Unless a loop of intestine has been very severely damaged it is not necessary to resect. It is far safer to pare the edges of the laceration and to close it with two continuous sutures of fine linen thread. Linen thread closes wounds in these damaged tissues more effectively and permanently than fine catgut and does no harm. While the surgeon is closing the perforation gauze rolls are passed into the pelvis and flanks to absorb the effusion in these areas. This is a quicker and better method than washing out, and the peritoneum is left dry and less damaged. In late cases a stab wound is made about two inches above the pubis and a tube is inserted to drain the pelvis, but in early cases the peritoneum is completely closed.

MORTALITY.

The mortality of this condition is appalling, and is chiefly due to delay and errors of diagnosis. James Berry and Giuseppe¹ have done good service by collecting and analysing 132 cases of rupture of the intestine from contusion, from the records of ten London hospitals, previous to 1908. Of Berry's collection, 84 patients were operated upon, with 67 deaths—a mortality of 80 per cent.; but in 15 the ruptures were not found at the operation; 7 of these were in the duodenum. The surgical registrars of twelve London hospitals collected 44 cases occurring between 1908 and 1912.² In 12 of these there was no operation. Of 32 operated upon, 23 died (72 per cent.). Taking these two series together, there were 176 cases, with 116 operations, and a mortality of 77 per cent. It is interesting to note that 60 (or over one-third) of the patients were not submitted to operation. This was chiefly due to their grave condition on admission, owing to delay or the presence of complications.

It is certain that the best results are obtained by quick decision, early operation, and accurate and rapid work at the operation, followed by careful after-treatment.

CASE I.

Mrs. T. H., aged 43, had been up to London, and was walking from the station to her home, at 4 p.m. on September 4th, 1922. She was carrying a heavy suit-case, which had hard protected corners, when she was run into from behind by a cyclist. She was thrown violently forwards and doubled up over the case, one of the corners of which injured her in the right hypochondrium, and the cyclist fell on top of her. She crawled to the side of the road in terrible agony and scarcely able to breathe or speak. A doctor was fetched who, however, did not think anything very serious had occurred, and he took her home (four miles) in a taxi. She almost fainted before entering the taxi, but took some sal volatile which made her feel better. She could not sit up or lean back, and especially could not bear to be touched on the abdomen or trunk. Arrived at home she crawled upstairs on her hands and feet, holding her body rigid but shaking all over. She was given a cup of tea, but vomited at once. Dr. G.-J. was called in late that night and found her with a rigid abdomen and very tender in the right flank. Pulse and temperature were normal. She was vomiting a little, but brought up no blood. A diagnosis was made of "bruised ribs and abdominal wall." As the pain was still very great he, at the urgent request of the husband, gave an injection of morphine (1/4 grain), but the following morning it was as bad as ever, and, as he was unhappy about the patient, Dr. G.-J. got me to see her at noon. Although the abdomen did not move well on respiration, I did not think there was sufficient cause for operation, but by 8 p.m. she was much worse. The pulse was 124, and temperature 102°; the abdomen was getting more distended and she was very flushed; the liver dullness had almost disappeared, and the pain was so intense that the patient welcomed the idea of an anaesthetic as she longed for unconsciousness. A diagnosis was made of "ruptured viscus, bowel, or gall bladder," and an operation advised and carried out at once. From the moment of the accident the patient had an acute sense of impending death and the brain was more than usually active throughout, in spite of the pain suffered.

Operation.—On opening the abdomen through the right rectus gas at once escaped, also foul, bile-stained pus, of which there was a large amount in Morison's pouch. There was a large collection of thinner sero-pus in the pelvis. This was mopped away, and two rents, large enough to admit the tip of the finger, were found in front at the junction of the first and second parts of the duodenum. There was a narrow bridge between the two rents which I divided. There was no induration of the duodenum nor any evidence of chronic ulceration. Moreover, the mucous membrane pouted, which it never does for a perforated ulcer, because it is adherent at the edge of the ulcer. The large opening was then closed with fine linen thread in two layers, the line of suture being transverse to the duodenum, so that the lumen would not be narrowed. The omentum, above and below the duodenum, was then brought over the suture line. A tube was left in a stab wound just above the pubis and another in the abdominal wall just above the wound. The patient vomited a good deal during the next forty-eight hours, bringing up black vomit; the temperature kept up for a week, and there was considerable suppuration in the abdominal wound and some cystitis. She slowly regained strength, however, and made a complete recovery.

CASE II.

A man, aged about 21, in the Officers' Training Corps, at 9 p.m. on December 29th, 1915, was struck in the abdomen by the handle of a handcart. It hurt him very much, but he did not fall and later went home to Woolwich. He did not sleep at all that night, having dreadful pain in the abdomen and vomiting frequently. He was seen by Dr. Baird, who sent him up to Guy's Hospital the following day. On admission he looked ill and anxious; temperature 100°, pulse 110.

Operation (December 30th, 5 p.m.).—The abdomen was flat, completely fixed, and exquisitely tender, but it was quite resonant over the liver and in the flanks. He was unable to pass urine, but the bladder was not fully distended, only 6 ounces of clear, high-coloured urine being removed with a catheter. A diagnosis of ruptured small intestine was made, for the signs of peritonitis were much too severe for anything else. Pallor was not very marked. A very long incision was made to the right of the middle line. Pus and gas at once escaped, followed by brownish, very offensive fluid. There was lymph on the coils of small intestine, which I withdrew in order to find the perforation without delay. Ultimately I found a very large laceration, 2½ in. long, across the dilated, oedematous jejunum, high up. The perforation was lying far back in the left flank, near the spleen. I withdrew it, after separating some adhesions, pared the edges, and closed the opening with two continuous fine black threads. Meanwhile, gauze rolls had been draining away the fluid from the flanks and pelvis. There was general peritonitis. A tube containing a wick of gauze was inserted in the pelvis, through a stab wound above the pubis. The main wound was closed completely in layers. The patient was infused throughout the operation. He made a complete recovery.

REFERENCES.

¹ *Lancet*, 1908, vol. ii, p. 1143. ² *Trans. Roy. Soc. Med.*, 1914, vii, 3, p. 96.

A CASE OF INTESTINAL STASIS.

BY

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THE CASE I am about to describe seems to warrant publication more by the multiplicity than by the rarity of the abnormal features it presented. The patient was referred to me by Dr. Cowardin of Guildford with the provisional diagnosis of "colon disease," which was, perhaps, the happiest term that could have been chosen, for the whole of the colon was in a pathological state.

Mrs. W., aged 46, had always been an active woman, and gave a life history free from any abdominal trouble, inflammatory or otherwise, until about five years ago, when she began to be troubled with chronic constipation and colicky pain, which gradually became more persistent; for two years she had had constantly to resort to the use of laxatives, but was often quite constipated for periods of four or five days, generally followed by a few days of diarrhoea. Pain of a colicky nature had for a year been almost constantly present on the left side; it was most severe for about two hours prior to the morning evacuation, which was becoming more difficult.

Considerable quantities of mucus had been passed with the stools for two years, and for some time the stools had taken the form of small, hard, rounded nodules; tenesmus had become a marked feature. She was never sick or visibly distended and melaena had never been noticed. A barium enema was administered and its passage through the colon examined with the fluoroscopic screen. There was no noticeable delay at any point, the opaque material passing round to the caecum in the normal five minutes without any massaging, but there was noticed a very severe kinking of the ascending colon at a point about on the level with the iliac crest; at this point the column of barium was thinned out and, for a time, broken. The splenic flexure appeared in good position, but the hepatic was unusually low. A week later the patient entered a nursing home and a barium meal was administered by the mouth. Four hours later the stomach had emptied and the opaque meal was all collected in the terminal ileum; at eight hours the caecum had begun to fill; at twelve hours the whole of the opaque substance had passed into the caecum and ascending colon.

Fluoroscopic examination showed that the caecum was unusually large and that the ileo-caecal junction was well below the level of the brim of the true pelvis. The ascending colon appeared very short, the hepatic flexure being about the level of the iliac crest.

At twenty-six hours the bulk of the barium was still in the caecum and ascending colon; only a few small pellets of barium were seen in the transverse and upper part of the descending colon down to the level of the kink noticed on giving the opaque enema; but as these all threw small separate shadows, no definite evidence of obstruction at this point could be demonstrated.

The marked general stasis and proptosis of the caecum and ascending colon decided us to advise operation. Through a large paramedian incision the whole colon was explored, working from below upwards. The rectum was normal. The pelvic colon was greatly elongated (about two feet) and lay loose in the cavity of the true pelvis, to the walls of which it was attached by a long loose mesentery which allowed of its being withdrawn freely from the pelvic hollow. The kink seen in the first radiographic examination was a typical "Lane's last kink," being caused by a dense

band stretching from the brim of the true pelvis into the mesentery of the colon; at its attached end it is perhaps best described as resembling the blade of a razor set in the mesentery, the thick back portion being towards the lateral abdominal wall. As it approached the lateral surface of the bowel it became spread out to form a thin sheet, the fibres of which passed actually into the peritoneal covering of the lateral aspect of the colon. It had not contracted sufficiently to tie the bowel at all tightly to the pelvic brim, and there was no external evidence of constriction of the lumen at this point. The descending colon was throughout provided with a loose abnormal mesentery, three to four inches in length at the iliac end, and about two inches as it approached the splenic flexure, which was normally fixed in good high position. The transverse colon appeared normal but sagged rather low in the centre; this probably was partly due to the low position of the hepatic flexure. The ascending colon was greatly dilated; it also appeared to have an abnormal mesentery, but this was not easy to demonstrate, because the anterior and external surfaces were invested with an extensive Jackson's membrane spreading from the colon to the lateral abdominal wall. In places this membrane was of the thin diaphanous type usually described, but in others it presented patches and bands of firm glistening fibrous tissue which were strong enough to resist digital separation. The caecum was more grossly dilated; it was entirely within the hollow of the true pelvis, and a large, thickened, chronically diseased appendix lay on the fundus of the urinary bladder.

The caecum was readily withdrawn from its pelvic bed, there being no adhesions in that cavity. A band stretched from the anterior surface of the caecum to the front of the terminal ileum, about two inches from their junction, but this did not appear to be causing any kinking of the latter. Lane's ileal kink was not present, nor were there any gall stones. The stomach was normal in size and high in position; it showed no sign of ulcer or other disease.

As the interest of this case lies entirely in the extensive pathological features present, there can be no purpose served by describing the operative procedures carried out. They were conservative in character, though I cannot help feeling that this was a case in which nothing short of a complete colectomy could be expected to yield any great degree of permanent benefit. I may add that this is one of the very few cases of this type in which I have felt thoroughly convinced that such a drastic operation would have been (in the hands of one accustomed to performing it) completely justified.

The points of special interest in this case appear to me to be: (1) the unduly long and mobile pelvic colon; (2) the Lane's "last" kink; (3) the descending mesocolon; (4) the proptosed dilated caecum and ascending colon with mesocolon; (5) the Jackson's membrane, and its remarkable density; (6) the inability of the caecum and ascending colon to propel their contents as shown by *x* rays.

In the performance of the operation I was greatly assisted by Dr. C. P. Lankester (Surgeon to the Royal Surrey County Hospital), who had carried out the radiographic examinations which had portrayed the actual conditions found at operation with such accuracy.

TREATMENT OF STRANGULATED OBTURATOR HERNIA.

BY

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STRANGULATED obturator hernia must be regarded as a rare condition. The case here recorded is the only one that has occurred in the practice of the Bristol Royal Infirmary, which is the largest hospital in Bristol, in about twenty-five years. It might, however, fall to the lot of any surgeon, in town or country, to deal with the condition. Most of the described cases have occurred in old women. The diagnosis is usually acute intestinal obstruction, as it was in my case at the first time of strangulation, but occasionally there may be pain down the distribution of the obturator nerve, or a deep swelling beneath the origin of the adductor muscles, to suggest the correct diagnosis.

The best account of the anatomy and operative treatment of the condition with which I am acquainted is in Lejars's *Urgent Surgery*, vol. ii. Three types of obturator hernia are described.

1. The bowel may traverse the whole length of the canal, emerging from the anterior aspect, and spreading out in front of the obturator externus and under cover of the pectineus.

2. It may push through the obturator externus muscle, not through the canal with the artery and nerve, and so be encircled by muscle fasciculi.

3. It may burrow into the layers of the obturator membrane beneath the obturator externus muscle, so that that muscle covers it, as well as the pectineus, when an attempt is made to dissect down to it from the groin.

The artery and nerve bear no constant relation to the sac. Usually they are behind the neck and a little to its outer side, but cases have occurred in which the artery has formed a circle around the neck.

It is generally advised that when the condition is diagnosed the swelling should be cut down on from Scarpa's triangle by an incision an inch and a half to the inner side of the femoral artery, the pectineus muscle being either divided or retracted.

My patient, an old woman of 75, came up in March, 1921, complaining of symptoms of acute intestinal obstruction. She had been ill for four days. There was no pain, and no swelling over the obturator region. On opening the abdomen a knuckle of gut was found tightly strangulated in the obturator canal. I reduced it and buried a small gangrenous area by a purse-string suture, but did not attempt to close the canal as she was very ill.

She came up again, sent by Dr. Angell James, in January, 1923, with a recurrence of the condition, this time on the third day. Again there was no pain down the leg and no swelling, but in view of the previous history the diagnosis was obvious. I again opened the abdomen without much difficulty, pulled out the small intestine which was snared in the opening, and ascertained that it was not gangrenous. About half the diameter of the gut was nipped; it was a Richter hernia. The patient was then placed in the Trendelenburg position, and it was found that the hernial canal was about two inches long, of uniform calibre, and just admitted the finger. The position of the vessels and nerve was not identified. I made a small incision over the lower rib cartilages, excised a piece of cartilage corresponding in length and thickness to the capacity of the canal, and inserted it into the obturator canal; by means of a purse-string stitch I drew the peritoneum together so as to close the canal over the piece of cartilage, which completely filled it. All this only took five minutes. She made an uninterrupted recovery in spite of her 77 years.

Herniotomy from the groin must surely be very difficult, especially in an aged patient acutely ill. If the bowel lies between the layers of the obturator muscle, it would be more difficult still. Then there is the grave uncertainty as to where to cut to free the strangulation without dividing the artery and nerve. If gangrene is found it will be necessary to open the abdomen to repair it. Difficult surgery is generally dangerous surgery.

It would appear, therefore, better practice, even when the condition is diagnosed, as it was on the second occasion in my patient, to perform laparotomy and use the Trendelenburg position. Perhaps the hernia will be reducible without cutting the neck of the sac; if it has to be cut the surgeon may be able to see and avoid the artery, and even if it be divided there will be no difficulty in securing it. The bowel can be examined for gangrene, and treated if necessary. The only risk is that dirty fluid from the sac may get into the peritoneal cavity; probably a little does so even if the hernia is reduced from without, and it can be guarded against by careful packing and mopping.

As my case shows, an attempt ought to be made, in favourable circumstances, to close the canal, or there will be recurrence. It would be easy to do so by a purse-string suture through the peritoneum, but it is doubtful if that will be effectual when, as in my case, there is an open canal, with firm walls, inviting the peritoneum to stretch and form another sac. The peritoneum is very loose at this point. To close the canal by suture of the obturator muscle is difficult; it will not yield easily and it has to be sewn to bone or periosteum. The nerve might very likely be included and give rise to persistent pain. When the size and shape of the canal is suitable, and the contents not noticeably septic, the introduction of a piece of rib cartilage seems to be quick, safe, and effectual. Cartilage needs a very small blood supply, and can readily unite with fibrous tissue to form a firm resistant mass.

THE late Mr. Joseph Constantine, shipowner, of Northallerton, has by his will bequeathed £1,000 each to the North Riding Infirmary and the Cottage Hospital, North Ormesby, and £500 to the Rutson Hospital, Northallerton.

THE trustees of the estate of Mrs. Constance Armstrong, who bequeathed a large part of her fortune to cancer institutions, have allocated £1,600 each to the Imperial Cancer Research Fund, the Cancer Hospital, Fulham Road, London, the Cancer Charity, Middlesex Hospital, the Liverpool Hospital for Cancer, and the Caird Cancer Wards of the Dundee Royal Infirmary; also £1,040 to be used on behalf of cancer cases at the Royal South Hants Hospital; and £1,500 for the same purpose at the Royal Victoria and West Hants Hospital, Boscombe.