Clinical and other Notes.

REPORT ON A CASE OF GENERAL PERITONITIS FOLLOWING AN OPERATION FOR REMOVAL OF APPENDIX, IN WHICH SUBCUTANEOUS INJECTION OF SALINE SOLUTION WAS USED WITH MUCH BENEFIT.

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PRIVATE B., 8th Hussars, was admitted on April 9th, 1907, to the Military Hospital, Colchester, with the following history: Nineteen months ago, while walking about, he felt a sudden pain in the right iliac region. It was very severe, and he had to go home and sit down. The pain kept him awake all night and, although it had gone by the morning, it left him a bit sore for a couple of days. Since then he has had "stitches in his side" if he ran. The next attack was seven days ago. While riding, at 9 a.m., he was suddenly seized with pain in the right iliac region and had to dismount. The pain lasted till 10 p.m., and then disappeared. While trotting next morning he got sudden stitches of pain, which disappeared after a short rest. This condition recurred every day on riding, and so he reported sick. Temperature normal. Bowels open. Located tenderness, with one finger, accurately over McBurney's point.

On April 16th, 1907, under eucaine and adrenalin, the usual operation was performed. The cæcum was found to be much tied down, and the appendix (which could be felt running up along the outside of the ascending colon) could not be withdrawn. Under chloroform the muscle fibres were divided in an upward direction. The appendix was found buried in dense adhesions, and was removed with difficulty. It contained three concretions and its mucous membrane was much ulcerated. There was a good deal of vomiting after the operation, which was ascribed to the anaesthetic.

On April 19th, 1907, it was noted that there was a good deal of local peritonitis, and the bowels had not been moved, although purgatives had been repeatedly given. The wound looked inflamed and smelt. Temperature 99·8° F. Enema of terebinth acted freely, and it was thought that the vomiting would now cease and that he would do well.

April 20th, 1907. He had acute abdominal pain last night. This morning there is general peritonitis. Pulse 138, of very small volume; face pinched; persistent vomiting of dark fluid. Those who saw him expected a fatal termination in a few hours. He was given 5 minims of strychnine hypodermically, and it was repeated twice at intervals of an hour. His rectum was washed out and rectal feeding commenced. Subcutaneous
injection of normal saline solution into the tissues over the pectoral muscle was begun. At first it was run in by means of a hollow needle (from an aspirator case) connected by rubber tubing to an irrigator can. This was slow and not altogether satisfactory, so I subsequently used the needle of a large antitoxin syringe. This was pushed into the axilla, vertically, close to the anterior fold, and the solution injected as fast as the syringe could be detached and filled. It was found that only the first syringeful was painful. One and a-half pints could be injected in about fifteen minutes. Up to 9 p.m. eight and a-half pints of saline had been injected, alternate axilla being used. The pinched appearance had disappeared and he did not complain of thirst.

April 21st, 1907. Hyoscine gr. $\frac{1}{10}$, digitalis gr. $\frac{1}{100}$, given at 9.30 last night. It made him rather delirious. Repeated at 2 a.m., and he slept. His pulse dropped steadily and is 108 this morning, of good volume and tension. Intense infection of wound, and black slough of connective tissue separating. Abdomen is less distended and flatus is passed. Stomach washed out by large tube; large quantity of dark fluid and much gas escaping. He appears to have acute dilatation of the stomach. Four and a-half pints of saline given subcutaneously to-day; vomiting much less.

April 22nd, 1907. Hyoscine gr. $\frac{1}{10}$, and morphia miii., given at 6 p.m. yesterday and repeated at 9.30 p.m. He had a good night. No more vomiting. Stomach still much distended. Had several stools during the night and passed a lot of flatus. Rectal feeding stopped, and feeding by mouth in small quantities commenced. Saline solution, one and a-half pints, given subcutaneously. About 1.30 p.m. it was obvious that all the fluid which was being given by mouth was being re-tained in the stomach, which was unable either to absorb or reject its contents. Stomach tube removed a large quantity of dark brown fluid, a very much larger amount than had been drunk. About 5 p.m. the abdominal pain (chiefly over the stomach) became very acute, and a hypodermic of morphia miv. given. At 9 p.m. I washed his stomach out again with saline solution and injected two pints, with 1 ounce of brandy in it, subcutaneously. Half an ounce bovinine, diluted to 4 ounces, ordered as enema every six hours. All fluid by mouth stopped.

April 23rd, 1907. Hyoscine gr. $\frac{1}{10}$, repeated during the night, which, with the addition of morphia miii. hypodermically, gave him a good sleep. Stomach washed out. It contained much less fluid, and it was not quite so coloured. Its distension appeared less. Pulse remains as good as it was three days ago. Liq. strych. miv. hypodermically, given from 9 p.m. last night and continued till 9 p.m. to-day, every four hours, with the idea of getting the intestinal walls to contract. Saline solution five pints, with $\frac{1}{2}$ ounce of brandy in each pint, given during the day. No thirst. Flatus freely discharged. Wound much cleaner.

April 24th, 1907. Temperature 99° F. Pulse 96. Abdomen much
softened. No apparent accumulation in stomach. Bowels open. Rectal feeding and saline injections stopped, and whey ordered by mouth.

From this date food by mouth was gradually increased. The wound on May 7th, 1907, was quite clean and had gaped to such an extent that the edges were about 2½ inches apart at the centre. Three stout silk-worm gut sutures drew them together, and union of granulating surfaces resulted.

He went on sick furlough on May 30th, 1907.

Remarks.—The history of the patient's symptoms was the usual one obtainable in these cases of chronic appendicitis due to concretion and ulceration, and the man required no urging to get him to submit to operation. He fully realised his inability to go on doing his duty with chronic discomfort in his iliac region.

The operation was a clean one. The peritoneal surface of the appendix (to the naked eye) appeared normal. I can only account for the intense infection of the wound by supposing that some virulent germs had found their way from the ulcerated mucous membrane through the coats of the appendix, and were lying on its peritoneal surface. The organ was completely enclosed in a canal formed by tough adhesions. When this was stripped up these germs were set free and infected the wound. Mr. C. B. Lockwood, in his book on "Appendicitis," has called attention to the possibility of this.

Several officers who saw this case urged me to open him in the middle line and wash him out, stating that they considered it was his only chance. I did not act on their advice, for this reason: the appendix lay on the outer side of the ascending colon and cæcum. I felt that within a few hours the infected area must have been shut off towards the right flank by adhesions, and as there had been no manipulation of parts towards the middle line, I failed to see how infection could possibly have spread in that direction.

The want of a reliable hypnotic which can be given subcutaneously in cases such as this, where morphia is positively dangerous, was very forcibly impressed upon my mind. Hyoscine acted fairly well, when assisted by a minute dose of morphia. A purgative which can also be given subcutaneously would be of immense value.

Post-operative dilatation of the stomach undoubtedly existed in this case. The symptoms came on insidiously, and were at first attributed to anesthetic vomiting. The bulk of the pain was referred to the epigastrium, and the vomiting was constant and without effort. The outline of the distended stomach was very marked, and reached some distance below the umbilicus, and the bulk of the distension was due to gas.

From the character of the vomit, I had no doubt that post-operative hæmatemesis also existed, but not to a very marked extent. By some this is considered to be a symptom of toxaemia. The fact that it did not make its appearance until the fourth day after the operation, when sepsis
had become evident, and that it rapidly improved after a large quantity of saline solution had been injected, seems to support this view.

I have no doubt that this man was saved by the free injection of saline solution, acting by washing the toxins out of his body through the kidneys. The amount which could be given, and the ease with which it could be got into the body by means of improvised apparatus, was a source of astonishment. It was all given into the two axillae alternately, and no tenderness remained a day or two after the last injection. The addition of brandy did not make it at all irritating.

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A CASE OF APPENDICITIS WITH SUPPURATIVE PERITONITIS; OPERATION AND RECOVERY.

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CORPORAL F., R.G.A., was sent to the Military Hospital, Portsmouth, as a direct admission from Gosport, suffering from the above condition.

History of Present Illness.—Four days before admission patient felt sick, but did not actually vomit until after eating his breakfast. There was at this time no pain. The vomiting continued without pain during the next two days, and he was constipated during the same period. On the day of admission he was wakened up by very severe pain over the right iliac region, and the vomiting continued. He reported sick, and arrangements were at once made for sending him over to this hospital for operation.

On Admission.—Patient complained of great pain and tenderness over abdomen, especially in the right iliac region, and frequent vomiting—not feculent. The percussion note was tympanitic over the whole of the front of the abdomen, but more so on the right side, and especially so over the right iliac region. There was some dulness in both flanks; liver dulness lost, tongue rather dry and furred, absolute constipation, dorsal decubitus; temperature 101.5° F., pulse 110, respirations 42. There was a systolic and also a presystolic murmur in the mitral area, which, apparently, was pre-existing, as there was a history of invaliding from abroad for "V.D.H."

Immediate operation was decided upon. Under A.C.E., exhibited on a Silk's inhaler, and administered by Lieutenant J. A. Bennett, R.A.M.C., and assisted by Major R. J. Copeland, R.A.M.C., I made an incision about 4 inches long, the centre being over McBurney's spot; the muscle fibres were divided, all bleeding stopped, and then the peritoneum picked up and opened. The intestine was very much distended and intensely inflamed. Some coils of small intestine presented in the wound; no adhesions found. The intestine in the region of the wound was found to be bathed in pus; this was wiped off and the small intestine packed away