time of the operation, otherwise the patient may die poisoned by his own excrement; and (8) that it is probably safer to be content with colotomy or enterotomy where the bowel is seriously damaged than to attempt an operation for nistomosis.

Swansea.

CURE OF ASCITES DUE TO LIVER CIRRHOSIS BY OPERATION.

NOTES OF A SECOND SUCCESSFUL CASE AND OF A POST-MORTEM EXAMINATION.

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DR. DRUMMOND and I have already published a paper¹ on the cure of ascites due to liver cirrhosis by a surgical operation. The design of the operation, as we then pointed out, was to relieve the obstructed portal circulation by the establishment of an efficient anastomotic one. I propose to offer now further evidence, both of a clinical and post-mortem character, that this can be successfully accomplished.

A man, aged 42 years, was sent to me in January, 1897, by Mr. G. Longbotham of Middlesbrough, complaining of swelling of his bowels. It appeared that eight weeks previously he had felt unfit to attend to his business from weakness, having an uncomfortable puffed-up feeling after meals and being somewhat swollen. Since the beginning of the year the swelling had increased very rapidly. Except for a history of three attacks of pneumonia, always in the left lung, there was nothing to note in his previous health and his family history was excellent. With regard to alcohol he said that he never took more than a pint of beer to his dinner and supper, and very occasionally a glass of whisky, and that he had always been temperate. This statement was corroborated by his wife and by Mr. Longbotham. His arms, his legs, and his chest had got much thinner since his illness commenced. His organs, with the exceptions to be presently noted, appeared to be sound. His abdomen was much swollen and it felt tense. All the signs of a large collection of free fluid were present. No liver dulness could be distinguished. His spleen was so much enlarged as to fill the left ilio-costal and lumbar spaces and to bulge forward the left flank. A distinct notch was felt in the tumour, showing it to be spleen, in a line drawn from the umbilicus to the ninth left costal cartilage and midway between the two. Never having seen so large a spleen before in liver cirrhosis, before deciding to operate I asked Dr. Drummond to see the patient. He concluded that the ascites and enlarged spleen were due to liver cirrhosis and advised operation.

The operation was performed on Jan. 12th, 1897, under chloroform. The abdomen was opened midway between the umbilicus and ensiform cartilage sufficiently to admit my index finger for exploratory purposes. The characteristic hard, hobnail surface which was felt on reaching the liver left no further doubt as to the diagnosis and the parietal incision was extended from the ensiform cartilage to the umbilicus. I then introduced my hand into the abdomen and projected my finger against the anterior parietes three inches above the pubes and made an opening sufficiently large there to admit a glass drain into the recto-vesical pouch. About two gallons of fluid escaped from the upper opening and through the tube. Through the upper opening a perfect view of the liver and spleen was obtained. The liver presented the typical appearance of the ordinary form of alcoholic cirrhosis, and although diminished in size was not so much contracted as we expected it might be from the diminished liver dulness. The spleen was enlarged to at least six times its normal size. After emptying the peritoneal cavity and drying it with sponges, the anterior surface of the liver, the outer surface of the spleen, the exposed coils of intestine, and the parietal peritoneum were all firmly sponged and the omentum was attached by sutures widely to the parietal peritoneum lining the anterior abdominal wall, as described in the paper to which I have referred above. The whole of the upper wound was closed by deep and superficial sutures and the glass drainage-tube was left projecting and firmly gripped

below. Wide, long strips of strapping were applied firmly over the dressing from the epigastrium down to the drainage-tube. The nurse who was left in charge was directed to keep the dressing dry by frequently emptying the tube with a pump. The operation was completed at 12.45 P.M. The after-progress of the case was as follows. Fluid was drawn off at 2.15 P.M., at 2.45 P.M., at 3.15 P.M., at 3.45 P.M., at 4 P.M., at 4.30 P.M., at 5.15 P.M., at 6.10 P.M., at 7 P.M., at 7.40 P.M., at 9.15 P.M., at 10.15 P.M., and at 12 midnight. The total amount of fluid drawn off since the operation was 8 oz. 4 dr. On Jan. 13th fluid was drawn off at 2.30 A.M., at 4.30 A.M., at 6 A.M., at 7.40 A.M., at 9.15 A.M., at 10.40 A.M., at 12.35 P.M., and at 2.45 P.M. The total drawn off during the 24 hours was 6 oz. 6 dr. On the 15th fluid was drawn off at 6.15 A.M., at 9 A.M., at 1.30 P.M., at 3 P.M., at 10 P.M., and at 12 midnight, and on the 16th at 1 A.M., 3 A.M., and at 6.30 A.M. The total for the 24 hours was 4 oz. The wound was dressed for the first time on the 18th, when the glass tube was removed and a small indiarubber one was inserted. On this day and on the 19th and 20th the dressing was frequently changed to keep the wound dry. The wound was dry all the night of the 21st, and on the 26th the indiarubber tube was taken out. The patient went home on the 28th with the wound healed except where the drainage-tube had been.

The general recovery of the patient requires no note. From the surgical point of view it was straightforward. It was, however, evident during the last few days of his stay in Newcastle that he was much depressed mentally and after his return home the depression increased and for three weeks he was alternately depressed and excited. This feature seems to me to be deserving of more attention than would have been given to the same in an ordinary case, for it may possibly be one of the special risks of this operation. Dr. Drummond has brought before the Northumberland and Durham Medical Society at various times cases of liver cirrhosis complicated by peculiar nervous symptoms, and in one patient who died he was unable to find any change in the nervous system to account for the symptoms. In that case the liver was in an advanced stage of cirrhosis, there was no ascites, and there was a very large vein of Sappey connecting the portal with the systemic circulation. The explanation given by Dr. Drummond of the attacks—viz., that they were due to intestinal products finding their way directly into the systemic circulation without any liver influence being brought to bear on them—is in accordance with the fact that this patient was on several occasions rescued from an apparently hopeless coma by the administration of a brisk purgative and also with the results of experiments on the liver functions. 10 months after the operation my patient was shown at a meeting of the Northumberland and Durham Medical Society. He appeared then to be in excellent health and said that he felt perfectly well. His spleen, though considerably less, was large enough to be easily felt. There was no sign of fluid in the abdomen. I next heard definitely of him in January, 1899. A well-known insurance office wrote asking me to report on the nature of the operation performed two years previously. He had been passed by the medical adviser of the company as a first-class life, but before completing the insurance I was consulted.

The only difference between this operation and those previously recorded by me was in the position of the parietal incision. The main opening in this case was made above the umbilicus and was only large enough to admit a drainage-tube below that point. The importance of avoiding the chance of a ventral hernia will be seen later.

The patient in the first successful case, a woman, attended the Medical Section at the annual meeting of the British Medical Association at Carlisle eight months after the operation and was then apparently in perfect health. The abdominal cicatrix had yielded to some extent, producing a ventral hernia. This was the result of a cough which had troubled her for some months and imperfect suturing, but the hernia occasioned no inconvenience and was kept in place by an abdominal belt. Two years after the operation this patient called on me concerning her ventral hernia. During this time she had felt strong and well, had led an active and happy life, and had performed all the duties of her household. Latterly a troublesome cough had led to a marked increase in the size of the hernia and her belt had ceased to be a sufficient support. She was anxious to have the hernia radically cured, and considering the trouble which it was causing, the certainty that it would get worse, and the

¹ Brit. Med. Jour., Sept. 19th, 1896.

good condition she was in, I could not refuse to undertake the operation. The operation was performed on Oct. 5th, 1897, by a method of my own without opening the peritoneum. The only peculiarity observed was that the sub-peritoneal vessels were large and bled freely. She recovered in an hour from the immediate effects of the operation but towards evening became very restless and complained of pricking pains and numbness in her arms and legs. Next morning after a restless night I found her distinctly jaundiced and complaining still more of the numbness and pain in her arms and legs which were very tender when touched. The jaundice and restlessness increased and on the second day after the operation she became comatose and died at night, deeply jaundiced.

Post-mortem evidence.—At the necropsy Mr. W. G. Richardson removed the whole of the abdominal viscera and the parietes, excepting the skin, *en masse*. He then injected the whole from the trunk of the portal vein. I showed the specimen at a meeting of the Northumberland and Durham Medical Society on Nov. 11th, 1897, and in demonstrating it I said²: "The liver, the spleen, and the intestines are seen to be attached to the parietes chiefly by numerous band-like adhesions. (Many of these seemed to contain little except a blood vessel and in several of them such vessel was four inches in length.) The omentum also is firmly adherent over the anterior abdominal wall by strong bands. In all of these adhesions innumerable injected vessels are readily seen passing from the omentum and viscera to the parietes. Many of them are fully the size of a normal radial artery. The sub-peritoneal plexus of vessels forms a dense large network.

This specimen establishes our belief that an efficient anastomotic circulation can be brought about by operation. There can also be no doubt that this patient was cured of ascites and that useful life was prolonged to her for two years by the operation. A further examination of the specimen shows the liver to be much atrophied and degenerated. The spleen is at least four times its normal size. It is quite evident that the obstructed portal circulation has nothing to do with the splenic enlargement—in this case at all events—for the new anastomotic circulation is clearly more than sufficient to compensate for any diminution in size of the portal vein."

Dr. Bolam reported as to the microscopic condition of the liver: "Typical cirrhosis with much fatty degeneration. Fibrous tissue well formed. So-called new bile-ducts present in numbers, liver cells showing extreme fatty degeneration in all zones, and normal cells few and situate in central portion of lobule."

In another case I have performed the operation for the cure of ascites and though the case is of no value in forming an estimate of the worth of the method I think it is right to report it, as the introducer of a new operation should be expected to offer the whole of his experience concerning it.

The patient, a woman, aged 54 years, was sent to me by Dr. Welsh of Felton when she was very ill. She was an excessively stout woman and had enormous distension of the abdomen. 18 months previously she noticed her legs to be swollen for the first time. One year previously, though always very stout, she found herself getting stouter and this was most noted in the abdomen. Up to two months ago she was able to attend to her business and felt fairly well, then the swelling of her abdomen and legs which had been steadily increasing incapacitated her and for the last three weeks she had been confined to her bed. Her mother died from "consumption" and her father from pneumonia; all her father's family had had delicate chests and her only sister had died from "consumption." Eight years previously the patient had had pneumonia and bronchitis, to which she was subject, but otherwise her health had been good. A year after this she had a rupture at the navel.

When I saw her on March 5th, 1897, her legs and abdomen were enormously swollen and beyond ascertaining that there was a quantity of free fluid in her abdomen and some albumin in her urine I learned nothing from careful physical examination. On March 6th I tapped her and removed five and a half gallons of ordinary ascitic fluid. This made no appreciable difference in the size of the swelling, but I thought that I could now feel that the bulk of the enlargement was due to a round elastic tumour. On March 13th I opened her abdomen and found in addition to a

quantity of ascitic fluid an enormous multilocular cyst. The abdominal incision was extended so as to include the umbilicus and the sac of a hernia and these were excised. After separating the adherent omentum the tumour was found to be of the left ovary and to be buried in the broad ligament. An extensive enucleation was necessary for its removal but very little blood was lost. The liver was seen to be cirrhotic and the spleen and the omental vessels to be enlarged, so the omentum was sutured across the anterior abdominal wall. The abdomen was closed without drainage. For the first week after the operation the patient was exceptionally well and looked as if there was no doubt as to her recovery. Then she had an attack of diarrhoea with some vomiting, she became lethargic, and she refused her food. On March 27th it was noticed that her pulse had become markedly intermittent. She steadily went downhill and died on March 29th, on the eleventh day after the operation. A post-mortem examination limited to the abdomen corroborated the opinion formed at the operation. There was some free fluid in the abdomen. Both kidneys were in an advanced cirrhotic condition, not smaller than normal, but markedly granular on the surface with adherent capsules. There were no surgical complications. I think, judging by the symptoms and the result of the limited post-mortem examination, that death was due directly to the kidney lesion.

It is more rare than I thought to see uncomplicated cases of liver cirrhosis and ascites. Valvular heart lesions, thoracic aneurysm, albuminuria, and glycosuria, are the most frequent complications which I have met with and each would seem to contra-indicate operation because but seldom can the latter two be temporary. Of my two previously recorded cases one was successful in curing the ascites, the other was not.³ The clinical diagnosis of liver cirrhosis was not in the latter case corroborated by surgical examination of the liver, and Dr. William Ewart suggested at a meeting of the Harveian Society of London on April 6th, 1899, that my case might be similar to one under his care. In his case the operation failed to cure an obstinate ascites which was believed to be due to liver cirrhosis and his patient died like mine several months after the operation. In his case the post-mortem examination showed a universally adherent pericardium stiffened by a layer of calcareous salts which must have precluded the contraction of the ventricles. The liver was not cirrhotic.

I have now operated on four cases. Two were uncomplicated and were regarded as suitable cases for operation and both of them were cured. In one the diagnosis was doubtful, and in another the complications were such as to preclude recovery.

The conclusions which I have come to are as follows. 1. Ascites due to liver cirrhosis can be cured by the establishment of an efficient anastomotic circulation. 2. Adhesive peritonitis produces adhesions between the abdominal contents and its parietes in which new blood-vessels form. If there is any demand for the new blood-vessels they remain permanently. 3. The operation described in the paper by Drummond and myself⁴ is the safest and most certain method of producing adhesions. 4. It is no longer advisable to treat the ascites due to cirrhosis by repeated tapplings if the patient is otherwise sound and in fair general condition. After one or two tapplings have failed operation offers the best chance of prolonged and useful life.

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³ Brit. Med. Jour., Sept. 19th, 1896.

⁴ Ibid.

BRISTOL JUBILEE CONVALESCENT HOME.—At a recent meeting of the governors of this institution it was stated that when all the expenses of the home had been paid £55,000 will remain for endowment purposes. Mr. E. P. Wills has since promised to subscribe £5000 provided another £15,000 be raised within three months. This would be sufficient to give the £65,000 required to endow the 65 beds allotted to the infirmary, hospital, and other medical charities and would leave a sum the income from which would be applied to reducing the charge made for the 15 beds allotted to other patients. Mr. J. S. Fry has promised to provide the last £2000 of the £15,000 required and Mr. Vaughan has given £1000 for the endowment of another free bed.

² Northumberland and Durham Medical Journal, January, 1898, p. 50.