those up to the size of a fist or somewhat larger—is evidently being reduced to a minimum. But with huge herniæ—I mean things like foot-balls or small Gladstone bags—the danger becomes very great. This is chiefly due to the great area of loose cellular tissue opened into in removing the sac. In case 116 a huge volume of small gut had been down for a very long period. It had hypertrophied to the size of average great intestine, while the abdominal had so collapsed that by no efforts whatever could the bowels be pushed up. There was no room for them.

Statistics.—In the statistics, by “Quite sound,” or “Complete success,” is meant that the rupture has never come down since the operation, that there is nothing in the way of a swelling to be felt or seen, and that there is no impulse on coughing. By “Partial success,” is meant that the rupture has slightly returned, or threatens to return if unsupported, but that, with the aid of a truss, the patient is in safety and comfort. In many of these cases no truss at all would keep the bowel up before operation, while after it support could be effectively given. In every instance the patients placed in this category declared that they were in a distinctly better position after the operation than before it. By “Complete failure,” is meant that the rupture is as big and as troublesome as before the operation.

Statistics of Mortality.—Among the 101 moderate sized non-strangulated herniæ two deaths are recorded. One (No. 77) was distinctly due to the operation. It was a case where there was a “land slip” of the cæcum down into the scrotum, which is a very dangerous condition. The other (No. 76) was doubtful, as the wound was all but healed.

Of the 16 very large and enormous herniæ four cases proved fatal. Septicæmia killed two patients (Nos. 115 and 117), and unsuspected abscess, bursting into the peritoneal cavity after the patient was walking about and deemed sound, proved fatal in No. 114, while in Case 116 the operation could not be completed.

Of the 26 cases of strangulated inguinal herniæ, an old man of 77 (No. 27), died from septicæmia and bronchitis. Of the 24 cases of strangulated femoral herniæ two died: No 50 never recovered from the collapsed state in which she arrived at the infirmary, and No. 51 was moribund when admitted.

It will be seen, therefore, that the mortality of the radical cure in moderate sized herniæ has been 2 per cent., and of the strangulated herniæ 6 per cent.

Statistics of Permanence of Cure.—Of the whole 168 cases, it has been possible to trace for very considerable periods 113. Of these, 79 remain quite sound, 19 are partial successes, and 15 are complete failures. The majority of the failures occurred either in very degraded people, who took no care of themselves, or in persons who had very severe work to perform, and began it too soon.

It will be noticed that by far the greater number of cases on the list have been traced for years. To report as successful those radical cures in patients who have just left hospital, or have only been out for a few months, is worse than useless, because it is misleading. Again, all the cases which had not in 1888 (when I made my last investigation) stood the test of some years, have been seen by myself or by a doctor within the last two or three weeks. When this sort of examination is made, it is astonishing how one's successes melt away. I entertain profound doubts of broad statements and general recollections. The surgeon who indulges in these has nothing but successful cases. I have heard that at the Surgical Aid and Truss Societies the number of persons with ruptures who come for trusses, after being radically cured, is very remarkable.

I have only to say, in conclusion, that I have endeavoured to put the matter as fairly as I can, and have tried to enter upon it without bias one way or the other.

XV.—MR. RUSHTON PARKER'S REPLY.

MR. PARKER was glad, in reply, to touch upon several points which he had purposely omitted, for want of time, from his paper. He thought too much was made of the mere removal of the sac, as if that were itself an object, instead of only a slight incident to the operation. For instance, Czerny's method consisted in tying the neck of the sac without stripping or removal. As to trusses, their objection varied with the patient's tolerance. Some almost liked to wear a truss, others could hardly bear them. As regards ligatures, he thought that any substance could be rendered aseptic, or even actively antiseptic, and he preferred those that best answered their purpose. For instance, he preferred yellow catgut to sew the skin in operations where union by first intention was expected or desired, but for the ligature or suture of the hernial sac, or other deep and durable purpose, he preferred the green catgut, or even silk. He could not see any special virtue in kangaroo tendon over other string fibrous tissue. In answer to Mr. Jessop, he distinctly advised and practised the attempt at radical cure in cases of strangulation where the state of the bowel and tissues was not too bad to render their inclusion dangerous. Of course, in the event of herniectomy for strangulation he would probably leave the ends of the cut bowel outside, and so be unable then to attempt radical cure.

PRESENTATION.—Dr. Adams, of Martock, was on October 26th, the occasion of his silver wedding, presented by his friends with a set of silver *entrée* dishes, weighing about 110 ounces, and bearing a suitable inscription.

SOME POINTS IN THE SURGICAL TREATMENT OF SIMPLE ULCER OF THE STOMACH.

By WILLIAM F. HASLAM, F.R.C.S.,
Surgeon to the General Hospital, Birmingham.

CASES of perforation of the stomach due to simple ulcer group themselves into three classes:

1. Where no adhesions whatever have formed around the base of the ulcer, so that the contents of the organ pass freely and at once into the peritoneal cavity; or where, if any adhesions have formed, these are so slight that they readily give way, producing a similar result. In these cases the perforation is usually found on some part of the anterior surface of the stomach.

2. Where adhesions have formed between the stomach and some adjacent organ; these adhesions may have formed before any perforation has occurred, or, where the stomach is in close contact with some other organ, the leakage due to perforation may be so gradual that time is allowed for adhesions to form and protect the general peritoneal cavity. In either case a localised peritonitis will be set up, and any resulting suppuration will be shut off from the rest of the peritoneum. In these cases the perforation is more commonly met with at the posterior surface of the stomach, where its relation to adjacent parts are more intimate than on the anterior surface.

3. Those rarer cases where adhesions form between the stomach and some hollow viscus or serous cavity and perforation opens, for instance, the colon, pleura, or pericardium.

It is with the first class alone, namely, those where the peritoneum is rapidly invaded, that I wish to speak to-day as the clinical progress of these cases is essentially different from that in the other divisions, and the surgical treatment of each class has to be conducted on a different principle. In the cases where the peritoneal cavity is suddenly invaded as the result of perforation of a gastric ulcer, our aim is to close the perforation and cleanse the peritoneum. In cases of localised suppuration due to perforation, the resulting abscess has to be treated on the general principles that guide us in the management of any such localised peritoneal suppuration, whether caused by a perforating gastric ulcer, or by a similar perforation of the vermiform appendix; while in the last division surgical treatment has to be conducted according to the exact nature of each case.

For treatment by operation to be of any avail in the cases now under consideration it is absolutely necessary that it should be undertaken as soon as possible after perforation has occurred; delay of a few hours may make just the difference between success and failure, not only by permitting an extension of the intraperitoneal mischief, but by allowing the patient to get into a condition of shock and exhaustion unfavourable for the proper performance of the operation. It is therefore of the utmost importance that those engaged in general practice, under whose care such cases first come, should be keenly alive not only to the symptoms indicating so grave a peritoneal lesion, but to the necessity of taking immediate steps for its repair. I propose, before speaking of the operation, to read notes of a case that was under my own care, and to refer to the records of other cases illustrating the symptoms and progress of this terribly fatal condition. I was asked by my colleague, Dr. Saundby, to see the following case which had been admitted under his care, and which in his opinion was one of perforated gastric ulcer requiring immediate operation:

S. T., aged 17, admitted February 2nd, 1893, in a condition of collapse and with the following history: Her friends stated that on the day previous to her admission she vomited some coffee-coloured matter; that this occurred again on the following morning, and that at 2 P.M., whilst washing clothes at a tub, she was suddenly seized with a very severe pain over the pit of the stomach, followed almost at once by pain over the lower part of the abdomen and under the left breast. The pain was intensely severe, and her friends said “she tore at herself in consequence of it.” Pressure over the abdomen increased the pain. She speedily became collapsed, and was admitted into the hospital at 3.30 P.M. An hour and a half after perforation had taken place. On inquiry as to her previous history it was ascertained that during the last three weeks she had vomited after food, but that there had neither been any blood with it, nor the coffee-coloured material that she had vomited during the present attack. It was also stated that she had had an attack of vomiting three months ago, but there was no history of pain after food,

nor had she been at all anemic. On admission she was found to be pale and collapsed, her face was perspiring, and, though her expression was anxious, there was nothing about it that was typical of an abdominal "facies"; her legs were drawn up, and any movement caused pain. The abdomen was not distended or tympanitic, the abdominal muscles were rigid, and the pain she complained of was increased by pressure. This pain, however, was not localised, but was present all over the abdomen, its intensity being greatest under the left breast, in the region of the heart; she vomited several times; the vomited matter was found to contain blood, mucus, and starch granules. Her pulse was fair in character, and varied from 90 to 100. The temperature was subnormal. At 5.30 P.M. the abdomen was opened above the umbilicus just to the left of the middle line, and the peritoneal cavity found to contain gas and some turbid fluid. The stomach was seen, and after some difficulty a perforation was found on its anterior surface near the lesser curvature, and close to the cardiac orifice. This, which was almost large enough to admit the tip of the little finger, was situated in the centre of a dense mass of induration, the diameter of which was about 1½ inch. The stomach was brought as near to the surface as possible, and fine sutures were passed through the peritoneum in the neighbourhood of the perforation; these, however, would not hold, and finally three stout silk Lembert sutures were inserted through the peritoneal and muscular coats well clear of the induration, and the stomach wall on either side of this was drawn together so as to obliterate the perforation. The peritoneal cavity, which was apparently generally contaminated by the contents of the stomach, was washed out as thoroughly as the condition of the patient would allow, the wound closed, and a glass drainage tube inserted between the liver and the stomach. She gradually got worse after the operation, and died on February 4th, 1894, forty-five hours after it was performed. The post-mortem examination showed a general and suppurative peritonitis. The stomach was removed, and the position of the perforation verified; this was completely occluded by the stomach wall that had been drawn over it by the sutures.

The true value of operation for perforated gastric ulcer has yet to be determined, and it is only by a careful record of all cases in which it has been performed that we can provide material on which to base any conclusion; experience alone will show in what cases we may carry out this line of treatment with any reasonable hope of saving life. In the case under consideration there are several points worthy of notice.

1. There was nothing in the previous history that pointed with certainty to the fact of this patient having had a gastric ulcer for any time. It is true that she had vomited at intervals during the past three weeks, but there had not been any pain after food or blood in the vomited matter. This, however, is just the history of so many cases where sudden perforation of a gastric ulcer has taken place. Indeed, from an examination of the records of a number of such cases, it is exceptional to find that there have been previous symptoms suggestive of gastric ulcer. This absence of previous symptoms may be accounted for by the fact that a good deal of pain may be caused by the localised peritonitis and resulting adhesions that are so frequently met with in cases of gastric ulcer. But these are exactly the cases where a sudden perforation is unlikely to occur, for if leakage takes place it causes a localised and not a general peritonitis.

2. The position she was in at the time that perforation occurred must have favoured the passage of the contents of the stomach into all parts of the peritoneum, thus starting at once a widespread inflammation of that sac.

3. When seen three hours after perforation had taken place some of her symptoms were less marked than one would have expected with an extensive perforation. Though there was evidently considerable shock, there was an absence of the extreme anxiety of face so often associated with severe peritoneal injury. The pulse was comparatively low in rate and fair in volume. There was no abdominal distension, and the pain was widely distributed all over the abdomen. These modifications in the symptoms can, however, be readily accounted for by remembering that sufficient time had not elapsed to allow the symptoms of peritonitis to be well developed. The opportunities for watching the early effects of perforation are necessarily few, and one's ideas as to the severity of the symptoms are based on the conditions seen in cases where this lesion has taken place sufficiently long to allow the symptoms of an acute peritonitis to be well developed. In looking over the records of these cases I find that wherever the mode of onset is noted it has been sudden, no matter what the antecedent symptoms may have been. In nearly all cases recorded some mention is made of the sudden invasion of this lesion. The symptoms grouped under the word "shock" were present in greater or less degree in all. Vomiting, though a frequent symptom, was by no means always present. Abdominal pain and tenderness, increased by pressure, were nearly always present; indeed, one can

hardly understand their being absent, yet in one case, though there was acute pain, this was relieved by pressure; in another there was very little pain, but some tenderness on pressure; in another no pain was caused by pressure; and in another the pain, which shifted about, was relieved by firm pressure. Abdominal rigidity in the early stage and distension later on were frequently noted. The duration of the cases varied from seven hours to five days, most of them terminating under twenty-four hours—a significant point to bear in mind when considering what prospect of relief surgery can offer. When, therefore, we consider that the chances of recovery after perforation are practically *nil*, we must feel that, provided that the condition is not so bad as to forbid operation, some attempt should be made to place the patient in a more favourable position, even though the chance of success is but slight.

What, then, is the *technique* of such an operation? Every means must be taken to diminish the shock it will necessarily cause, and to effect this the temperature of the room should be high, the patient's limbs and thorax wrapped in cotton wool and well covered with blankets; and, if the character of the pulse is bad, a brandy enema should be given shortly before commencing. The best position for the incision is above the umbilicus and just to the left of the middle line, so as to miss the falciform ligament. On opening the peritoneum it is possible that positive evidence of perforation will at once be manifest, namely, by there being air in the peritoneum together with fluid from the stomach, causing signs of more or less inflammation according to the time that has elapsed since perforation took place.

In searching for the perforation, and assuming, as seems probable, that it is situated on the anterior surface of the stomach, it is well to bear in mind that the anatomically anterior surface, that is, the portion between the attachment of the gastro-hepatic omentum and the great omentum is only anterior in the undistended condition of the organ, and that it becomes, when the stomach is distended and its position altered, practically an upper surface. Consequently, that portion of the organ first met with on opening the abdomen will be at no great distance above its greater curvature—in other words, the lower part of the anterior surface, a position where perforation does not often occur. If this is regarded as representing the whole anterior surface it is very unlikely that an ulcer will be seen, the fact being that the finger must be carried along this surface upwards and to the back until, far away from the abdominal incision, that portion of the anterior surface near the lesser curvature is found; here, experience teaches us, ulcers frequently perforate. The practical importance of this is that while we rightly describe the ulcer as being on the anterior surface of the stomach, we must not necessarily expect to find it immediately beneath the incision, for, owing to the alteration in the position of the organ by distension (and the history of many of these cases shows that they often follow a meal), it may be well out of sight, and by no means within convenient reach.

Further, a want of recognition of this fact may account for the statement in some of the reported cases that the ulcer was on the posterior surface of the stomach when from the notes it must have been on the anterior surface even though its exact situation may have been at a great depth from the anterior abdominal wall. Obviously if perforation occurs through the posterior wall we can only reach it by first forcing a way into the lesser sac of the peritoneum. In the case on which I operated I was surprised to find that an ulcer on the anterior surface could be so far away from the incision and so difficult to bring forward for suturing. Having found the perforation the next step should be the complete removal of the contents of the stomach. This may be effected by means of a large tube and funnel and some warm water. In some cases the already existing opening at the seat of perforation may be sufficiently large to admit the tube, or if not it should be introduced through the oesophagus, the hole in the stomach being closed either by seizing it between the fingers or holding a sponge over it. The advantages of thus clearing the stomach are evident when we remember that it is frequently full when perforation takes place and that the resulting shock at once stops digestion. This quantity of half digested food, if left, will not only severely test the line of

suture but will in course of time cause movement in the stomach wall or set up vomiting, thus interfering with that complete rest so necessary for repair.

Various suggestions have been made as to the best way to treat the perforation, and while it may not be possible to follow out one plan in all cases we must favour that method which, while it is efficient, will make the least demand upon the patient's power of endurance. The most radical method is to excise the ulcer with its indurated base and then suture up the rent. This plan, however, does not commend itself favourably to me for various reasons:

1. It necessitates the removal of a considerable portion of the stomach wall, consequently the difficulty of efficiently closing this will be great.

2. It must cause free hæmorrhage, and the patient is not in a condition to stand any loss of blood.

3. This hæmorrhage will cause a waste of valuable time.

Closure of the Perforation without its Removal.—This seems to offer in many cases the most satisfactory plan of treatment. To carry this out, the stomach must be drawn up as near the surface of the body as possible, to facilitate which it may be necessary to enlarge the abdominal incision. In applying sutures, which should be of the Lembert type, we must remember that for a considerable distance around the actual perforation the stomach wall is so indurated that it is impossible to cause sufficient inversion of this part so as to get the peritoneal surfaces in opposition, nor, indeed, will the tissues bear the strain put upon them by the sutures. It is therefore necessary to go outside this area of induration, so as to get a good hold of the stomach wall at a point where it can be drawn over the orifice so as to meet the peritoneum from the opposite side. Three Lembert sutures of stout silk passed in this way in the case I have recorded buried the perforation together with its surrounding induration, and completely shut off the cavity of the stomach from that of the peritoneum. I would suggest, however, that in addition to these deep sutures, some small superficial ones should be inserted in the intervals between them, and that a similar precaution should be taken at each end of the resulting puckering.

Suturing having been effected, our attention must be turned to cleansing the peritoneum, and here the question will arise as to whether it will be necessary to drain the pelvis. Bearing in mind that fluids tend to gravitate into that cavity, and the extreme difficulty there is in being sure that every particle of foreign matter has been removed, it seems probable that, at any rate in most cases, pelvic drainage is desirable. If the operator, therefore, intends to use the drainage tube here, he had better at this stage of the operation make the necessary incision for it. This will also facilitate the thorough flushing of the peritoneum, which should be carried out in the most liberal way and with volumes of hot water, the intestines being moved about and the current directed in such a manner as to remove, if possible, every particle of the extravasation. There is no doubt that this is a most important step in the operation, and one that must be persevered in as long as the anaesthetist considers the patient can stand it, unless the operator is satisfied before any such prohibition is necessary that sufficient has been done. All excess of fluid should then be removed, the drainage tubes inserted, and the wounds sutured in the usual way. I feel that it is necessary to emphasise the importance of this thorough flushing of the peritoneum, not only from the fact that the chief cause of failure after operation has been suppurative peritonitis, but on account of a somewhat natural feeling on the part of the surgeon that, after the time already spent in finding and suturing the ulcer, the patient's condition will not permit more than a limited amount of flushing, which, while it satisfies the surgeon's conscience, is of no real value.

It is on every ground undesirable to have a patient die either during an operation or very soon after as an immediate result of it. But it must be understood that a clean peritoneum is the patient's only chance, and therefore the anaesthetist must most carefully watch the general condition of the patient, and only stop the surgeon if he considers that further time spent on the operation will prove fatal.

Two other methods of treatment have been suggested, and

these may be considered under one heading. By these the perforation is brought to the abdominal incision and fixed there, either by suture or a bone plate, so as to leave a gastric fistula. While such a procedure may be the only possible course to take in some cases, it is hardly the one to follow where a more complete operation can be done, for, if temporarily successful, it necessitates a second operation later on for the closure of the fistula.

Before closing this paper I should like to suggest whether, considering the dangers incident to a gastric ulcer, it would not be well in a case where the symptoms are unequivocal to seriously consider the question of opening the abdomen with a view to the treatment of the ulcer. This might in some cases be of such a size as to permit of excision, or the stomach wall might be drawn across it so as to prevent perforation; or why might not its base be strengthened and protected by grafting on to it a piece of omentum carefully removed for that purpose? Unfortunately, however, the cases where surgical treatment could be best carried out are just those where, owing to the absence of adhesive peritonitis, symptoms are either entirely absent or do not point so clearly to the nature of the case as to warrant even the slight risk of an exploratory incision. Moreover, we must not lose sight of the fact that ulceration of the stomach frequently occurs at several points, so that the difficulties in the way of dealing successfully with such cases are so great as to offer but little hope of benefiting them to any extent.

THE EFFECT OF REPEATED TAPPINGS ON HYDROCEPHALUS.

By JOHN HERN, M.D., F.R.C.S. EDIN.,
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THE operation of tapping the enlarged and distended lateral ventricles in cases of hydrocephalus which have resisted medicinal and all other forms of treatment, and in which the head continues to increase in size, has, with English surgeons at any rate, not been looked upon with favour. Mr. Erichsen condemns it in his last edition. Mr. Treves does not even mention the operation in his *Manual of Practical Surgery*.

My own cases (6 in number), all tapped more than once, would appear to show much less danger than is usually supposed, and as 5 have improved, and 2 of the 5 appear to have almost recovered, it appears to me that the operation is a justifiable proceeding, even granting the dangers usually ascribed to it, for without operation the result usually is an early death, or a mere existence worse than death, in which the poor child lies perfectly helpless, and is in fact a hopeless imbecile. In all my 6 cases the head was much enlarged, and continuing to enlarge rapidly; in 5 this ceased after the first tapping; in the sixth case the enlargement progressed, and the child died of convulsions. At the *post-mortem* examination a large cerebellar tumour was found, but there was no trace of any harm done by the tapplings. The most successful of my cases was, according to notes, copied from my notebook as follows:

Born August 9th, 1887. Head not enlarged. Three convulsions at 6 weeks old. Head noticed enlarging in the tenth week. Continuous treatment for more than a year (thirteen months). No treatment up to thirtieth month—two years and a-half.

Condition then.—Head much enlarged (circumference $2\frac{1}{2}$ inches), Hydrocephalic shape. Fontanelles not ossified, but apparently covered by a tense membrane. Face small and idiotic. Internal strabismus and blindness (total) of left eye. Body emaciated and ill developed (equal to about 10 to 12 months). Height $2\frac{1}{2}$ inches; weight 23 lbs. Lies still most of the day, but cries almost all night; crying accompanied by twitchings of the limbs.

First tapped April 29th, 1890. Two ounces and a-half removed. Immediate relief of the crying at night, and all the acute symptoms.

Second tapping July 17th 1890. Head same size as three months previously (date of first tapping). Child uses its limbs freely, and takes more notice, but the fontanelles have ceased to pulsate, and crying at night has returned. Three ounces and a-half removed. From this time progress was steady and uninterrupted.

It would be absurd to expect the tapplings to relieve all cases, for obviously this condition can be induced by many and diverse pathological conditions, some of which are incurable. Nevertheless, I consider that, although it is dangerous to argue on such a small number of cases, it is