now passed from side to side of the groove made by the tube, so that the tube, when the stitch was tightened, was buried by the overlapping of the edges of the groove. The stitch was begun about $\frac{3}{4}$ in. below the opening in the jejunum, so that any leakage there might be effectually prevented. About 2 in. of the tube was covered by the stitch, which was then

Fig. 1.—Jejunostomy; Maydl's operation, at *a* the jejunum is stitched to the abdominal wall.

tied and cut short. The line of suture in the bowel was then made fast to the anterior abdominal wall by a stitch at each extremity, and the abdominal incision was tightly closed round the tube, which projected for about 10 in.

Fig. 2.—Jejunostomy; showing the tube lying in a groove, on tightening the stitch the tube is buried.

When the patient is fed through such a tube, a funnel is fixed on to the end and food poured in slowly. At the first only 6 oz. are introduced, but after the first few days up to a pint may be given in the space of ten minutes.

The opening in the jejunum is made, therefore, at approximately the point where Schlatter made the oesophago-

intestinal anastomosis in his case of complete gastrectomy. It is clear from this case, and well shown by my second case, that enough food can be taken by the jejunum to enable weight to be gained and the general well-being of the patient to improve. If a jejunostomy were performed for any non-malignant condition of the stomach, the probability would be that, as in Schlatter's case, a decided increase in the capacity of the jejunum would be demonstrable, affording a reservoir for the food.

The same variety of food may be given in jejunostomy as in gastrectomy; the staple article of diet should be peptonized milk. In some cases a duodenostomy may be preferred to a gastrectomy. Hartmann has recently reported an example of duodenostomy for a cicatricial narrowing of the stomach following upon the swallowing of a caustic fluid. A duodenal mouth may be considered as more efficient than one opening into the jejunum, in that the food is introduced into the bowel at a point higher than the orifice of the ampulla of Vater.

If a duodenal opening is to be made, the method that I have described is probably better than any other.

LOCALIZED PERITONITIS IN ENTERIC FEVER WITH MARKED SYMPTOMS OF ONSET: LAPAROTOMY: RECOVERY.

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THE early performance of laparotomy in the perforative peritonitis of enteric fever admittedly offers the greatest, and generally the only, chance of recovery. The difficulties in the way of prompt diagnosis are often great. Some of them are exemplified in the following case, where definite symptoms were associated with a very limited lesion.

History.

G. B., aged 44, sickened of enteric fever on October 19th, 1901. The primary attack was mild, the temperature falling under 99° F. on the fourteenth day, and only once exceeding that figure thereafter until the beginning of the fourth week, when a relapse occurred. Widal's reaction was sought at the end of the first week and again at the end of the second. The bacteriologist did not return an account of the dilution used or the time taken to ascertain the reaction. After the first examination the report was "suspicious" after the second "negative." The diagnosis was confirmed at this stage by the presence of blood in the motions. During the relapse the symptoms were not at all severe until November 20th, the thirty-third day counting from the beginning of the illness. At 6 a.m. on this day the patient awoke complaining of pain in the abdomen, but did not summon help until 9 a.m. He was then excited, shivering, and complaining of pain in the abdomen. The expression was anxious and the whole aspect suggested the onset of serious trouble. The temperature was 102° F., the pulse was 100, of fair size and of good tension considering the duration of his illness. After an injection of morphine the pulse fell to 80, and did not exceed 100 until after the operation. Unfortunately the last previous record (70 per minute) was two days before the onset of peritonitis.

Diagnosis.

There was tenderness in the right iliac fossa, and relative rigidity of the right rectus muscle. In the right iliac region there was a distinct area of dullness on light percussion, and this increased in extent during the forenoon. At the operation this was found to be due to the contracted and empty state of the ileum. There was a fair-sized liver dullness.

I thought it probable that an ulcer had ruptured into a part of the peritoneal cavity which was shut off by adhesions, and communicated with Mr. Paul of Liverpool, who saw the patient with me in the afternoon. In the meantime the latter had a small hypodermic of morphine, and was forbidden to swallow anything. Mr. Paul agreed with the presumptive diagnosis as such, and also that the abdomen ought to be opened.

Operation.

This was accordingly done by him at 4.30 p.m. Chloroform was given at first, followed by ether. A median incision was made, and the lower part of the ileum pulled out. No perforation was discovered, but over a thickened and congested Peyer's patch about 6 in. from the ileo-caecal valve the peritoneum was roughened and there was an inflammatory exudation. No appreciable fluid exudation was present in the peritoneal cavity. The lower part of the ileum was contracted and empty. As viewed from the peritoneal surface there were one or two small reddened portions of bowel evidently

corresponding to affected lymphoid tissue, but the portion through which the inflammation had spread was apparently the only patch of size which was affected by the typhoid process. The patch being thickened, no attempt was made to deal with it, save that it was left under the abdominal wound, which was closed by sutures of silkworm gut passing through all the layers.

After-History.

The progress after operation was uneventful until the stitches were removed at the end of a month. Some difficulty was experienced in removing two of these, and of one a part broke off and was left in the wound. During the following night the patient had a rigor, and the temperature ran up to 103.6°. This was almost certainly due to the onset of a cystitis, which troubled the patient for some time—a lighting-up of a former trouble—and I cannot connect it with the accident in removing the stitch. Later an attempt was made to isolate Eberth's bacillus from the urine: this failed, but *B. coli communis* was separated. Except for an occasional attack of colic the intestine has not given rise to any trouble since the operation. The patient got up on January 15th, and has now been out and about for several weeks, and attends to a great part of his business as a tailor.

The special interest of the case lies in the diagnosis, the onset of peritonitis being signalled by marked symptoms. The pulse-rate certainly was never high, but in view of the other symptoms—and correctly as I think—stress was not laid on this, otherwise than as a hopeful factor in prognosis. With regard to the vomiting, absolutely nothing was given by the mouth after I saw him at nine until he recovered from the anaesthetic. Vomiting, of course, is not necessarily a symptom of peritonitis. Not to advance cases of an entirely latent character, a short reference may be made to a case where perforation and extreme peritonitis was associated with a minimum of sickness. W. R., aged 13, was admitted to the Glasgow Fever Hospital under my care in November, 1898. He was at the end of the third week of enteric fever, but had only taken to bed five days before admission. One afternoon towards the end of the fourth week he complained of slight abdominal pain. Next morning his temperature dropped to 98.4°, the pulse being 94. This morning he complained of pain in the abdomen and a desire to go to stool. The pain increased when the patient was placed on the bedpan, but lessened after the passage of a small motion.

During the day the face became more and more pinched; the pulse was increased in rate and diminished in quality while the area of liver dullness decreased. There was slight general tenderness of the abdomen and rigidity of the lower part of the right rectus muscle.

During the afternoon he vomited some milk on one occasion only. He generally refused milk after this, and once when he did take it complained of discomfort, but there was no further vomiting.

At the laparotomy a widespread peritonitis and two perforations were found. The patient died about sixteen hours later.

Possibly an earlier laparotomy might have prevented rupture of the ulcers—indeed, a third ulcer on the point of rupture was invaginated, the peritoneal coats being opposed by a continuous Lembert suture. In the first case a count of leucocytes might have helped in the diagnosis.

If patients are to be saved from perforative peritonitis in enteric fever by means of laparotomy, it is certain that many will be operated on in the preperforative stage.

The recovery of my patient in a private house where conveniences for surgical work were limited is an incentive to urge operation in doubtful cases.

PERFORATION OF THE APPENDIX WITHIN A HERNIAL SAC: RESECTION OF THE CAECUM AND ILEO-CAECAL JUNCTION: RECOVERY.

By J. BASIL HALL, M.A., M.C.CANTAB.,

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ALTHOUGH a considerable number of cases of inflamed or strangulated herniated appendix have been recorded, the occurrence of actual perforation within a hernial sac is comparatively uncommon. Moreover, in every instance where perforation has occurred the appendix has been the sole

occupant of the sac, the general peritoneum being more or less shut off by adhesions at the ring. In the following case the sac contained both caecum and small intestine, and it seems probable that there had been a sudden descent of bowel into an unclosed funicular process, at the mouth of which lay an adherent appendix. This sudden descent tore the appendix from its adhesions, carrying it into the sac, and damaging it sufficiently to produce sloughing and perforation. The history of the case is as follows:

On January 26th, 1901, I saw W. H., aged 23 years, with Dr. Munro, of Bradford. The patient had always had good health, and never suffered from hernia up to five days ago, when he was lifting a sack of flour, and felt a sudden acute pain in the right groin and a sensation of something having given way. He then became conscious of a large scrotal swelling, and went home to bed. He "felt sickly," but there was no vomiting. During the night the swelling disappeared, but on getting up in the morning it came down again. Pain in the scrotum then became severe, and he felt ill and feverish. There was constipation but no vomiting or distension of the abdomen. When seen five days after the accident, he had a right inguinal hernia the size of a small cocoon. The swelling was tender, the upper half tympanitic, the lower dull on percussion and not translucent. His temperature was 99°. He was removed to the Royal Infirmary. The bowels were emptied by enema and the motions were normal. Next day his temperature rose to 101.4°, but he otherwise seemed well. During the following two days his temperature fell somewhat.

On February 1st, ten days after the accident, I operated under ether. The sac being opened high up, I first exposed the colon, and, finding the rest of the sac shut off by recent lymph and adhesions, I extended my incision downwards and found my way into a mass of lymph, disorganized blood clot, and pus. Buried in this was the caecum and ileo-caecal junction. At the apex of the caecum was a ragged and irregular mass, which proved to be the remains of the appendix. Near to its base was a sloughy opening out of which pus and faecal material oozed. Two small concretions extruded from it whilst it was being examined. The whole of the parts were so infiltrated and softened and so thoroughly septic that I felt that to return them into the abdomen would almost certainly result in peritonitis. I therefore decided to do an enterectomy.

Having placed elastic ligatures on either side I resected the caecum, appendix, and about 1½ in. of ileum, bringing the ends together with a Murphy's button. The ileum being somewhat dilated, the difference in calibre between the two cut ends was insignificant. I had previously noted that the abdominal ring was large enough to allow the button to be replaced through it. The sac was then removed and the ring closed. The patient bore the operation well, there being comparatively little shock. Recovery was uneventful. The wound healed by first intention; the bowels acted spontaneously on the second day, the button being passed on the seventeenth. The scar is sound and the patient wears no truss.

Reporter.	Hernia.	Contents of Sac.	Reference.	Result.
Cruveilhier	?	Perforated appendix	<i>Anatomie Pathologique</i> , 1835	?
Annandale	Right femoral	Perforated appendix	<i>Lancet</i> , vol. 1, 1889	R.
Hall	Right inguinal	Perforated appendix, tuberculous?	<i>New York Medical Journal</i> , vol. xlii	R.
Davies-Colley	Right inguinal	Perforated appendix	<i>Guy's Hosp. Reports</i> , vol. xlii	R.
Davies-Colley	Right femoral	Perforated appendix	<i>Ibid.</i>	R.
De Morgan	Right inguinal	Perforated appendix	<i>Path. Soc. Transactions</i> , vol. xxv	D.
Waring and Eccles...	Right femoral	Perforated appendix	<i>Bart's Hosp. Reports</i> , vol. xxvii	R.
Basil Hall	Right inguinal	Caecum, ileum, and perforated appendix	Present case	R.

Although the sac was obviously a congenital one and the ring large, there was no history of a hernia ever having been present in earlier life. It seems most probable therefore that the neck of the sac had been blocked, prior to the accident, by an adherent appendix. The sudden descent of the hernia, by tearing the adhesions, probably damaged the appendix sufficiently to produce sloughing and ultimate perforation. The adhesions may have been produced by the presence of the concretions. Perforation evidently occurred after the patient entered the hospital, as shown by the onset of fever.

It was most fortunate that the hernia, after reducing itself spontaneously after the accident, descended a second time into the sac, and that no attempt at taxis was subsequently made. It seems to me that in all herniae where there is any suspicion of unusual contents the reduction by taxis is fraught with great danger. Indeed, it is very doubtful, except under conditions where operation is strongly contra-indicated, whether taxis should ever be attempted at all. In cases where a general anaesthetic is undesirable herniotomy