break is an instructive one, as showing how impossible it is to arrive at a conclusion regarding the safety of a water supply upon chemical evidence only.

HEPATOTOMY AS A TREATMENT FOR HEPATIC ABSCESS.

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THE very interesting and instructive papers on the surgical treatment of hepatic abscess, appearing in recent numbers of the *BRITISH MEDICAL JOURNAL*, induce me to bring forward the notes of a case which lately came under my observation, as I am strongly of the opinion that the fear expressed by most writers on this subject as to hæmorrhage from the liver, and the danger of pus escaping into the peritoneal cavity is much overrated, as shown by recent abdominal surgery.

I can readily understand that if a liver abscess be evacuated by an aspirator, pus may escape by the side of the needle into the peritoneum. Or that, as the sac fills again and the tension becomes great, the pus will follow the track of the needle, and having no point of exit be forced into the peritoneal cavity; but in cases where a free incision is made in the first instance and kept patent while pus continues to form, there can be little or no danger of the pus passing into the peritoneal cavity even when no adhesions exist between the parietal peritoneum and that covering the liver, as the normal contraction of the abdominal muscles is such as to hinder extravasation, as shown in the case of the second abscess I operated on.

A. P., aged 27 years, a clerk, booked with the Imperial British East African Company as an assistant, in December, 1890, and was sent to Mombaza, 140 miles north of Zanzibar. Soon after arrival he was attacked by remittent fever; and after a residence of four months, was sent to Aden to recruit his health. On the voyage, the weather being very hot, he slept without bed clothes, and on awaking in the morning felt chilly, and had a stitch-like pain in his right side; this, however, shortly disappeared, giving place to a heavy, dull, persistent pain in the right side. After a short stay in Aden he returned to Mombaza in much better health. About six weeks later the fever again attacked him, which necessitated his return home in September, 1890. On the voyage home he so far recovered his health that on his return he was appointed clerk on the Great Southern and Western Railway, which post he soon relinquished owing to a recurrence of his illness. I saw him on December 3rd, 1891, and took the following notes of his condition. The complexion was sallow, the pulse 112, regular and compressible, the tongue coated with thick white fur; he was losing flesh rapidly, and for the past three weeks vomited large quantities of a light green fluid, solid food caused pain in the epigastrium. The bowels were regular, with light coloured motions; he had a feeling of numbness and tingling in the left leg, corresponding to the cutaneous distribution of the musculo-cutaneous nerve; sensibility was diminished. His liver was greatly enlarged, giving rise to bulging out of the ribs and fullness in the epigastrium. He complained of a dull aching pain in the hepatic and right iliac regions, also of tenderness below the costal arch, chiefly in the epigastric region; the spleen was slightly enlarged; flatus passed frequently by the mouth and rectum; there was constant nausea and occasional mucous vomiting; the breath was very offensive. The urine was clear, high coloured, acid, of specific gravity 1021, and contained a trace of albumen and bile pigments, but no sugar; the chlorides were abundant.

The patient was kept under observation until December 8th. The temperature varied between 100° F. and 101° F. in the morning, and 102° F. to 103° F. in the evening; his liver increased rapidly in size, a distinct enlargement occurring in the epigastric region to the right of the median line.

Operation being determined on, an incision 3 inches in length was made parallel to the right costal arch in the epigastric region, commencing opposite the seventh costal cartilage, and the liver, which was pale in colour and not adherent to the abdominal wall, exposed. A small aspirator needle was passed into the liver, pus being found at once, a little oozing out beside the needle; 20 ounces of a chocolate coloured pus were at once removed by the aspirator. Tension being now relieved in the abscess, a free incision was made through the walls of the sac, and about three pints of pus removed, the opening in the liver being held by forceps in close contact with the wound in the abdominal wall. The sac was now washed out with boric acid solution, and sutured to the abdominal wall by two rows of gut, the first attaching the liver half an inch from the opening in the abscess sac to the parietal peritoneum and deep muscles, the second attaching the margin of the opening to the incision in the skin. Two large drainage tubes were introduced to keep the opening patent, and the whole dressed with zinc sulphate gauze.

The condition of the patient improved rapidly after the operation: the temperature varied from 99° F. in the morning to 101° F. in the evening; nourishment was freely taken. For the first few days there was a very free discharge of pus; the sac was washed out daily with boric acid solution, and the amount of discharge rapidly became less. On December 18th pain was again complained of in the epigastrium; his temperature rose to 102°, and by December 21st a slight tumour was observed in the

epigastrium to the left of the median line. His symptoms becoming aggravated, an aspirator needle was passed into the tumour on December 23rd and pus found. I now made an incision to the left of the median line, exposing the left lobe of the liver, which I found partially adherent to the abdominal parietes. On incising the liver I removed about a pint of pus, but I found that when I attempted to suture the liver to the abdominal wall the stitches tore through the liver substance. So a strip of zinc sulphate gauze was introduced, and pressure applied by a pad to the abdomen below the opening. At the time of this operation the abscess opened into previously had almost ceased to discharge pus, and was practically well. The abscess opened into now made an equally favourable and rapid recovery under daily dressings as before, but the patient's strength gradually failed, and he died from asthenia on December 31st, eight days after the second operation.

Post-mortem Examination.—The liver was adherent to the abdominal wall at the sites of the operations, completely closing off communications with the peritoneal cavity. It weighed 110 ounces; the abscess cavity operated on in the right lobe was represented by a fissure about two inches in depth and lined by a distinct membrane and contained no pus. The abscess cavity in the left lobe was capable of containing about 5j of fluid. Another large abscess was found in the posterior portion of each lobe filled with pus; those were entirely out of reach of operative interference. The spleen weighed 3xij; the kidneys were normal; there was no evidence of peritonitis.

PERINEAL DRAINAGE IN SUPRAPUBIC LITHOTOMY.

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VERY little reference is made in British textbooks to this mode of drainage in suprapubic operations, still less to the differentiation of cases requiring it. And for this two reasons are perhaps accountable. First, it is really very seldom needed in civilised countries, where cases of stone usually come under treatment at an early stage. And, secondly, if the drainage by this route is not perfect, it is practically useless. Drainage by the urethra is too uncertain to be employed with any satisfaction. To be perfectly successful, a tube other than the ordinary lithotomy tube or soft catheter must be used. These are liable to blockage either from the falling down of the collapsed bladder wall or by mucus and pus. I found a silver lithotomy tube pierced with two rows of large closely set openings for the terminal $1\frac{1}{2}$ inch of its length sufficient for the purpose. The puncture in the perineum being made after the suprapubic wound with the left index finger in the prostatic urethra from above as a guide is one of the simplest of counter-openings, large enough only for the introduction of the tube, and, if kept accurately in the middle line, necessitating the loss of scarcely a drop of blood. True drainage is secured as distinguished from the overflow through the suprapubic wound, which, together with the cavity of the bladder, is kept perfectly clean, and thus absorption from a large raw surface is avoided.

The first time I was led to practise this drainage was purely accidental. The patient was an emaciated Arab, 30 to 40 years old, with a stone (since given to the Leeds Museum) over 10 ozs. in weight, largely phosphatic, with alkaline urine. Having tied the penis with a tape after the injection of only 4 ounces of fluid (instead of using the pressure of a column of fluid through a large catheter, as should always be done), the membranous urethra ruptured, and the penis, perineum, and scrotum rapidly filled up. This is an accident which I have not seen recorded elsewhere. The vesical walls were much hypertrophied. To relieve this, I made a median puncture at the base of the perineal swelling, extending into the urethra, so that it should be available for bladder drainage afterwards. But it necessarily wounded the bulb, and the consequent loss of blood must have contributed to the ultimate fatal result. For some days soft catheters were used for drainage, and the patient put on his back on an inclined plane. But it was not till the above-mentioned tube was used that we succeeded in keeping the large upper wound dry, and even then it was found advisable to insert a strip of gauze into it as an additional precaution. On the fifth evening the drainage was discontinued, as the one constant position was irksome to the patient. But next morning the usual drop in temperature was absent, and the patient distinctly not so well, so it was resumed till the ninth evening, when again an attempt was made to dispense with the tube. The patient's temperature had varied between 100° and 103° F., but his tongue was