assume the sitting-up position, or a compromise may be effected by raising the shoulders and turning the patient slightly over to the right. This position is good for all ulcers except those which are low down on the anterior wall, and it may then perhaps be best for the patient to be lying on his back. In the case of ulcers of the lesser curvature the higher the patient can sit up with comfort the better. But while one or other position may be of advantage in any particular instance it should never be continued until it becomes irksome. It must not be forgotten that while the passage of foods over an unhealed wound or ulcer cannot be desirable the same is not true of liquids other than foods. It may be of distinct advantage sometimes to turn the patient into such a position that what is swallowed shall pass over the wound. Plain hot water, peppermint water, or even well diluted carbolic solution (containing no more than 3 or 4 drops of phenol) may be given.

Aperients.

It is, of course, of the utmost importance that the natural flow of intestinal contents should begin as early as possible after an operation. Nothing, perhaps, requires more judgment than the use of aperients. Treatment after operations on the stomach differs from treatment after other abdominal operations in that sickness is even more to be dreaded and, therefore, must be the more carefully guarded against. In those instances of perforation in which the escape of gastric contents has been limited to the neighbourhood of the stomach, and peritonitis has become localised in the same area, it is best, to refrain if possible from irritating that organ by aperients. I suppose it is true that the higher up in the abdominal cavity the peritonitis exists, the more likely is vomiting to be an early and inveterate symptom.

In one of my cases the patient, I believe, lost her life owing to the injudicious use of magnesium sulphate. There had been obstinate constipation which could not be overcome by the use of injections; and wind was being pumped up freely by the mouth, though none escaped through the anus. Small quantities of decoctions of raisins and of malt were being given occasionally and were retained, though there was occasional nausea. The patient was weak and her expression anxious. The pulse was about 130 to the minute; but though the abdomen was distended, the lower part of it was free from pain or tenderness. It was the fourth day and she was so desperately ill that I feared that unless natural action of the bowels was secured she would soon die. I therefore ordered teaspoonful doses of white mixture to be repeated every quarter of an hour. After four doses had been given vomiting set in and continued until the patient's death about ten hours afterwards. At the *post-mortem* examination nothing further was found than septic areas round about the stomach wound. In this, as in other cases, the enemata consisted of four ounces of glycerine mixed with half-ounce of turpentine. These I begin, as a rule, twenty-four hours after operation, though the time varies according to the amount of distention and eructation of gas. Soap and water, with turpentine may also be given to the amount of a quart. Either of these may be repeated every four hours until decided relief is obtained.

In some cases of perforation the freedom of the stomach area from peritonitis and the involvement of the lower parts of the abdomen must lead to some modification in the course of treatment. Aperient enemata should be given at first, but if they are not successful and ileus is threatened it is imperative that we should make use of drugs. Of these magnesium sulphate and calomel are probably the best. After giving one dose of calomel followed by magnesium sulphate in frequently-repeated doses for four hours a large glycerine or soap-and-water injection should be given, and this course of treatment should be continued until the bowels act. If there is sickness it is sometimes a good plan to give a drachm or more of Epsom salts immediately after each attack of vomiting.

Although perforated gastric ulcer is the lesion to which the above remarks are especially directed, they will also apply to all injuries of the stomach and, in principle, to cases of unperforated gastric ulcer as well.

REFERENCE.

See paper by Dr. Vaughan Harley, BRITISH MEDICAL JOURNAL, November 23rd 1895, vol. ii, p. 1283.

AN IMPROVED INCISION IN LAPAROTOMY FOR THE PREVENTION OF POST-OPERATIVE HERNIA.

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THERE can be no doubt that post-operative hernia is still far from uncommon. It does not, however, occur so frequently as was at one time the case. Formerly a hard-and-fast rule was followed that no muscle fibre should be involved. Latterly it has been the rule to separate muscles, whenever practicable, in the direction of their fibres. This is probably one of the reasons why hernia is now less common. But to carry out this rule involves, except in the case of the rectus abdominis, division of several strata of muscles in different directions. The union of such divisions produces scars, which cross one another in their several planes. One would, perhaps, expect that the cicatrices themselves would be scarcely perceptible, since, the muscles being cut longitudinally and not transversely, there is nothing to prevent close contact. This is not the case when circular ligatures are used to unite the approximate bundles of muscle fibre.

Quite recently, in dissecting out a scar, resulting from this method employed twelve months before, I had reason to notice how broad was the area of cicatricial tissue which had formed. (The case was one of appendicitis, the appendix not having been removed at the first operation.) The reason of this was first clearly brought to my mind by my friend Dr. Willoughby Furner. When parallel bundles of muscle fibres are united by tightly-drawn sutures, three or four to the inch, degeneration occurs of the individual highly-organised fibres involved. Absorption follows, and cicatricial tissue fills the gap.

Why, then, is post-operative hernia less common after division of muscles in their length? Because the resulting cicatrices are supported on one or both sides by uninjured muscle or aponeurosis. In the case of a division of the fibres of the rectus this support would be absent. In order to do as little damage as possible to delicate muscular and aponeurotic structures, mattress sutures with the finest silk and curved intestinal needles should be employed.

A second cause of the less frequent occurrence of post-operative hernia is the fact that we now recognise the importance of avoiding the division of the nerves supplying the muscles. To take the case of the rectus abdominis: The motor nerve supply is derived from the terminal branches of the abdominal intercostal and ilio-hypogastric nerves. These branches enter the muscle through the outer part of its sheath at intervals from above downwards. If an incision be made through the rectus, those fibres lying to the inner side of such incision will become paralysed and atrophied. If the incision through the linea semilunaris be used, the effect will be still more disastrous, since the whole thickness and breadth of muscle corresponding to the area of injury will be cut off from its motor and nutritive nerve supply. Paralysis and atrophy must ensue.

The whole questions of incisions in the abdominal parietes, with special reference to nerve supply, has been recently and ably discussed by Dr. Brindley Eads.¹

The conclusions I form are:

1. That division of aponeurosis without supporting muscle is bad, as is evidenced by the frequency of ventral hernia occurring after such a procedure.

2. That division of muscle in the direction of the fibres cannot be satisfactory if it entails division of motor nerve fibres.

3. Nor can such division be satisfactory unless supported by other uninjured muscle or aponeurosis.

A consideration of these points led me to adopt the method which I will now describe, to which none of the above objections apply:

1. *Incision through Skin, Superficial Fascia, and Fat.*—An incision is made of the required length down to the anterior layers of the sheath of the rectus, an inch more or less, according to the size of the patient, either to the right or left of the middle line, as may be desired.

2. *Division of Sheath (Anterior).*—The anterior layers of the sheath are divided with the point of the knife, an inch, more or less, from the inner edge of the muscle, upwards and downwards to the same extent as the skin incision. Care is taken not to injure the muscle fibres.

3. *Enucleation of Muscle from its Sheath Outwards.*—The inner divided edge of the sheath is picked up with dissecting forceps, and, by means of the handle of the knife and the forefinger, the inner part of the muscle is readily enucleated from its attachments to the sheath anteriorly, internally, and posteriorly. Care must be taken that, at the level of the fold of Douglas, posteriorly and for an inch or so above, the deep epigastric vessels be carried outwards on the under surface of the muscle. In the separation anteriorly it will be found necessary, should the incision include in its length any of the transverse fibrous intersections, to use the point of the blade of the knife to free the sheath from these—a perfectly simple performance. The intersections do not penetrate to the posterior surface of the muscle.

4. *Division of Sheath (Posterior), together with Transversalis Fascia, Sub-peritoneal Fat and Peritoneum.*—The enucleated portion of the rectus being retracted outwards and the inner part of the anterior sheath inwards, the abdomen is opened in the same vertical plane as the previous incisions. As soon as the peritoneum has been incised a director or the forefinger is introduced, and the following structures divided, up and down, as far as necessary: in the whole length of the incision the transversalis fascia, subperitoneal fat and peritoneum, and above the level of the fold of Douglas the posterior layers of the muscle sheath.

5. *Suturing of Sheath (Posterior), together with Transversalis Fascia, Sub-peritoneal Fat and Peritoneum.*—To close the abdomen the above structures can be readily united by a continuous suture, the necessary parts being retracted to help the operator. A curved intestinal needle, a needle holder that will not allow the same to turn, and fine silk being used. Care must be taken to accurately adjust the divided edges of the semilunar fold of Douglas, which is easily recognised an inch or so below the umbilicus.

6. *Suture of Sheath (Anterior).*—The rectus, after the posterior structures have been united, is allowed to slide back into its natural position, thereby completely covering the line of suture. The anterior layers of the sheath are united by a similar continuous suture.

7. *Suture of Skin and Fat.*—This is performed in the ordinary way. Although this description may seem somewhat long and tedious, the actual performance, so far as the opening of the abdomen goes, will be found to be extremely simple, and to take little, if any, longer than any other method. The incision can readily be extended, if necessary, by slitting the anterior sheath with the extreme point of the knife, enucleating the muscle with the finger, and dividing the posterior structures with scissors. As regards closing the abdomen the parts come together so accurately and readily, and it is so easy to see what one wants to do, that the continuous suturing can be completed with great rapidity.

Directly the patient regains consciousness and begins to vomit the advantages of this method become apparent, for whereas the rectus under the influence of the anæsthetic has been flaccid, it now regains its normal tone and resumes its functions, unimpaired either by a row of sutures or by loss of nerve supply. In the act of vomiting it stands out, one may almost say, involuntarily, firm, and stiff, and so guards in the most efficient way possible the very area which has been injured. With every subsequent strain to which the abdominal wall is liable, whether in expelling the contents of the abdomen or pelvis, in coughing, or in other physical effort, the action of this muscle will be the surest preventive of hernia, forming at such times a tough and more or less rigid band, tending to approximate itself to its fellow of the opposite side, and so holding itself securely in its sheath, and more particularly into that part of it from which it has been separated. It must at the same time be remembered that the disturbed area presents for the formation of adhesions in the process of healing wide opposing surfaces some $2\frac{1}{2}$ inches broad (1 inch anteriorly between sheath and rectus, the same posteriorly plus the breadth of muscle internally). On several occasions I have opened the abdomen in this way *post mortem*, from pubes to ensiform cartilage, to right and left of the middle line, and closed it as described. To all appearances it was perfectly satisfactory. This was particularly noticeable when, on putting the hand into the abdomen from above through the diaphragm, pressure was exerted from behind the line of suture forwards. The thickness of the rectus could then be plainly felt in front of the fingers giving a sense of perfect security and strength to the area in question.

I used the method on the living subject for the first time on February 7th of this year, the case being one of semi-solid dermoid tumour of the ovary about the size of a fetal head. The patient was a small, thin woman, and the result so far has been entirely satisfactory; nor, although it is early days, do I see how she can develop a hernia through the scar in the future.

The operation was followed by vomiting, and one could see and feel the recti standing out equally right and left, with the skin incision over the left muscle. The patient was on a couch on the tenth, and allowed to walk on the twenty-first, day after the operation. Palpation of the parts now, five weeks from that date, when the recti are acting, assures one of the security which exists.

In looking up the subject after I had performed the opera-

tion; I found that the late Mr. Greig Smith, in his admirable book on abdominal surgery, advocates a somewhat similar procedure, but it is to take the place of incision in the semilunar line; and he recommends that the rectus be turned inwards, thereby injuring the motor nerve supply, which I particularly avoid. The sutures, also, are apparently put through the muscle substance.²

To sum up the advantages of this method, they appear to me to be:

1. Extreme simplicity.
2. Division of aponeurotic structures only, such being afterwards supported by a strong muscle entirely free from injury by sutures or division of nerves.
3. Extreme improbability of hernia.
4. Great reduction in time of the length of period at present necessary for convalescence after simple cases of laparotomy.

REFERENCES.

- ¹ *Annals of Surgery*, vol. xxxiii, No. 1, 1901. ² *Abdominal Surgery*, vol. 1, p. 109, 5th edition. Greig Smith.

CASE OF CONGENITAL HYDRONEPHROSIS : NEPHROTOMY AND DRAINAGE : RECOVERY.

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As cases of congenital hydronephrosis are somewhat rare, I venture to put this on record.

History and State on Examination.—On April 11th, 1900, I was called to see a male child, 6 weeks old, on account of a swelling of the abdomen, which had been present at birth, and been getting slowly larger. The child had been brought into the world by a midwife, who declared that the swollen abdomen had impeded the labour after the birth of the head. The child, when I saw it, was weakly and wasted, and had irregular attacks of diarrhoea. The abdomen presented the appearances of an abdomen with a large ovarian cyst; it was greatly distended, the distension being greater

on the left side; the skin was thin and tightly stretched, and large veins ramified over its surface. Palpation and percussion revealed a tumour exactly the shape of a kidney occupying the left lumbar, iliac, and hypochondriac regions, and left half of the umbilical region. It was dull all over, right up to the lumbar spine, and gave the vibratile thrill. It had a smooth surface and edge all round, except at the inner side, where a distinct notch could be felt. As time went on the child grew thinner, although it took nourishment greedily, and the tumour increased until it occupied the entire umbilical region, and entered the hypogastric region as well, so that the abdomen projected on to the thighs. The tumour seemed to have rotated somewhat to the right at its lower end, so that the notched inner surface lay at a slight angle to the median line. The bowels were crushed up under the liver, and lay between the tumour and that organ; one or two coils lay over the surface of the swelling. The descending colon could be felt and percussed at first over the surface of the tumour, but eventually slipped round and lay quite close to the lumbar spines. The tumour was most prominent and nearest the skin about one inch above the umbilicus, and half an inch to the left side; and into this point I inserted a hypodermic needle, and drew off some fluid, which was clear, non-albuminous, and showed nothing under the microscope beyond an occasional epithelial cell.

Operation.—The diagnosis having been made, I strongly advised operation, in the hope of establishing a fistula, and with a possible chance of complete cure. On May 2nd, accordingly, when the child was 9 weeks old, nephrotomy was done, with the assistance of my partner. There being no room for extraperitoneal drainage on account of the youth of the child and the position of the colon, but still desiring to have the drainage as far back as possible, I made a 2-inch incision midway between