was some difficulty in detaching the peritoneum from the upper end of the intestine, but when denuded the muscular coat was easily approximated to the peritoneal coat of the lower end by a continuous suture, which was laced up so as to bring the surfaces into intimate contact without being sufficiently tight to be likely to cut through the included coats of the intestine. A second continuous suture was now used to unite the triangular gap in the mesentery beginning at apex. When the bowel was reached the suture was continued around the gut to draw the piece of reflected peritoneum down over the first row of sutures, and to attach its deep fibrous surface to the serous surface of the peritoneum of the lower portion of the gut. This was successfully accomplished, except over a small portion, where the reflected peritoneum had curled up and could not be brought down quite as far as was wished.

This partial failure of the method in the dog cannot be held to prejudice the operation in man, because, as already stated, there is not the same difficulty in the reflection and reapposition of the peritoneum of the human intestine that there is in that of the dog. Moreover, it served to show that one sero-fibrous apposition by a continuous suture was in this instance sufficient, and therefore the double sero-fibrous apposition which can easily be obtained in the human intestines should be doubly efficient.

The clamps having been removed and the hole in the mesentery sutured, the intestine was returned, the abdominal wound united, and the dressings strapped on. The whole operation lasted under thirty-five minutes. The animal rallied well, but was sick once on the following day. He made an uninterrupted recovery, passed a dark motion on the fourth day, and well-formed normal motions subsequently. On the seventh day the abdominal wound was found to be united, and the stitches were removed and ordinary food given. He seemed little worse for the operation, and showed evident signs of gratitude when I visited him, apparently on account of the removal of his tapeworms. On the fifteenth day after the operation the dog was killed under chloroform, and the body examined. The abdominal wound was soundly healed. The great omentum was adherent to the outer side of the junction in the intestine, which was thickened at this point. The gut was very firmly united, and no stitches could be seen. A current of water flowed freely through it. On passing the little finger into the bowel above the junction the first joint could be passed through the union, although the little finger fitted closely into the normal intestine of this animal, showing that there was no material constriction at the seat of the resection. In short, the operation had proved a complete success, and I should not have the slightest hesitation in performing it in the human subject if a case requiring enterectomy presented itself.

The advantages of this mode of operating are: (1) That it can be done with the aid of the instruments in a pocket case, ordinary round sewing needles being used (although curved intestinal needles are to be preferred), and with very little assistance, and is therefore likely to be of special service in military surgery. Yet (2) it can be completed in about half an hour, or only a little longer than the time required with the aid of such special appliances as plates, buttons, and bobbins. (3) The junction is a double sero-fibrous one, and hence, as Greig Smith has shown, will unite the maximum of rapidity and firmness. (4) The mesenteric side can be made very firm by the apposition of the muscular coat of one end to the peritoneum of the other, and the subsequent covering up of this suture by the reflected peritoneum. When special appliances are at hand their use will probably be preferred to the method which I have described, but in country and foreign practice, where these luxuries are seldom likely to be at hand when the occasion arises for their use, I venture to think that my method will be materially quicker and more efficient than the ordinary one of suturing with interrupted Lembert's sutures, in which both Jacobson and Treves are agreed that from twenty-five to forty sutures are required, and even then the mesenteric junction gives cause for anxiety. As it may not fall to my lot to perform an enterectomy for a long time to come, I have thought it best to describe this method of operating in order that others may give it a trial. Anyone who will take the trouble to practise it on the dead body will, I am sure, very soon become convinced of the ease

and rapidity with which it can be performed. The same principle can also be applied to some of the other intestinal operations which do not fall within the scope of this communication.

TRANSPERITONEAL LIGATION OF THE EXTERNAL ILIAC ARTERY FOR ANEURYSM;

SECONDARY CÆLIOTOMY FOR INTESTINAL OBSTRUCTION; RECOVERY.¹

By JOHN C. DAVIE, M.D.

F. E. W., a labourer, aged 32, a powerful man, with a syphilitic history, was admitted into the Jubilee Hospital, Victoria, British Columbia, on December 9th, 1890, suffering from aneurysm of the left external iliac artery. The tumour extended from Poupart's ligament to a point half-way between the ribs and the anterior iliac spine; laterally it extended well over towards the median line.

All usual aseptic precautions having been taken, under ether anaesthesia, on January 9th the abdominal cavity was opened in the median line, by an incision extending from 2 inches above the umbilicus to within 1 inch of the pubes. The lower end of the operating table was then elevated a foot, and the intestines pushed up out of the pelvis. The external iliac was found lying alongside the aneurysm to about the centre of the tumour; the peritoneum over the vessel was carefully divided, the artery isolated, and ligatured with ox aorta. Pulsation in the tumour immediately ceased. The intestines having been replaced, the abdominal wound was closed with a single row of silver wire sutures and dressed with aseptic gauze. The leg was encased in cotton wool, and the man put in bed.

The patient stood the operation well, and had no vomiting. He slept for an hour the following night. On the morning of January 10th, while his temperature was normal, his pulse was 114. At 10 A.M. he commenced to vomit, and continued to do so at intervals all day and night. The abdomen also became distended. On January 11th the temperature was still normal, and the pulse 106. He vomited in the morning; after enemata of turpentine, etc., the vomiting ceased, and he passed a fair night.

On January 12th, the thermometer in the mouth registered 96.4° and the pulse was 100. He rested well in the morning. Nutritive enemata were ordered. He vomited once or twice during the day. In the afternoon the enemata were rejected and flatus was passed, and the patient vomiting slightly in the evening, 10 grains of compound extract of colocynth, with half a grain of belladonna, was ordered.

On January 13th, the temperature in the morning was 97°, the pulse 108. No movement of the bowels had followed the purgative administered the night before. He was then ordered large enemata containing turpentine, with no effect. He vomited slightly in the morning and evening. The abdomen was still distended.

On January 14th the temperature in the morning was 96.5°, and the pulse 105. He vomited in the afternoon. Purgative enemata were repeated, with no effect. In the evening, nutritive enemata were rejected, and a considerable quantity of flatus passed. He slept well. Since the operation he had had practically nothing by the mouth, as any attempt at this brought on vomiting. He had been fed entirely by nutritive enemata, and he naturally suffered much from thirst. At 8 P.M. on the evening of January 14th, during the absence of the nurse from his room, he got out of bed, walked to the dresser and drank a pint of cold water which he found there. He vomited after this every few minutes until 1 A.M., when he passed some flatus. I saw him at this time, and on entering his room found that the vomited matter had a distinctly faecal odour. I gave him 10 ounces of brandy and soda, which he enjoyed and retained.

On consultation, it was determined to reopen the abdomen, to relieve his intestinal obstruction. Accordingly, on the morning of January 15th, under ether anaesthesia, the silver wire stitches were taken out; the wound having lost this support,

¹ Read before the British Columbia Branch of the British Medical Association

quietly broke open, and a large mass of distended small intestines protruded. The distended intestine was followed downwards until a point was found where the gut was acutely bent on itself. Its approximated surfaces were glued together by lymph. The intestine above the point of flexion was dilated, inflamed, and much thickened, below this point normal and collapsed. The adhesions were separated and the intestine straightened; as it was impossible to return the distended intestines into the abdomen, I aspirated them at a dozen or more points, using a fine needle, and thus emptied them very satisfactorily of their contained flatus. The peritoneal cavity was then washed out with water at a temperature of 115°, and the parietal wound closed with silver wire.

The subsequent history of the case, briefly, is that within twenty-four hours the bowels acted freely of themselves, and there was no further trouble from this source. The abdominal wound suppurated at its lower end, causing a slight rise of temperature for a few days. The patient's left leg, from the time of the first operation, was carefully enveloped in cotton wool and kept warm, and gave us no trouble. His aneurysm was permanently cured. He was seen in 1895, when he was quite well.

Three points to my mind are worthy of comment in the foregoing case: (1) The transperitoneal method of ligature of the iliac arteries, especially in cases of aneurysm of the same; (2) the occurrence of intestinal obstruction after abdominal section; (3) aspiration of the intestines as a thoroughly safe procedure where indicated.

Most abdominal surgeons will, I think, agree with me that the ligation of the iliac arteries, particularly in such a case as narrated, by means of abdominal section, is the most desirable method. By the old operation it would have been impossible to have placed a ligature on the external iliac in this case; it would have been necessary to tie the common iliac with the greater proportionate risk of this procedure. Again, in doing the ordinary operation for ligature of the iliac vessels on the cadaver, it will be found that the peritoneum, which has to be stripped up, varies considerably in thickness. In some cases its separation is simply and easily effected, as it is a substantial and tough membrane; in others I have found it so thin and frail that, with all possible care, I have got into the peritoneal cavity. Those who do much abdominal work are aware of such variations. With proper precautions, the opening of the peritoneal cavity *per se* is devoid of risk. A median incision gives the freest possible access to the vessels in question; they can be examined from end to end by the eye and by touch, and the most desirable point selected for the application of ligature. These reasons, in my opinion, make this method the operation of election.

As regards the second point, the occurrence of intestinal obstruction after abdominal section, no doubt many lives have been lost through this unfortunate occurrence. In many cases it may be unavoidable; in the majority I think it is caused by faulty methods. I think it was so in my own case. In my practice, intestinal obstruction has occurred only in this instance. If all unnecessary handling and displacement of intestines, except *en masse*, be avoided as much as possible, such an accident will be very rare. My own practice in almost all cases of operation on the contents of the lower abdomen is, after making the parietal incision, to at once place the patient in the Trendelenburg position and gently empty the pelvis of the intestines, passing them up into the upper abdomen, where I cover them again with a large flat sponge, and seldom touch or see them again until the major part of the operation is completed. When the patient is placed on the level again, the intestines slide back into their normal position, the relation of the different coils having been disturbed as little as possible. When obstruction does occur, reopening of the abdominal cavity at the earliest possible moment a diagnosis can be made, is the only reasonable treatment. The obstruction in the case narrated was not complete, in that flatus was voided by the rectum unmistakably several times, and in considerable quantity—such flatus having passed the point of flexion in the gut. This caused delay in a positive diagnosis; though vomiting came on after its causation by the anæsthetic was out of the question, its continuance, despite absolute non-administration of liquid or solid by the mouth, taken with

the abdominal extension and subnormal temperature, make up a pretty clear picture of obstruction. The fecal character of the vomiting on the evening of January 14th made the diagnosis of obstruction beyond doubt.

As regards aspiration of the intestines as a safe means of treatment where they are distended by flatus to such an extent as to make their return in the distended condition dangerous or impossible, I am of opinion that this should supersede any other plan. It is commonly recommended to make an incision lengthwise in the gut to effect this purpose, and having emptied the intestines to sew it up; I contend that one cannot empty the intestines satisfactorily through a single incision, and the practice of making a number will hardly commend itself to anyone. An incised wound of the intestine is not a desirable addition to any abdominal operation. On the other hand, to take a fine aspirating needle and pass it obliquely into the gut, avoiding any blood vessels, to aspirate out the flatus, carefully withdraw the needle, and wipe the punctured point with a piece of gauze wrung out of bichloride solution, is in my opinion an ideal method. One can puncture as many coils as necessary; indeed, the more thoroughly the intestines are emptied the safer the treatment appears to me. One has only to watch the behaviour of the punctured point for a few seconds after this little operation to be convinced of its safety. No doubt many surgeons have adopted the same plan. At the time I used it I had seen no mention of it anywhere. In many cases one can picture it would be a matter of no small importance to have a ready and safe means of relieving great intestinal distension by flatus.

SUCCESSFUL CASE OF TREPHINING FOR MENINGEAL HÆMORRHAGE: LIGATURE OF THE CAROTID.

By FRANCIS J. SHEPHERD, M.D., C.M.,

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THE following case is one that presented so many difficulties and was of such a serious nature that it seems to me worthy of being placed on record. It is not often the surgeon has an opportunity to trephine successfully for meningeal hæmorrhage, because usually these cases are seen too late for the operation to be of any service. In the present case the hæmorrhage was not very severe at first, and pressure symptoms from the slowly spreading clot were not marked until the following day, due, I believe, to the circumstance that the rupture of the artery was low down, where the dura mater was closely attached to the base of the skull, and where it needed considerable force to separate it from the bone. In most cases of meningeal hæmorrhage the artery is injured higher up, and a clot more readily forms where the dura mater is not so closely adherent to the bone.

O. C., a clerk, aged 30, was admitted into the Montreal General Hospital on August 4th, 1895, suffering from injuries received by being thrown off his bicycle whilst coasting down a very steep hill. Within forty-five minutes of the accident he was brought to the hospital, and on admission he was unconscious. The pulse was 84, regular, but not very full; the respirations 25, full, and regular; the temperature 100.2° F. Immediately after entrance he vomited a large quantity of bilious matter, and after this he slowly regained consciousness. He had a large wound on the left side of the head, behind the coronal suture and over the anterior superior portion of the parietal bone; the wound extended downward and forward for 3 inches; the bone was laid bare, and a fissured fracture was seen running downward. At the upper end of the wound a slight depression was noticed. The left ear and the left eyelid were almost torn off. The side of the nose and the cheek were much contused and ecchymosed, and there was slight ptosis; the left eye also showed subconjunctival hæmorrhage, and the left pupil was more dilated than the right. Sensation, motion, and the reflexes were unimpaired on both sides of the body. He was admitted at 7.45 P.M., and at 10 P.M. he was quite conscious, and his speech was normal. The wound was cleansed and dressed in the usual way, and whilst this was being done he twice vomited bilious matter