position of the cavity, and so determining the best site for opening and drainage; no hæmorrhage; certainty of free drainage, better fixation of the liver than by a rubber drainage tube, no necessity for excision of a portion of rib, and rapid, certain, and easy introduction of the tube in any position both at the operation and at exchange of tubes.

I presume that no one now regards the treatment of liver abscess as other than surgical. In my thesis for the M.D. degree I recommended early antiseptic incision and drainage as a promising method of dealing with hepatic abscess. That was 11 years ago, when aspiration was looked upon as the best method of treatment, a proceeding which, I think, at the present time will find few if any advocates. In these days of abdominal surgery it has been proposed to explore this condition and deal with it by abdominal incision, a mode of treatment which has been carried out in the case of suppurating hydatid cysts, but not, so far as I am aware, with tropical liver abscess. In my experience most abscesses that might appear capable of being dealt with in this way may be evacuated without opening the abdomen as proposed, while those situated in the upper or back part of the convexity hardly admit of such treatment. Certain difficulties arise out of the location of these abscesses in a movable organ not normally attached to the outer wall of the body and closely related to two large serous cavities and several important organs. Fortunately in the great majority of cases that come under treatment the liver is adherent at some part of its surface so that the normal movement is restricted but never abolished. As will be seen from some of the cases here recorded another kind of movement caused by reduction in size of the inflamed organ and by contraction of the abscess cavity may give rise to considerable trouble during after-treatment and may even lead to fatal results. The following cases presented difficulties which suggested to me the method here presented of obviating them.

CASE I. Abscess of the Convexity and Back Part of the Liver: Operation: Recovery.—In a married woman, aged 26, a severe chill on December 16th, 1881, was followed by suppression of the menses and ill-health, and ten days later by severe pain in the right shoulder and chest. She was seen three times before January 6th, and no fever or hepatic enlargement was observed. From that date till March 1st the temperature ranged in the morning from 98° to 104°, in the evening from 99° to 103.9°, the pulse from 91 to 120. During the last week of that period there was increased fever, evident increase of hepatic dulness, and a loss of weight. Stitch-like pain had been felt in the side and back, the shoulder pain persisted, and at one time there was hyperæsthesia all over the liver region. There was no bulging of ribs or obliteration of intercostal spaces, nor was there any history of diarrhoea. Personal and family history were good. On March 1st, in the seventh intercostal space in the anterior axillary line, at a depth of 1½ inch, pus was found by aspiration, and 8 ounces evacuated by incision. Before the abscess was emptied of its contents the point of an ordinary pair of dressing forceps, tilted forward, was felt to touch the anterior wall of the cavity, so that the latter was not in front of the anterior axillary line. Backwards the forceps passed to the handle, and also freely upwards. As the abscess emptied itself, repeated introduction of the forceps was only successful as the point was directed more and more backwards and upwards. The diaphragm tendon could be felt by the finger in the wound, and was firmly adherent to the chest wall. A large drainage tube was introduced with difficulty. At 8 P.M., on the same day the temperature was 104.4°, pulse 116; there was great pain in the region of the navel, and the legs were drawn up. Next day the whole abdomen was tender, the breathing rapid and shallow, the knees had to be kept raised on a pillow, and all movement was painful, but the temperature fell to 102°. On the third day 99° was the highest temperature; the tube was withdrawn, requiring some force, and it and the dressing changed. On the fourth day there was no pain in the belly, and on that and the following days the temperature was 100°, 99.8°, 99.7°, 99.6°, and then normal. On the fourteenth day the drainage tube was shortened, and in the evening I was sent for, and found my patient in great distress, afraid to move or breathe deeply, the temperature being undisturbed. At noon I had withdrawn a 2½-inch tube and introduced the dressing forceps along its track easily, while eight hours later the forceps passed but one inch, the tube track in the liver being no longer in line with that in the wall. A shorter tube was left in the wound, and removed two days later, and the wound was healed in the beginning of the fourth week without further trouble.

Here it is to be observed: (1) Before emptying the abscess, its anterior wall stretched transversely opposite the puncture, and after emptying sloped well backwards. (2) Peritonitis was probably set up by the escape of pus into the peritoneum. (3) There was anchoring of the liver to the side by drainage tube when long, accompanied by a good deal of discomfort; but when the tube was shortened on the fourteenth day the liver shifted its position, the shortened tube could not be replaced in the track through the liver, and the discomfort was relieved. I have seen this accident require chloroform and a second opening, and in a case seen in consultation it led to a fatal result. These various troubles suggested the question, how could one before evacuating such an abscess determine its size and relations with a view to opening at a better point? Having found pus in my next case, through the aspirator cannula (Matthieu) I passed an ordinary knitting needle, and tilting it forwards, backwards, upwards, and downwards, each time withdrawing it a little and pushing it as far as it would go, I was enabled to tell whether the bulk of the cavity was opposite to, above, below, in front of or behind the point of aspiration. Also by slowly withdrawing the cannula and observing at what depth the pus ceased to flow, the distance of the outer wall from the surface of the body at that point was ascertained. In such a case as the one just related, an opening 2 inches posterior to that made would probably have prevented the peritonitis and been much more comfortable to the patient.

CASE II. Dysentery: Multiple Abscess: Operation: Death.—A merchant, aged 37, who had lived freely and exercised little, early in September, 1887, had an attack of subacute dysentery. In the end of October he had disturbance of pulse and temperature, accompanied by hepatic enlargement and shoulder and side pain. Till December 5th the temperature varied in the morning between 97° and 106°, occasionally reaching 101° or 102°; in the evening it was usually over 100°, and higher than in the morning, frequently 102°, and on November 25th, 104°, and accompanied by the first and a severe rigor, and followed by a heavy sweat, perspiration at night having been fairly well marked for some time previously. The weight fell from 198 to 148 pounds. On December 5th, through an opening in the seventh interspace, half way between the costal cartilages and the anterior axillary line, a cavity of some size was demonstrated by the

probe. Great difficulty was met with in introducing a rubber drainage tube, owing it was thought, to resistance from the tendon of the diaphragm. Finally a tube was forced into the cavity threaded on a probe, but very little discharge escaped on that or the two following days. On the fourth day a silver tube was introduced along the same track, giving escape to several ounces of pus. Drainage went on freely, but the liver did not decrease demonstrably, the temperature was lowered only temporarily, and death took place from exhaustion on January 9th. *Post-mortem* examination revealed many abscesses in the liver, and a thickened leather-like capsule forming the obstacle to the introduction of the rubber tube and rendering drainage through it impossible unless a hole has been literally punched out of the capsule to prevent the tube from being nipped.

The difficulty in this case, also met with in others, of introducing a large-sized india-rubber drainage tube (a small one is useless) with forceps or otherwise, and the likelihood of thereby tearing through adhesions already present, besides injuring more than necessary of the liver and other tissues, led me to devise the following apparatus, which Mr. Young, Forrest Road, Edinburgh, made for me three years ago, and which I have found so useful in entering and draining these abscesses that I venture to recommend it to others. 1. A trochar and cannula, the latter 5 inches long and $\frac{1}{2}$ inch in diameter. 2. A probe 11 inches long, and grooved one half of its length as a director and fitting the cannula. 3. Four nickel-plated drainage tubes, 4, $3\frac{1}{2}$, $2\frac{1}{2}$, and $1\frac{1}{2}$ inches in length respectively, oval in calibre, thus more suitable for use between the ribs than round tubes, largest diameter $\frac{3}{8}$ and smallest $\frac{1}{8}$ of an inch, each tube having two oval lateral openings at one end for drainage and two small openings at the other to admit of the passage of a safety pin as guard. 4. Another tube called the guiding tube, $\frac{3}{8}$ of an inch longer than the longest of the drainage tubes, and accurately fitting its interior, furnished at one end with a flange at right angles to its length, and tapering into a cone at the other end, where it is open enough to allow the passage of the grooved probe. The guiding tube in the interior of any one of the drainage tubes by means of its conical point slides easily into the abscess, when the two are threaded on the probe previously introduced; then, by removing the probe and the guiding tube, the drainage tube is in position.

CASE III. Dysentery: Large Abscess: Operation: Recovery.—A chief mate, aged 54, in May, 1889, suffered from dysentery, and thereafter from fever of a remittent type. Repeated examination of the liver region by his medical attendant discovered no evident enlargement. In August he was sent for a change to Nagasaki, where he became very ill, the liver greatly enlarged, and he suffered severely in that region. I saw him for the first time on October 3rd, when he looked at death's door, having lost 40 lbs. in weight, had a feeble, quick pulse, and a liver dullness reaching from the nipple to the iliac crest and a swelling projecting below the ribs. On the following day I made an opening in the right hypochondrium, giving vent to 39 ounces of pus from a cavity 5 inches deep measured directly backwards. On one evening after the operation the temperature touched 100° , otherwise it was below 99° , and discharge went on freely for fourteen days. On December 10th the last tube was withdrawn, and on the 19th the wound was healed, and the weight increased 10 lbs.

This is the only occasion on which I have been able to make out fluctuation in a liver abscess. In spite of its size there was no sign of bursting on the surface. In the end of 1890 the lower margin of the liver could be distinctly defined above and away from the scar.

CASE IV. Hepatic Abscess: Rupture through the Lung: Exploration: Death.—On June 5th, 1882, a tailor consulted me at my house complaining of pain in the shoulder, which had interfered with sleep for six weeks. Examination of the upper part of the chest and shoulder gave no positive information. He was ordered a large dose of quinine and to report the effect. I heard no more of him till June 11th, when I was sent for, and found him with a temperature of 102.6° , and though he had previously reported that he had had no fever, he now acknowledged that he had felt feverish chiefly at night, that he had had night sweats, and had lost 24 lbs. in weight in two months. He had had no cough till the previous night, when a fit came on, bringing up what he called blood, which stained his handkerchief brown. There was slight pain on the right side on movement. In the left subclavicular region there was slight flattening, deficient expansion, comparative dullness, but no moist sounds. From the angle of the scapula at the right base dullness extended downwards and into the subaxillary region, uninfluenced by position, and no breath sounds could be heard in that area. Expectoration was slight, brownish and mucopurulent. Next day he was coughing up stuff the colour of brick dust and characteristic of hepatic abscess, and continued to do so, from 2 to 9 ounces daily, the temperature remaining normal; cough and expectoration ceasing about the middle of July, and weight having increased 9 lbs. On July 28th a fit of coughing ushered in copious expectoration, a return of illness, a loss of weight, and, on September 8th he was aspirated in five different directions without success. He died on October 16th, having expectorated by measure 3 gallons, 1 pint, and 14 ounces of discharge. *Post-mortem* examination disclosed a single abscess of the convexity and back part of the liver, opening through the diaphragm into the right lung. The apex of the left lung was emphysematous, and contained a cicatricial nodule about the size of a walnut. The wall of the large gut was thinned at several points by cicatrised ulcers.

Had I examined the liver area on the day on which the patient was first seen in my consulting room, the abscess might have been prevented from bursting through the lung. If the abscess had been reached and drained through any of the punctures made, it would have been at a point free from adhesions. Posteriorly the abscess was nearest the surface, and there adhesions were present. The fear of the absence of adhesions at the seat of puncture has led to a variety of propositions, the latest of which is set forth in Greig Smith's valuable book *Abdominal Surgery*, p. 581, where, writing of the treatment of liver abscess, he says: "Direct incision into the abscess through the abdominal walls would be carried out only if there were signs of the abscess bursting of its own accord.....Redness, tenderness, and some swelling at any part over a hepatic tumour which is probably suppurating may be taken as an indication that the matter is forcing its way to the surface. In such cases there will be adhesions between the liver and the overlying peritoneum, and an opening may be made with safety." Then he very wisely adds, "It need scarcely be said that such a tendency to point is neither to be waited for nor encouraged.....and before the signs of pointing appear the patient will have been reduced to a very low ebb." With such views as to the indications for this method of operating, it is not to be wondered at that on the next page he recommends something different: "Hepatotomy—the name usually given to direct incision through the liver tissue after abdominal section—is the operation which most commends itself for hepatic abscess." [The italics are mine.] Then follows an excellent description of the operation, the most important direction of which is that "the whole length of the incision in the liver is stitched to the margin of the wound in the parietes," a direction which appears to have been carried out with the cyst wall of a suppurating hydatid cyst, but not yet with the wall of an acute hepatic abscess. In acute liver abscesses I have never seen anything that could be called a cyst wall or that could be sewn to the parietes, unless liver capsule thickened by inflammation could be called a cyst wall, but in such a case there is always adhesion if the inflammation is recent. So far, therefore, as hepatic abscesses are concerned, hepatotomy thus resolves itself into an abdominal incision to find out where adhesions exist, so that puncture may be made at that point; if adhesions are not present, stitches are to be used to fix the liver to the incision, though it has yet to be shown that stitches through liver tissue will hold sufficiently for this purpose. No allowance is made for the fact that the incision in the abdominal wall may not be at a convenient point for drainage of the abscess cavity, which may be on the upper part of the convexity or back part of the organ, when it would be impossible to perform an operation like hepatotomy. I have tried the stitching of the liver to the incision in the dead body, with the result that I would place little or no reliance on their efficacy in fixing the organ or preventing escape of pus into the peritoneum, from the difficulty of getting the stitches to hold. It is only fair to mention that Greig Smith has in mind hydatid cysts in describing the operation, and is not writing of it as applied by himself to abscess. I am sure that if he had had experience of acute liver abscesses, he would have made some distinction between their walls and those of suppurating hydatid cysts. The special advantage, and I think the most important of all, has been overlooked by Greig Smith, namely, cases of multiple abscess which can be seen on the surface of the liver could be readily detected by this means of operating, and further interference prevented: unfortunately all cases of multiple abscess cannot be so distinguished.

Where the pleural cavity has to be crossed to reach the abscess, and the diaphragmatic and parietal serous surfaces are not adherent, these also it is proposed to stitch. Without stitches in either case adhesions will rapidly form from the presence of the drainage tube, and the surface of the liver being closely applied to the parietes, and this application maintained by atmospheric pressure, with free drainage, there is more likelihood of the discharge finding its way externally than internally. In a case in which I assisted at operation, the pleura was opened and the lung collapsed, but after death (from a failure in drainage) the lung was found expanded, and the track into the abscess shut off from the pleural cavity. In this case stitches would not have pre-

vented collapse of the lung nor influenced differently its after-course. Absolute certainty of freedom of drainage is obtained by the tube I use, so that I do not allow the fear of adhesions being absent to influence me in operating, any more than I would do in the case of a brain abscess from fear of pus finding its way beneath the membranes because they may not be adherent to the brain. It has not been proposed to stitch the brain to the dura mater when adhesions are absent. In every instance (17 in all) where I have seen pus found by aspiration within 1½ inch of the surface, adhesions at the point of aspiration have been present, so that I prefer to trust to this indication with the aid of the soundings made as already described, until it can be demonstrated that stitches through liver tissue can be used efficiently, as suggested in the operation of "hepatotomy."

CASE V. Dysentery: Abscess: Rupture into the Peritoneum: Operation: Death.—A storekeeper, aged 43, with a history of a few days' dysentery in the end of December, 1889, followed by slight diarrhoea for a month, on February 25th complained of slight pain and tenderness in the epigastrium and right hypochondrium, fever, and loss of appetite. There was slight increase of hepatic dullness in front. From February 28th till March 11th the morning temperature was between 99.4° and 102.4°, the pulse from 80 to 90, and there were night sweats. On the night of the 11th abdominal pain, vomiting, and collapse suddenly set in, followed by distressing hiccough, and a temperature for thirty-six hours of from 95° to 97° in the mouth. Rupture of an abscess into the peritoneum was suspected, but the case appeared in a couple of days to resume its previous course with slight increase of liver dullness. On March 16th eight ounces of pus were evacuated near the margin of the ribs in the right hypochondrium through an opening judged by the soundings to be as near as possible opposite the middle of a cavity 5 inches deep, pus flowing at 1½ inch from the surface. The first puncture 3 inches deep in the epigastrium failed to reach pus. Free discharge was followed by no improvement in the temperature or the general condition, and no contraction of the cavity ensued. Death took place on April 5th from exhaustion. On two occasions, without any blocking of the tube, there was sudden increase of the discharge as if fresh abscesses had burst. *Post-mortem* examination disclosed a very ragged irregular cavity, in the wall of which there were several rounded infarct-like areas projecting into the liver substance, and consisting of softened tissue infiltrated with pus. Either this was a single abscess with these extensions, or more probably there were several foci of inflammation and suppuration, probably originating in infarcts and running together. A tumblerful of pus lay encysted between liver, colon, and stomach, and separated from the abscess cavity by thin liver capsule, in which no opening could be found; probably the opening had become glued up by peritonitis after the rupture.

A noteworthy feature in this case after the rupture was a temperature of 95° in the mouth, frequently registered in the morning, and on one occasion, ten days before death, 94°, by repeated observations with a tested thermometer. There were no rigors. Earlier operation might have prevented rupture into the peritoneum and saved the patient.

CASE VI. Dysentery: Multiple Abscess: Operation: Death.—On November 2nd, 1889, a merchant's clerk complained that he had been ill for twelve days with fever, diarrhoea, and loss of appetite. He had had syphilis five years before and drank freely. In the lower axillary region a stabbing pain was felt and friction could be heard next day. The liver dullness was slightly increased. The temperature till November 20th was from 98° to 102° in the morning; 101.4° to 103.4° in the evening, and there were slight night sweats. The liver increased demonstrably in size, and the cardiac apex became markedly displaced upwards and to the left. On November 20th, through the ninth interspace between the anterior and mid-axillary lines I evacuated 20 ounces of pus from a cavity 2½ inches deep. For three days the temperature was lowered; it then resumed its old course, the pulse became quicker and feebler, the skin round the opening sloughed, and he died on December 21st. The heart, spleen and kidneys were increased in weight, the kidneys and liver were fatty, the liver weighed 104 ounces and was riddled with abscesses.

This case illustrates the occurrence of a large abscess associated with numerous small ones. There was extensive ulceration of the large gut, and the two ribs adjoining the opening showed bare bone, the only occasion on which I have seen the ribs so affected. This had not I think anything to do with the want of space between the ribs, but was probably due to the same cause as the sloughing of the skin. I have not found it necessary to excise a piece of rib as is recommended by some operators. The only ground upon which such a proceeding can be considered necessary is that of whether there is sufficient space between the ribs for operating or drainage without injury to these bones. To throw some light on this question I examined the space available between the ribs for this purpose in every position where an abscess could be reached, in ten bodies on the *post-mortem* table. In all of them I found that the normal intercostal space affords ample room. At the junction of the cartilaginous and bony rib there is often a space of 1½ inch. The drainage tube I recommend does not require quite ½ an inch.

CASE VII. Dysentery: Abscess of the Convexity: Double Operation: Recovery.—A married woman, aged 47, in August, 1890, suffered from acute

dysentery at Wuchang. This was followed by fever of a remittent type, weight and discomfort on the right side, and for 24 hours one day in September by an acute stitch-like pain in the subaxillary region. She was seen by me for the first time in consultation with Dr. Douthwaite, of Chefoo, when there was increased hepatic dullness in the axillary line difficult to define because of much subcutaneous fat, and there was slight shoulder pain. From September 28th the morning temperature ranged from 98.2° to 100.6°, that of the evening from 100° to 101.8°. On the night of October 25th there was a rigor, with a temperature of 104.4°, and on the 29th the case was handed over to me. Notwithstanding repeated rigors, the general condition remaining good, the temperature being raised for a few out of the 24 hours, the pulse being rarely over 100 and food being well taken and digested, operation was delayed till November 25th, when 15 ounces of pus were evacuated through an opening in the anterior axillary line between the seventh and eighth ribs. The rigors ceased and the temperature fell to normal to rise again on December 3rd to 100.4°, after sudden cessation of the discharge, previously very free. A longer tube then introduced gave exit to several ounces of pus, which was followed by a fall of the temperature to normal, till the evenings of December 18th, 19th, and 20th, when it was 100°, 101.6°, and 101.3°, the discharge having been very slight for some days before these dates. On these three nights there was a return of vomiting, coughing, and pain in the back, symptoms which had invariably preceded the rigors before the operation. So on the morning of the 21st I made another opening further back and somewhat higher up in the same interspace, giving vent to 3 or 4 ounces of discharge through the four-inch tube. The temperature again fell to normal and the wound healed early in February, but on the 21st of that month some discomfort was again felt in the seat of the second wound. Temperature, normal in the mornings, was raised for the next three evenings, once to 101.4°. On the 24th the wound reopened under a dressing and gave escape to several ounces of brickdust-coloured discharge, the probe passing down to the original depth. The track was then dilated, a long tube reintroduced, and by means of a square of cardboard rendered aseptic retained in position for three months to allow sufficient time for complete contraction of the abscess cavity. At the end, there being no discharge, the track was kept filled with an emulsion of iodoform in glycerine and allowed to heal. With the exception of the slight disturbances of temperature referred to, the general condition of this case from the time of the operation was remarkably good.

From the soundings in this case I found that the cavity was on the convexity of the organ, aspirated on a level with its floor, and that the bulk of the abscess was above the point of puncture. For this reason I was tempted to open in the next higher interspace, but did not do so from fear of opening into the pleura and lung collapse. Pus was reached 1½ inch from the surface, yet the 3-inch tube became imbedded in the liver tissue forming the floor of the abscess, as the cavity contracted, and the discharge ceased in consequence, but recommenced when the tube was exchanged for a longer one. The same thing happened with this longer tube, and it had to be reintroduced at a point higher up. The abscess, at first drained 1½ inch from the surface and through its outer wall, came to be drained through its floor at a point 4 inches from the surface, the drainage tube passing obliquely upwards. The case took longer to terminate than any other with which I have had to deal, and I am inclined to think that if I had acted in opposition to my fear of opening the pleura it would have recovered in a few weeks and without a second operation. The apparatus here described proved very useful, the frequent withdrawals and introduction of tubes being rendered so easy to me and the patient. I am satisfied that without the metal tubes the patient would not have recovered through failure of drainage.

My method of operating is as follows: Instruments, skin, etc., being rendered aseptic, an aspirating trochar and cannula are passed, preferably at a point chosen where dullness is absolute, and where there may have been stitch-like pain felt or friction heard. If in a case there has been no such pain or friction, the first step in the operation might be an abdominal incision to search for adhesions or to examine by sight the liver surface for evidence of multiple abscesses, if these be suspected. If pus be found on aspiration, a knitting needle then introduced through the cannula into the abscess and tilted forwards, upwards, backwards, and downwards, and measurements made of how far the needle can be passed in these various directions, will determine if the point of exploration be fairly opposite the centre of the cavity, failing which another point is chosen from the data thus afforded, and the process repeated. When a satisfactory point is thus obtained, a large trocar and cannula are entered thereat; the trocar is next replaced by the director, and the cannula withdrawn. A single vertical incision about an inch in length, through superficial and deep structures, is then made, Lister's sinus forceps passed down the groove of the director into the abscess, its blades opened and then withdrawn, and if necessary a dressing forceps used in the same way. Through the opening thus made the drainage tube, with the guiding tube in its interior, is slipped into the abscess threaded on the

director, which is then withdrawn along with the guiding tube, and a safety pin passed through the holes in the outer end of the tube as a guard. After the pus has ceased to flow, or does so but slowly, a dressing is applied. At each dressing the director probe can be passed into the abscess to ascertain the degree of contraction, and used as a guide for slipping in a fresh tube, which will thus enter the cavity each time with ease and certainty, and without pain, a consideration which will be valued by those who have had frequently to pass large rubber tubes through intercostal spaces. I have tried both glass and rubber tubes, but prefer those of metal. Dry antiseptic dressings have been used with all these cases.

With regard to *early* incision. I have had no unsuccessful result that I could attribute to this cause, while I have had to regret opening these abscesses too late. Moreover, I believe that every single hepatic abscess, provided the general condition of the patient is fair, ought to recover if opened early, drained thoroughly, and kept aseptic.

For assistance in operating in all these cases I have to thank Dr. Henderson, of Shanghai; also Dr. Miles, of Shanghai, in Cases I and VII; Dr. Little, of Shanghai, and Dr. Howard Taylor, of the China Inland Mission, in Case VII.

REMARKS ON FIBROUS STRICTURE OF THE COLON. WITH A HISTORY OF TWO CASES DIAGNOSED BY LAPAROTOMY AND TREATED BY COLOTOMY.

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STRICTURE may affect any portion of the colon; but I find after considerable research, both in published cases and museum specimens, that in at least three-fourths of the cases the obstruction is situated in the sigmoid flexure. The cause of the stricture is either malignant or fibrous: the former results from adenoid cancer, which forms a ring-like growth surrounding the bowel. Fibrous stricture appears to be the result of chronic inflammatory mischief, originating either in the coats of the bowel or in the fibrous tissue in its neighbourhood. Thus, ulcerations of the mucous membrane or the formation of abscess, either in the walls of the bowel or the pelvic fascia over which it runs, may be the starting point of the disease.

The diagnosis of a stricture in the large intestine at an early stage must necessarily be difficult; and, even as the disorder advances and the symptoms become more marked, it is not always easily made. Vague colicky pains with a tendency to constipation may be at first present. As the contraction increases the symptoms become more decided. A rumbling of the intestines with recurring attacks of pain is observed, while there is often a frequent desire to go to the closet. Small diarrhoeic motions may be passed, or only a little discharge and wind comes away. The irritability of the bowel, so far as I have observed, seems to be greatest on first getting up in the morning. Sometimes at intervals a well-formed solid motion may be passed. This does not negative the fact that a stricture exists, for I have known fair motions passed where a subsequent *post-mortem* has disclosed a stricture which would not admit the little finger. Such motions must, of course, be formed by accumulation below the narrow part.

At the later stages of stricture vomiting occurs, but vomit of a fecal nature seems rarely to be present till the obstruction is complete. It occasionally happens that obvious symptoms of intestinal obstruction, accompanied by fecal vomiting, spontaneously give way with a free discharge of feces by the rectum. But the frequent occurrence of violent fecal vomiting extending over a long period without fatal result, as in the first case recorded, must be very uncommon. Such attacks seem probably due to the upper opening into

the stricture becoming temporarily blocked by a scybalous mass, which subsequently gives way to the churning action of the bowel.

The diagnosis between malignant and fibrous stricture of the colon must always be a matter of difficulty. Occasionally, however, an inflammatory origin is suggested by the manner in which the symptoms commence. This was especially so in Case I. Here the sudden onset of the pain, relieved after a few days by an attack of diarrhoea, and a copious purulent discharge, left little doubt that an abscess had formed and burst, for the patient had previously been in good health and dated all her subsequent troubles from this time. If a fibrous stricture results from the healing of an ulceration, the differential diagnosis is surrounded with difficulty, for the symptoms of an ulcerated colon closely resemble those of malignant disease. Without attempting to go into the detail of the differential diagnosis between simple and malignant strictures I may mention in passing that I have found the following points of advantage:

The duration of the symptoms may throw light on the case. Although malignant disease in its earlier stages progresses slowly it must be remembered that when it has advanced sufficiently to produce well-marked stricture, its subsequent course is comparatively rapid, and a fatal termination not far off. Indeed, it will be rarely found that a patient with cancer lives a couple of years after the symptoms of stricture become marked.

The character of the discharge helps towards diagnosis. In malignant disease it is generally considerable, while, if not at first, it soon becomes dark and blood-stained. In fibrous stricture, on the other hand, the discharge may be comparatively slight, consisting of simple mucus or muco-pus. It is true that in advanced cases where there is much secondary ulceration, the discharge may be of a coffee-ground colour as in cancer. When the stricture is due to cancer an observant nurse or patient may notice little flesh-like fragments in the discharge, an examination of which under the microscope will at once demonstrate the presence of adenoid cancer. The general condition of the patient, as shown by weakness, cachexia, and loss of weight, must be taken into consideration, for these symptoms, though not always absent in simple stricture, form a marked feature in malignant disease.

CASE I.—A lady, about 70 years of age, under the care of Dr. Pearson, to whom I am indebted for the following history: The patient was apparently in good health till 1883. In the spring of that year, whilst walking up a hill, she was suddenly seized with a severe pain in the left flank. The pain continued during the next few weeks, and was followed by some nausea and a sharp attack of diarrhoea and discharge. With rest and simple treatment she was convalescent at the end of a month. In October, 1883, the pain in the left flank and the nausea having recurred, accompanied by some tenderness and distension of the abdomen, she was seen by a surgeon who detected a lump low down, deeply seated in the left side. The diagnosis made at the time was that there was probably some malignant growth involving the lower part of the colon. During 1884 and 1885 she was troubled occasionally with constipation, followed by some diarrhoea.

In January, 1886, she first had what was described as a bilious attack, and since these attacks increased in frequency, and became the most prominent symptom in the case, it may be well to describe them in some detail. The patient, who had been previously feeling fairly well with a good appetite, would suffer from constipation for some days. She would then have an uncomfortable feeling of abdominal distension, accompanied by loud borborygmi. The discomfort would gradually pass into severe abdominal pain. All appetite would be lost, and she would have an intense feeling of nausea, and this would be followed in a short time by severe vomiting, lasting on and off for twenty-four hours. The vomited matter would consist almost entirely of fluid fecal material. Generally at this time she would have two or three copious diarrhoeic stools, the matter passed by the rectum being similar to that passed by the mouth. The attack would then pass off, the appetite return, and she would remain in fairly good health until another occurred. At first there was an interval of two or three months between these attacks, but their frequency gradually increased, so that, latterly the intervals were not more than a fortnight or three weeks. The spasmodic pains also became more intense, and the patient's general condition was very grave.

On being asked to see the patient by Dr. Pearson in July, 1888, I found her in a very feeble state after one of these attacks. She was naturally a stout woman, and though she had become much thinner, there was so much fat in the abdominal walls as to make an examination of the abdomen difficult, but, on deep firm pressure, there appeared to be some indistinct fullness in the left groin. An examination by the rectum and vagina gave a negative result. The general symptoms and character of the vomiting suggested so strongly a stricture of the large intestine that an exploratory operation was advised and consented to.

On July 19th, distension of the abdomen having again recurred, and seeing that she was evidently on the brink of another attack, assisted by Mr. Bowlby, I opened the abdomen on the left side by an incision 3 inches long, midway between the umbilicus and anterior superior spine. An enormously distended coil of the sigmoid flexure immediately presented itself. Upon tracing this downwards towards the brim of the pelvis, it