when she was suffering from typical diphtheria affecting the nasal chambers which were covered with membrane and from which exuded a bloody discharge, and also the tonsils and uvula which were coated with membrane; this was the third day of the disease. I injected 2000 units of anti-diphtheritic serum, this being followed by a fall in temperature. On July 12th, as the membrane was extending to the larynx, I gave a further injection of 4000 units of the serum (Parke, Davis, and Co.), which brought down the temperature to normal, but the membrane continuing to extend further down the larynx and the child being in imminent danger of asphyxia, on the 13th I performed tracheotomy. The case after this proceeded so favourably that no further injection of serum seemed to me to be indicated and on the 18th I removed the tube for an hour, but the nervousness of the patient necessitated its re-introduction until the following day when it was entirely dispensed with. At this date a careful examination of the throat revealed no sign of any remaining membrane and the case progressed so favourably that on the 24th the patient had so far advanced that I did not see her again until I was sent for on the 29th, when her mother said that she had been sick the previous day and seemed very bad again. On examination of the patient the tracheotomy wound had almost entirely healed. The temperature had run up to 103° F. and was accompanied by an extremely rapid pulse, and the child looked very ill. On inspection of the throat a fresh patch of membrane of about the size of a shilling had appeared on the left tonsil. Judging from the sickness of the previous day, this was the second day of a fresh invasion and I at once injected 4000 units of the serum with a most gratifying result, the temperature and pulse rate falling to normal by the next morning. The patch of membrane had begun to get smaller, and from this date convalescence was uninterrupted.

Though no bacteriological examination was made I think the clinical course of the case was such as to render the diagnosis certain. The points of interest to be noted are as follows: 1. The short interval of protection afforded by the injection of 6000 units of serum, as well as by the antitoxin which we may presume to have developed in the blood of the child herself in the primary attack; this might possibly be explained by the first two injections having been given so late that the serum had only power to check, but not completely to overcome, its antagonist. 2. The value of the serum as evidenced by the remission of most of the symptoms excepting the spread of the membrane in the primary attack, without which I believe the tracheotomy would have been a failure, and its success when given at an earlier date and in a larger dose on the relapse taking place. 3. The importance of giving a large and early injection of serum.

Ashford, Middlesex.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ST. THOMAS'S HOSPITAL.

A CASE OF ACUTE INTESTINAL OBSTRUCTION RECURRING SEVEN TIMES IN FIVE YEARS AND RELIEVED SIX TIMES BY OPERATION.

(Successively under the care of Mr. G. H. MAKINS, Mr. W. H. BATTLE, Mr. C. A. BALLANCE, and Mr. EDRED M. CORNER.)

THE most striking point about strangulated umbilical hernia is the very high mortality with which it is accompanied and with this is associated a great tendency to recurrence after "radical cure." The cause of this liability to return is to be found in the condition of the abdominal wall in those adults liable to this form of hernia. It is soft, stretched, and loaded with fat, and can offer no resistance to any dilating force; while any suture applied to effect a permanent closure of the hernial opening cannot hold together the softened tissues. The following case is very remarkable for the large number of times—four in all—in which strangulation of an umbilical hernia occurred. On three subsequent occasions the bowel was obstructed owing to adhesions which had formed after the operations for the relief of the strangulated hernia. For the notes of the case we are indebted to Mr. Corner.

The patient, a woman, aged 53 years, had been married for 36 years and was the mother of 13 children, eight of whom were living. The patient was very fat and bronchitic, but otherwise there was no history of illness. Her occupation was that of a monthly nurse and she had noticed an umbilical hernia for five years. Her first admission was on August 29th, 1896. She had had strangulation for two days and was operated on by Mr. Makins. Omentum and three knuckles of small gut were found in the sac. The former was ligatured with silk and removed; the latter were returned to the abdomen. Owing to the adhesions the sac was only partially removed. A radical cure was performed, salmon gut sutures being employed; the skin was sewn with horse-hair. She was discharged on Oct. 3rd, after being 34 days in hospital. The patient was now free from trouble for four months when in a violent fit of coughing the hernia appeared again.

On the second admission (Feb. 2nd, 1897) the hernia had recurred and been strangulated for one day. On admission there was a very small tender lump to the right of the scar of the former operation. Operation was performed by Mr. Makins. A knuckle of small gut was found in the sac and returned. A radical cure was performed as above. She was discharged on Feb. 26th, having been in hospital 24 days. The wound was quite sound. The hernia recurred about one year after this operation, but caused little trouble for 15 months, when it became strangulated for the third time. The interval between her admissions to the hospital was two years and three months.

On the third admission (June 2nd, 1899) there had been acute obstruction for two days, preceded by some chronic obstruction for some time. The recurrent hernia was of large size. Operation was performed by Mr. Battle. The sac was found to contain omentum and small gut. The former was ligatured with silk and removed; the latter was returned to the abdomen. Owing to the bad condition of the patient and the numerous adhesions, especially one to the left of the hernia, the sac was only partially removed and the layers were sutured hurriedly. The wound healed by first intention, but the hernia returned before the patient left the hospital. She was discharged on June 27th, after a residence of 25 days. The patient now experienced repeated attacks of pain in the hernia, which became strangulated for the fourth time, three weeks after her discharge.

On the fourth admission (July 19th, 1899) the hernia had been strangulated for seven hours. Operation was performed by Mr. Battle. The sac was found to contain transverse colon, omentum, and small gut. The omentum was ligatured and removed and the gut returned to the abdomen. The adhesions were more numerous now than they had been previously; the one to the left of the umbilicus, which had done so much to prevent the completion of the third operation, was found to consist of the omentum and transverse colon, adherent to the abdominal parietes. A radical cure was performed, silk sutures being used throughout, and the wound drained. The patient was discharged with a stitch sinus on August 12th. The duration of residence was 24 days. The stitch sinus persisted and she suffered from recurring attacks of pain and occasional vomiting. Fifteen months after her discharge symptoms of strangulation again occurred.

On the fifth admission (Nov. 5th, 1901) the hernia was recurrent but small and reducible. Operation was performed by Mr. Ballance. The sac was found to contain omentum and transverse colon which was strangulated by a band of adhesions. The band was divided and the gut was reduced, the omentum being ligatured and removed. A radical cure was performed with salmon gut sutures. She was discharged on Dec. 15th. The duration of residence was 40 days. The patient was never free from abdominal pain and discomfort and presented herself at the hospital in four months' time with symptoms of intestinal obstruction. She had from time to time had attacks of pain, vomiting, and constipation of short duration.

On the sixth admission (April 8th, 1901) there had been acute obstruction for two days and subacute for a week.

Operation was performed by Mr. Corner. An incision was made through the right rectus. The small bowel was found to be distended. A large number of adhesions were broken down. The chief obstructing agent was doubtless due to the re-formation of the large adhesion encountered by Mr. Battle at the third and fourth operations and which now consisted of transverse colon, the remains of the omentum, and small intestine and was fixed to the anterior abdominal wall. The layers were sutured with salmon gut, as were also the edges of a small recurrent hernia at the lower angle of the old scar. The old stitch sinuses (two) were scraped out, but they discharged copiously and infected the lower angle of the wound. The patient was discharged on May 8th. The duration of residence was 30 days. The patient always had pain in the abdomen and a month after her discharge a purpuric eruption broke out on her legs and a week later on the arms and abdomen. Symptoms of intestinal obstruction occurred for the seventh time, seven weeks after she left the hospital.

On the seventh admission (July 19th, 1901) there had been obstruction for 16 hours. Her abdomen was distended and most tender in the upper half. Operation was performed by Mr. Corner. An incision was made through the right rectus, but the adhesions were too dense to enable anything to be found except collapsed small gut. A further incision was made through the left rectus and the collapsed small gut was followed until the upper coil of the jejunum was found to be extremely thick and œdematous. The exact seat of the obstruction could not be ascertained owing to adhesions but was evidently very high in the small intestine; and the patient's condition forbade further operative treatment. The abdomen was closed after the transverse colon was brought out, as it had been opened in separating an adhesion. Death occurred from unrelieved obstruction in 24 hours (July 20th). Unfortunately, the body decomposed so rapidly that its diffluent condition prevented a post-mortem examination.

Remarks by Mr. CORNER.—The above case is interesting as illustrating the frequent recurrences of intestinal obstruction, which was six times relieved by operation and at the seventh the obstruction could not be found. The woman was first admitted in 1896 and Mr. Makins operated; the second operation was done in 1897, also by Mr. Makins; the third and fourth operations were performed in 1899 by Mr. Battle; the fifth operation in 1900 by Mr. Ballance; and the sixth and seventh operations in 1901 by myself. On examining the literature of intestinal obstruction and strangulated hernia I was unable to find any case which could show such an extensive clinical record. The first four admissions were for strangulated umbilical hernia and the last three were for obstruction by adhesions. Strangulated hernia has the lowest mortality of all forms of intestinal obstruction, though strangulated umbilical and ventral herniæ have a higher death-rate than either the inguinal or femoral varieties. The mortality is so high in the former variety of hernia because of their large size, multiplicity of adhesions, difficulty in reducing the contents, the fat, flabby condition of the patient, and so forth. No case of femoral or inguinal hernia has been admitted to St. Thomas's Hospital in which strangulation has occurred and been relieved four times. Out of 61 operations during 1891–99 for strangulated umbilical hernia only four were performed on recurrent cases. Recurrences after "radical cure" for umbilical and ventral hernia must be fairly frequent. Out of 81 operations for "radical cure" six were recurrent cases, of which four were strangulated and two had intestinal obstruction caused by adhesions. Hence recurrent cases seem only to return when the urgent symptoms of strangulation arise.

The second variety of obstruction from which this woman suffered was caused by adhesions and is one which bears a high mortality. Three operations were performed for this; two were successful and at the third the seat of obstruction could not be reached. It was noticed in this case that the obstructing adhesions were chiefly derived from the ligatured ends left after the omentum had been removed, which subsequently gave rise to a mass consisting of the remains of the omentum, the transverse colon and small gut all becoming adherent to the anterior abdominal wall. The other adhesions did little harm except being the most likely cause of various colicky pains. This form of obstruction is commoner in umbilical and ventral than in femoral or inguinal hernia, and must especially be borne in mind in those of long standing, recurrence, or irreducibility. The hernia may even, as sometimes happens, be easily reducible. From the date of the first operation to that of her death five years elapsed.

ADDENBROOKE'S HOSPITAL, CAMBRIDGE.

A CASE OF INTESTINAL OBSTRUCTION AND PERITONITIS FROM GANGRENOUS MECKEL'S DIVERTICULUM; RECOVERY.

(Under the care of Mr. GEORGE WHERRY.)

IT has been estimated that Meckel's diverticulum exists in about 3 per cent. of all persons. Even when it is recognised that in many of these the diverticulum is small and unimportant it is rather remarkable that more cases are not met with in which harmful symptoms arise from this developmental anomaly. Probably the explanation is to be found in the fact that "in nearly all reported instances of strangulation under a diverticulum the process has been adherent to a point other than the vicinity of the umbilicus."[1] When the diverticulum is attached to the umbilicus there is little likelihood of any strangulation occurring.

A boy, aged 14 years, was admitted into Addenbrooke's Hospital, Cambridge, on Jan. 22nd, 1901, with obstruction of the bowels. The abdomen was tympanitic and much distended; the patient vomited and there was violent pain round about the umbilicus. The onset of the attack occurred a week previously, but the more acute symptoms began three or four days before admission. No fæces or flatus had been passed for a week with the exception that Mr. R. E. Smith of Finchingfield, Essex, who was called in on the 19th, had washed away a little fæces with an enema.

An operation was at once performed under chloroform and the A.C.E. mixture. A median incision below the umbilicus let out about half a pint of turbid fluid with a foul smell; there were peritonitis and recent adhesions. The distended intestines were purplish and engorged and were tightly constricted by a band made by Meckel's diverticulum. The band was clamped near the bowel and the remainder was removed; the adherent ampullated end was black and stinking. The clamp on the stump of the diverticulum next the bowel was let free to allow the exit of some of the flatus from the distended bowel; it was then stitched with silk all around an adjacent ashy-grey patch in the intestine. There were some other ulcerated spots in the bowel which threatened to perforate, one of which was folded and stitched over with silk. Some fluid was then sponged out of the pelvis and a large rubber tube was placed in the lower part of the wound down to the bottom of the pelvis; a small superficial drain of gauze was left in the upper end of the abdominal wound.

Rapid recovery followed; the lad had some delirium during the next day or two but otherwise no anxiety arose. There was a free action of the bowels on the third day and the pelvic tube was then removed. There was a fæcal discharge from the wound later which lasted for a week or two but gradually stopped without operative interference. Mr. Smith kindly reported to Mr. Wherry that on June 21st "the boy was as well as ever" except for a slight watery discharge from the sinus, which was never fæcal.

Remarks by Mr. WHERRY.—The case on admission closely resembled one of acute appendicitis with peritonitis, but there were no indications of the locality of the lesion. The diverticulum was a tube about three and a half inches long and had a firm adhesion to the mesentery at its distal clubbed end, leaving a loop across the mesentery in which the small intestines were fixed and strangulated. As the loop did not give way, but pressed like a tense tape against the congested bowel, the distal end of the diverticulum became gangrenous. The absence of any mesentery would favour the death of this extremity, as stretching proceeded in the diverticulum. No doubt if the band had given way an extravasation of fæces would have occurred with the relief of obstruction. The bowels at the operation were only partly emptied of flatus. The gentle uniform pressure of moderately distended intestine in such a condition may assist in repair of the damaged intestinal walls.

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[1] Treves: Intestinal Obstruction, 1899, p. 47.