

the buzzing sound—in fact, he says he feels quite well. He is bright and cheerful, a state of mind that contrasts materially with his condition on admission. The vision in the left eye has improved and tension is normal.

A CASE OF INTESTINAL OBSTRUCTION DUE TO HYPERTROPHIC STENOSIS OF THE LARGE INTESTINE.

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THE following case seems worthy of note, if only on account of the very unusual lesion disclosed by operation.

Sergeant M., 1st Worcester Regiment, was admitted to hospital at Templemore, on May 28th, 1906, with constipation of four days' standing, intestinal pain and vomiting.

Previous History.—One of constipation off and on for twenty years. Has had several similar attacks, but none as bad as the present one. States his age is 28, but looks older and is anæmic and cachectic. At first purgatives and enemata had no effect, and on May 19th he was in great pain, with marked distension of the abdomen, neither fæces nor flatus being passed per rectum. Morphia given hypodermically to relieve pain.

May 20th.—Passed a good night. Looks better. Distension less. A turpentine and soap and water enema acted well.

May 25th.—Discharged hospital. No evacuation without enemata. Ordered an aperient and carminative mixture.

May 31st.—Attending daily for enemata. Distension continues.

June 6th.—Still attending. States he is getting worse. Bowels acted on slightly by enemata.

June 16th.—Transferred to the Royal Infirmary. On admission the abdomen was enormously enlarged and tympanitic all over. The distension was nearly equal on both sides, though when first examined the right side was a shade larger, but on shifting of flatus the left side became the bigger. The course of the colon was marked out in both flanks by a rounded ridge more than a hand's breadth broad, and a similar belt connected the ascending and descending portions at the level of the umbilicus. No peristalsis was visible. Above the pubes a hard mass, most marked under the left rectus insertion, was felt, but owing to the great distension and hypertrophy and tenseness of the recti muscles, it was impossible to make out any more. Patient was spare, anæmic, and somewhat cachectic-looking, but there was no vomiting, and his condition was not immediately serious. The tongue was very little furred, and the pulse good and regular. He was placed on plain milk diet, and ordered 2 ounces of magnesium sulphate in saturated solution, which produced no effect.

June 17th.—Ordered enemata of soap and water 1 pint, with turpentine, one teaspoonful, twice daily. Scarcely any effect produced. Digital examination of the rectum showed it to be empty and slightly ballooned. No stricture could be felt, but the anterior wall seemed to be pressed somewhat inwards immediately below one of the usual rectal flexures. The projection did not feel at all like a new growth.

June 18th.—Enemata repeated four times daily, with little or no effect, but he states he feels a little easier.

June 19th.—As the smaller enemata seemed to produce no effect, enemata of soap and water, 2 pints, each containing 2 ounces of magnesium sulphate and a couple of teaspoonsful of turpentine were ordered three hourly, day and night, and 2 ounces of magnesium sulphate by mouth, given at 7 p.m., under the impression that fæcal impaction was the cause of the obstruction, although the possibility of a stricture alone, or in conjunction with the constipation, was not lost sight of, in which case the administration of purgatives by the mouth might help to clear the diagnosis.

June 20th.—Having received an urgent telegram the previous evening, I had to proceed to the Curragh by the morning mail, not coming back until evening. I found that on the previous night, after the administration of the saline by mouth, vomiting had been very severe, and that the pulse had run up from 66 to 102, with slight elevation of temperature and considerable weakness. The bowels had, however, begun to act well after each enema, and quantities of very foul fæces were passed in a fluid condition, with numerous small flaky scybalæ. Having got the bowels to move, it was determined to keep them so until they were completely emptied, and the enemata were repeated two hourly during the night, with the result that twenty-five motions in all took place within the twenty-four hours.

June 21st.—Enemata given, four hourly, to-day. At 2 p.m. and 8 p.m. an enema of one pint of olive oil given. Distension rapidly subsiding. Twenty-nine motions within the twenty-four hours, fluid, with flaky scybalæ, as before. Feels much better. Pulse 88.

June 22nd.—Pulse rate has fallen to 52. Much better. Distension almost gone. Enemata still continued four hourly, but no turpentine used. Motions, twenty-seven, fluid.

June 23rd.—Enemata stopped. Twelve fluid or semi-solid motions.

June 24th.—On palpating the abdomen this morning a hard tumour about the size of a cricket ball was felt under the left rectus, midway between the umbilicus and the pubes. The hardness above the pubes had disappeared. The mass could be freely moved from side to side and slightly up and down. Five minutes later the patient had made water and the tumour had disappeared, a mass being once more felt above the pubes. When the bladder again filled the tumour was again lifted out of the pelvis. No dinting of the tumour on sustained pressure could be

made out. Within the next few days, though still rising and falling with the distension and emptying of the bladder, the swelling tended to become slightly more distinct in the abdomen. On rectal examination, the rectum as far as could be reached was found empty, and the "tumour" could be easily palpated bi-manually through its wall. As the distension seemed now almost completely relieved, the diagnosis was thought to lie between a dermoid arising between the bladder and rectum, or a fibroma or fibro-sarcoma of the mesentery, the descent of which into the pelvis had caused the obstruction.

June 28th. *Operation.*—Chloroform. Major Healey, R.A.M.C., assisting. An incision was made from pubes to umbilicus to the left of the median line and almost directly over the swelling, and the left rectus displaced outwards. On opening the peritoneum, what was recognised as an enormous dilated colon, from its broad anterior muscular band, at once presented. This band was nearly 2 inches wide, and the colon was dilated to the size of the cardiac end of a large stomach, with greatly thickened walls. Only on long-continued firm pressure could the contents be dented in the lower part of the presenting bowl, whilst in the upper part it was easier to do so. In the middle of the distended bowel presenting in the wound was a narrow strictured area of cartilaginous hardness, and, unlike the rest of the bowl, white in colour from opacity of its peritoneal investment. Below it the intestine was again expanded to almost the same size as above the stricture, and filled with hardened fæces. The stricture was situated at the junction of the descending colon and the sigmoid flexure. The walls of the hypertrophied colon were subsequently found to be over half an inch in thickness, and all the blood-vessels of the meso-colon were greatly enlarged and its layers widely separated, as distension of the gut had taken place backwards between them. The bowel was pulled as far forwards as possible, and could be just brought outside the abdominal wall. Pylorotomy clamps were placed above and below the stricture, but would only go half-way across the distended bowel. The abdominal wound was packed off as well as could be, the bowel above the stricture opened by a 2-inch longitudinal incision through anterior band, and its contents, consisting of very foul pasty fæces, evacuated and squeezed into a basin, until the portion of bowel immediately above the stricture as far as could be reached was thoroughly emptied. A couple of silk retraction sutures were passed through the outer coats of the lower portion of the bowel below the distal clamp, and the bowel cut across between it and the sutures. These sutures when drawn upon served to keep the gaping lower end of the bowel a little above the level of the parietal incision. The hard contents of the bowel below the stricture were dug out with a spoon, and in this manner a complete evacuation of the distal loop as far as could be reached obtained. In spite of careful packing and frequent changes, considerable soiling of the parietal wound

and of the peritoneum was inevitable, though it was endeavoured to minimise it as much as possible. The stricture was then excised by cutting across the bowel above the upper clamp. The portion removed was wedge-shaped, being broader at the free than at the meso-colic border, but a similarly shaped piece of meso-colon could not be removed, as, owing to wide separation of its layers, the blood distribution of the divided ends could not be satisfactorily traced, and it was feared that the vitality of the suture line might be endangered. The lumen of the upper bowel, which was more freely movable than the distal portion, was then irrigated and washed out, and the edges of the lower portion cleansed with swabs wet with saline solution; the packing round the wound replaced by fresh, and end-to-end anastomosis begun by Czerny-Lembert suture. The first suture, which began in the middle of the space behind which was bare of peritoneum, involved the mucous and fully half of the thickness of the muscular coat. It was a continuous one, being interlocked about every fourth stitch, and the silk used was much stouter than that usually employed for intestinal work. It was thought that finer silk would more readily cut out under the influence of intestinal peristalsis in such a hypertrophied bowel. As the suture approached the point from which it started it was found that the upper portion of the bowel was somewhat the larger of the two, but by leaving a wider interval between each stitch above than below, the ends were approximated without any undue puckering at one spot. A few additional sutures were placed here and there in the portion of gut uncovered by peritoneum, as this was likely to be the weak spot of the suture line. The bowel was then once more irrigated with hot saline, and a continuous Lembert suture, interlocked every fourth or fifth stitch, run outside the previous one. This suture was also of stouter silk than ordinary, and involved the outer half of the muscular coat as well as the peritoneum. As the suture approached the bared space behind, the layer of the meso-colon corresponding was picked up widely and forced into service. Owing to the rigidity of the thickened coats of the bowel the inversion obtained was anything but complete, but proved adequate; and for this reason also the amount of tissue picked up in both inner and outer layers of suture was much thicker than usual. The bowel was again irrigated and returned to the abdomen, which was then washed out with saline solution, and saline containing 10 minims of solution of adrenalin chloride, 1 in 1,000 to the pint, left in the peritoneal cavity as a restorative. The peritoneum was sutured by a continuous catgut suture, a rubber drainage tube ran into the pelvis, and the rectus allowed to resume its position, after which its anterior sheath was united by kangaroo tendon. The skin was united by a continuous suture of silkworm gut, and the wound dressed with iodoform gauze. The patient did not seem much affected after a prolonged operation, but was given a rectal hot saline injection before leaving the

theatre. This was repeated at 10 p.m. and 4 a.m. next morning, with the double object of alleviating thirst and facilitating toxin elimination. Warm water in $\frac{1}{2}$ -ounce quantities was given hourly after the operation. I saw the patient at 6 a.m. the next morning, on my way to the Curragh, whither I had been called by telegram, and found him surprisingly well, though in some pain and very weak. He had slept a little at intervals during the night, and had had no vomiting. A fair quantity of urine had been passed naturally.

June 29th.—Peptonised milk, $\frac{1}{2}$ ounce, allowed hourly after mid-day, and hot water in $\frac{1}{2}$ -ounce quantities as thirst required, also a little Valentine's meat juice. Temperature, morning 100° F., evening 100·6° F. Pulse, morning 104, evening 114; good volume. Moderate pain. Urine free and passed naturally. The wound was dressed during the day, and some slightly turbid blood-stained serum sucked out of pelvis by pressing a finer tube attached to a syringe down the drainage tube which had been left in the pelvis. The head of the bed had been well raised on blocks to facilitate drainage downwards.

June 30th.—Temperature, morning 99° F., evening 99·4° F. Pulse, morning 110, evening 106. Little pain except when wounded intestine contracts, when intense griping occurs. This took place frequently, owing to passage of flatus through sutured area, which was subsequently expelled almost entirely per anus. From midday he was given alternate hourly feeds of 1 ounce and $\frac{1}{2}$ ounce of peptonised milk respectively. Warm water freely given. Slept fairly well. Clear bloody serum aspirated on dressing.

July 1st.—Temperature, morning 99·4° F., evening 101·2° F. Pulse 104 and 100. Severe griping pain from flatus expulsion. Rectal tube passed, but did not relieve him very much. Very tender over wound. No fluid on aspiration of drainage tube, which was probably kinked by flatus-distended intestine, and down which the fine tube could not be passed. Slept fairly well after $\frac{1}{8}$ -grain of morphine at 11.45 p.m. Feeds as before.

July 2nd.—Temperature, morning 99·4° F., evening 100·8° F. Pulse, morning and evening, 88. Pain still severe. Drainage tube removed to-day and a small gauze plug passed a short distance along its track, in case the peritoneal cavity were not completely shut off from the external wound. Feeds as before, but beef tea and raw meat juice now being given in small quantities; $\frac{1}{8}$ -grain of morphine given at night, but did not sleep well.

July 3rd.—Temperature, morning 99·6° F., evening 100·4° F. Pulse, morning 78, evening 80. Had two slight natural motions during the day and slept well after morphine at night.

July 4th.—Temperature, morning 98·6° F., evening 100·8° F. One and a half ounces of plain milk given hourly, with one ounce of beef tea

at similar intervals. Twenty-four ounces of urine passed. Slept well after morphine.

July 5th.—Temperature, morning 99·8° F., evening 102·8° F. The pain over abdominal wound, with rising temperature, suggested suppuration of the parietal wound; the neighbourhood was slightly swollen. No abdominal *fæces*. A soap and water enema given during the day retained. Morphine at night.

July 6th.—Morning temperature 101° F. A discharge of *fæcal*-smelling pus in large quantity came from the parietal wound at the spot where the drainage tube had been inserted. On dressing, the skin suture was removed and the skin found united in the whole length of the wound, though from the point at which the drainage tube had been inserted a probe could be passed a long way upwards immediately beneath the skin. The evening temperature was 99·6° F., and he never gave any more anxiety. The malodorous pus discharge lasted in decreasing quantity for more than a week, until the infected kangaroo tendon sutures had been absorbed, but as they had apparently lasted long enough to attain their object of keeping the edges of the wound in the rectal sheath in apposition, it was not considered necessary to re-suture the abdominal wall. The subsequent progress was uneventful. He was gradually placed on ordinary diet, and gained rapidly in weight and strength, being allowed up on July 20th. The bowels continued to give slight trouble, as though occasional spontaneous movements took place. As a rule medicine was required, castor oil or magnesium sulphate proving the most efficacious. The difficulty with the bowels was apparently due to arrested peristalsis at the site of suture, as, though no pain or discomfort was experienced after the first fortnight, about a month after operation a piece of the inner silk suture was noticed protruding from the anus after a motion. Seven or eight inches were cut away and the remainder became subsequently withdrawn into the bowel. On August 9th the suture had not yet been cast off, and as it was necessary to obtain a deep hold of the muscular as well as the mucous and submucous coats, its extrusion by ulceration will probably be a slow process, each stitch leaving a cleft to heal, the irritation of which must tend to inhibit peristalsis in the neighbourhood of the wounded area.

August 11th.—Discharged hospital and granted a sick furlough. During the past week the bowels have on several days acted without medicine, and he has gained 7½ lbs. in weight.

March 3rd, 1907.—Reported himself to-day for inspection, being over eight months from date of operation. States suture came away three weeks after leaving hospital. He has been performing his duty for six months, and appears stout and in excellent health. He has been eating ordinary food since leaving hospital, and as a rule has a natural motion daily, but every three or four weeks becomes somewhat costive and flatulent, and then finds that a single dose of salts followed by a hot drink

produces a good evacuation in a few hours and makes him all right again. On a few occasions this purgative has produced pain, but generally does not do so.

An examination of the stricture after removal showed it to be annular in character, and covered by practically intact mucous membrane. The circular and longitudinal muscular coats were greatly hypertrophied, and both to the naked eye seemed to have undergone a colloid change. The stricture admitted the tips of two fingers, and seemed to be caused by an annular hypertrophy of the circular coat, which formed a sort of raised collar projecting into the gut and narrowing the lumen. On microscopic examination there was no sign of recent or old ulceration, and the mucous membrane at the site of the stricture showed normal crypts of Lieberkühn except at one spot, opposite the meso-colic border, where the appearance was that of an extremely early stage of columnar carcinoma, some penetration of the muscularis mucosæ having begun over one spot about a quarter of an inch square, but this was apparently only a secondary change, most probably due to irritation. The muscular coats recalled the appearance seen in fibrous myocarditis, each involuntary muscle cell being separated from its neighbour by a marked overgrowth of connective tissue. "Hypertrophic stenosis" would most accurately describe the appearance presented.

Comment.—The following points are of interest in the foregoing case:—

(1) The difficulty in diagnosis leading to an uncertainty scarcely creditable, but perhaps inevitable.

(2) The rare nature of the lesion present. I have been unable to find in the ordinary text-books any mention of hypertrophic stenosis of the colon. As is well known, this condition is fairly common at the pyloric orifice, and as such is always congenital; in all probability the lesion present in this case was also congenital, and the clinical history and marked hypertrophy present favour this view.

(3) The tolerance of the healthy peritoneum to a considerable amount of infection is no new discovery, but has been emphasised by many writers. It was well shown in the present case, in which the wound in the abdominal wall suppurred, whilst no trouble arose from the peritoneal soiling which must have occurred during operation.

(4) One cannot help being struck by the similarity in the clinical picture and history to the second case, ascribed to enterospasm, by Dr. Hawkins, in an article in the *British Medical Journal* of January 13th, 1906. The stricture in the present case was due to the narrowing of the lumen of the bowel by a hypertrophy and sclerosis of its muscular coats. Is it possible that in such a lesion we have the terminal state of the extremely interesting condition described by him as enterospasm, and which may possibly be due to perverted nerve influence?