tion, and having found pus cocci present, have been able to predict that suppuration would continue, and that some of the stitches would shortly have to be removed, and this is what usually followed.

Abscesses then, which are viewed clinically as "chronic," are not always free from the presence of ordinary pyococci. If the pathology of inflammation be considered for a moment, it will be seen that there is nothing surprising in this statement. If healthy tissues are subjected to chronic irritation of whatever kind, they come to be in a state of chronic inflammation, and when they have been thus inflamed for some days they offer greater resistance to microbic invasion. If we inoculate these tissues with certain kinds of living organisms the results are less severe than those produced by similar inoculations into the sound tissues of the same body. This I think is the reason why pus cocci are so apt to give rise to chronic instead of to acute abscesses in the glands of the neck in children. These glands, being so frequently irritated by septic products from the tonsils, scalp, ears, etc., are rendered more resistant than usual.

In 1894 (*Journal of Bacteriology and Pathology*) Mr. Cobbett and I showed that the peritoneum after recovering from an inflammatory attack offers greater resistance to subsequent infection than the normal peritoneum, and clinical experience, as Mr. Treves¹ has pointed out, teaches us that it may, in these circumstances, be operated on with greater safety than if it had not been previously inflamed.

The capacity of the tissue then to resist microbic invasion is probably an important factor in determining the kind of abscess which will result. Again, if the whole body be partially immunised against a particular organism towards which it is susceptible, the result of inoculation of these organisms is greatly modified; for example, if a horse be partially immunised against diphtheria, subcutaneous inoculations of living diphtheria bacilli will produce a cold abscess, from which a pure cultivation of these bacilli may be obtained several days afterwards. This fact was pointed out to me some years ago in Cambridge by Mr. Cobbett.

Again, in pneumonia, when due to pneumococci, an empyema containing living pneumococci unmixed with other organisms may exist for a considerable time, and produce remarkably little disturbance. This again is at a time when a marked general immunity has become established against this micro-organism. Now, these facts which have been proved to be true for the above organisms could probably be shown to be true of others.

Thus, then, in certain circumstances it is possible to meet with chronic abscesses due to organisms other than the tubercle bacillus, but it is often impossible to distinguish them without the microscope. If on microscopical examination no organisms are found in the pus, it is justifiable to scrape the limiting membrane and unite the skin wound. If, however, pus cocci are found, both of these procedures will be unscientific, but as I have already stated, it is not of much practical importance; suppuration will continue, and stitches will require to be removed, but grave consequences will rarely ensue.

The sac of a strangulated femoral hernia sometimes contains a blood-stained fluid, in which the microscope often reveals the presence of the bacterium coli commune. This is a sign that the wall of the strangulated piece of intestine has to a great extent lost its vitality. In these circumstances the sac should be carefully cleansed and dried before the abdomen is opened to prevent inoculation of that cavity; the abdominal viscera in the neighbourhood should be disturbed as little as possible in the process of reduction, and the strangulated piece of intestine left just within the ring, supported by a gauze plug, which also serves for a drain.

Perhaps we may conclude that although the microscope in the operating theatre may not be a matter of life and death, it may at times be valuable in cases in which doubt arises as to what line of treatment should be adopted.

VALUE OF THE MICROSCOPE AFTER OPERATIONS.

A few weeks ago a man was brought to our hospital with three extensive wounds in the left upper limb, each involving the elbow joint. There was a compound comminuted fracture of the lower end of the humerus, the bone being split through the external condyle into the joint. The superficial flexor

group of muscles of the forearm was completely severed and protruding from the wound. Arrangements were made to obtain primary union. Twenty-four hours later the temperature was 102° F. and the pulse 120. Now in circumstances such as these, it is of no use speculating as to the incubation period of streptococci, or the highest temperature and pulse-rate consistent with the mere absorption of disintegrated blood products, or again, the lowest temperature and pulse-rate consistent with sepsis. What we really want to know is, whether micro-organisms are or are not multiplying in the wounds; and in order to answer this question I passed a sterilised probe into the deeper parts of each one of them after carefully sterilising the skin along the lines of suture. I then made coverglass preparations, and examined with the microscope. No organisms were discovered. On the following day, the temperature being 101.5°, another examination was made, and again on the fifth day—each time with a negative result. The temperature remained about the same till the seventh day. The wounds, however, healed well, and the man could move his elbow-joint from start to finish.

The use of the microscope in such cases is obvious, for if the wounds become septic, you will discover the fact earlier by this than by any other means; and you are able at the earliest possible moment to open up all the wounds, and resort to continuous irrigation, or to any other line of treatment which may be thought advisable to avert a catastrophe. On the other hand, negative results allay anxiety, and prevent restless nights.

I am aware that micrococci have frequently been found by cultivation methods in many wounds which run an aseptic course, but I believe that in these circumstances they are not sufficiently numerous to be readily detected by direct microscopical examination; and I know, from a considerable number of personal observations, that within twenty-four hours after an operation they may readily be detected by this method in wounds which become septic; and if I had found a considerable number of cocci in the case I have just mentioned, I think I should have been justified in opening up the wound and taking such steps as would be calculated to check further infection.

With regard to after-examination of this kind, we may say, *Ex uno, disce omnes*; and I will not, therefore, burden you with any more.

REFERENCES.

- ¹ BRITISH MEDICAL JOURNAL, 1893, p. 632.

TWO CASES OF INTESTINAL OBSTRUCTION: LAPAROTOMY: RECOVERY.*

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CASES of successful laparotomy for intestinal obstruction are unhappily not so numerous as to be commonplaces of surgical practice, and I venture to think that the two cases I am going briefly to relate have other points of interest besides their successful issue.

CASE I.—A man, aged 61, was admitted under my care at the Bristol General Hospital on November 15th, 1896. Four days previously, after a heartier supper than usual, he went to bed and awoke in a few hours with pain across the abdomen. The pain increased through the night, and the next morning he was sick. Dr. Perry was called in, and attended him till his admission into the hospital, and kindly furnished me with the details of his illness. The sickness persisted, and was bilious in appearance till the day of admission; the bowels, which had acted as usual on the morning of the seizure, were not moved afterwards, nor was flatus passed. A dose of castor oil on the fourth day produced no effect. On the afternoon of the 15th—the fifth day—the vomit was like dark liquid feces, and Dr. Perry had him removed to the hospital at once. When I saw him at night he was placid and free from pain, and had nothing of the drawn and anxious appearance of many cases of acute obstruction; the tongue was clean and moist, and the pulse 90, regular, and of good force. The abdomen was considerably distended, but, though large coils were visible, especially at the sides, they exhibited the slightest, if any, peristaltic movement. Palpation could be expected to reveal nothing under such circumstances. The rectum was empty. The patient's history was excellent; he had been accustomed to have a daily action of the bowels, and he had had no illness that he could remember. The only thing amiss before the actual seizure was a little gripping pain for a few days. Laparotomy was performed at once. A small median incision was made, and opposite to it the finger came upon a hard mass about as large as a bean; it lay deeply against the spine, and could

* Read at a meeting of the Bath and Bristol Branch of the British Medical Association.

not be moved into the wound, so I enlarged this to get a view of it. It looked dense and puckered, and, on pulling out a coil or two of intestine, was found to lie in the mesentery; it felt densely fibrous as well as somewhat chalky, and there was a movable gland close beside it. I did not at this stage discover what connection this mass had with the obstruction, nor any cause for it, and believing I felt a distended cæcum I made a fresh incision over this, intending to drain the bowel here. I found the cæcum empty. With fingers in each wound I was now able to follow the ileum from the cæcum, and soon reached the point of obstruction. One of the lowermost coils of the ileum, empty, was drawn up and fixed against the spine by fibrous puckerings and adhesions of its mesentery, and bound by bands and adhesions to the adjacent coil, which was full of fluid, and, with its proximal neighbour, had been partially twisted on a vertical axis. At the root of this mesentery was the cicatricial mass first discovered. These three coils then seem to have taken part in causing the obstruction. It is probable that during a rather sudden or excessive alimentary transit the two proximal coils were quickly distended, but, owing to the mechanical confinement of the distal one against the spine, could not at once pass on their load, fell into the pelvis, and, being as it were partly drawn up and fixed at their points of flexure (by the cicatrix in the mesentery and by adhesions), were kinked, and rotated from left to right on their mesenteric axis. The adhesions, which were numerous, dense, and evidently very old, were separated or cut, and finally the bound-down coil was so completely loosened that there was no further tendency to kinking. In spite of this the distended portion showed no sign of passing on its contents, and I was afraid to leave the adjustment to Nature, lest on the first passage of fluid into it the liberated coil should fall into the pelvis, and offer the serious obstacle of an inert and overloaded tube to any further progress. To prevent this, and to start natural peristalsis by relieving the over-distension, I mechanically squeezed the fluid contents of the distended coils through the empty ileum into the cæcum, repeating the manoeuvre some half-dozen times till the cæcum was moderately full, and the ileum uniformly occupied with the fecal fluid. Both wounds were then sutured, and the patient returned to bed in very good condition. The subsequent progress was satisfactory and uneventful, the bowels relieving themselves the next day. The patient was sent home, with strict injunctions as to care and moderation in diet. I was anxious on this head because, though the operation was so successful in its immediate result, it was impossible to overlook the danger of fresh adhesions forming, and leading to a renewal of the old mechanical difficulties. On the other hand, if, as seemed not unlikely, the contractions and adhesions were due to a localised peritonitis excited around tuberculous deposits in the mesentery long years ago, there might be more hope that such fresh adhesions as occurred would not be so crippling as the older ones had proved. Unfortunately we had a proof of the justness of these fears, for in September last, ten months after the operation, the patient developed another attack of obstruction, with fecal vomiting, for which he was again admitted into the hospital. I was away, and my colleague Dr. Firth kindly took charge of him. The attack, however, was comparatively mild; and the obstruction, I am told, yielded in a day or two to enemata, and the patient again went home well. I have seen him to-day (January 26th, 1898), and he tells me he has had no trouble with his bowels since last September, and has, moreover, passed safely through a long attack of pleurisy.

Contractions and adhesions are among the less common causes of intestinal obstruction, and when present generally lead to a long train of chronic bowel trouble, with the usual accompaniment of recurring attacks of partial obstruction, ending at last in a subacute attack of complete stoppage. Some very interesting cases of this kind were recorded by the late Dr. Hilton Fagge in the *Guy's Hospital Reports* for 1868.¹ I can find no instance recorded parallel with mine where such a condition as there existed gave apparently no evidence of its presence till a typically acute attack of obstruction laid the patient at death's door. With regard to treatment, most surgeons are satisfied that the existence of acute or prolonged obstruction negatives a severe operation, but when convalescence is established more radical measures may be adopted. In this case the ideal operation would have been resection of the affected coils of ileum; a less severe but probably quite effectual one, an ileo-colic anastomosis. Considering the amount of risk inseparable from either of these operations, the age of the patient, and his present satisfactory condition, I should hesitate much before suggesting either step, even if there was any likelihood of the patient's consenting. If the worst come to the worst, we know the nature of the lesion, and its seat, and could adopt severer measures if they became unavoidable.

CASE II.—A woman, aged 51, whom I saw in consultation with Mr. Webb, for some time had developed symptoms suggestive of a chronic obstruction, and these culminated in the attack for which I saw her. Sickness and distension appeared, and on the third day after their onset I saw the patient. The distension was peculiar, in that it was almost confined to the lower half of the abdomen, the epigastrium notably escaping. There was some dulness in the flanks. Severe attacks of colic were frequent, during which a large coil became prominent in the right iliac fossa and extended across the abdomen below the navel, but did not reach the left iliac fossa. The rectum was empty. We considered the case probably one of sigmoid cancer, and she was sent into the hospital the next day, when laparotomy was performed. Through a 2-inch median incision I passed a finger and felt a hard mass in the sigmoid flexure. Rapidly exposing this by a fresh incision, a typical annular carcinoma of the upper end of the sigmoid was hooked up. The parietal peritoneum was attached to the skin all round²; a loop of sigmoid, with the growth, was

brought out and secured in the wound by an Allingham's stitch through its mesocolon, and a few stitches uniting the ends of the bowel to the skin, the two ends being approximated as closely as possible. The bowel and wound were dusted with iodoform, and the edges smeared with vaseline, and then the bowel was opened as far above the growth as possible, and drained through a piece of rubber tubing. On the seventh day, when the abdomen was flat, and all effects of the obstruction had disappeared, the cancerous mass was completely cut away under an anæsthetic. There was considerable bleeding from the mesocolic axis between the two ends of the intestinal loop. The two mouths of bowel thus produced were secured to each other and to the edge of the wound by a few extra stitches, but this was probably unnecessary. The sections through the bowel were quite free of the carcinomatous mass, and some enlarged glands in the mesocolon were removed at the same time. She left the hospital, passing solid, natural motions, without any skin irritation. The possibility of closing the artificial anus was discussed, but she is so comfortable that she prefers to let well alone.

Enterectomy in stages seems to me to have an overwhelming superiority over every other method, and it is probably practicable in the large majority of cases where the growth or other lesion is limited and free from adhesions. I do not know whether the method originated with Mr. Greig Smith, but in the sixth edition of his *Abdominal Surgery*³ he recorded 4 successful cases of the completed operation—in the sigmoid, descending and transverse colon, and the ileum—the artificial anus, that is to say, having been in each case closed by his ingenious extraperitoneal operation. This latter device, if successfully achieved, robs the final stage of its dangers, and removes the chief objection that might be raised to an enterectomy in successive stages. Even without this final step, provided the artificial anus be in the large bowel—at any rate, in the descending colon or sigmoid—the patient's condition is one of very little discomfort; and he has at least a chance of immunity from a mortal disease. Whether my patient has been rid of her cancer it is of course too early to speculate; the glandular infection is against such a happy chance; but, on the other hand, carcinoma of the alimentary canal seems to remain longer limited to the part first attacked than is the case with many other forms of cancer, and provided there has been no deeper glandular infection than that seen and removed, she may yet prove to be a brand plucked from the burning. This patient, too, I have seen to-day, and except from some contraction of the upper orifice from neglecting to wear a plug, as she was directed to do, she is in a highly satisfactory condition.

In conclusion, I should like to acknowledge the debt these patients owe to their medical attendants, for I have no doubt that it was largely owing to my seeing them at an early stage of their attacks that the results have been so satisfactory. It is early recognition and early operation that we most want.

NOTES AND REFERENCES.

¹ Vol. xiv, p. 323, *et seq.* ² Following Mr. Greig Smith's advice, I should not do this in future, but expose the bowel to the raw surface of the wound instead. ³ 1897, vol. ii, p. 636. Mr. Barling has published a case in which he performed this operation (BRITISH MEDICAL JOURNAL, 1898, i, p. 374).

A CASE OF CESOPHAGOTOMY FOR IMPACTED ARTIFICIAL TEETH.

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CASES of impaction of foreign bodies in the upper part of the alimentary canal are not infrequently met with in hospital practice, but the greater proportion are cases in which the foreign body is lodged in the pharynx, and can generally be dealt with from the mouth. But when they have passed from the comparatively wide pharyngeal chamber into the narrow passage below the cricoid, for example, into the œsophagus, the condition is a much graver one, not only on account of the greater probability of their becoming impacted and therefore presenting greater difficulties in their extraction, but also, should this be impossible, on account of the far greater dangers attending operative measures. Of these cases a certain number of the foreign bodies, for example, coins, are doubtless often dislodged by the passage of a probang or bougie, and passed on into the stomach and intestine, from whence they are later on evacuated, probably without further harm to the patient. But as regards artificial teeth the condition is different, probably owing to the fact that those which get into the œsophagus are either tooth plates which have been broken and present sharp corners, or consist simply