SOME OBSERVATIONS ON THE OPERATION OF RADICAL CURE OF AN INGUINAL HERNIA.

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Investigation of the postoperative results of large series of cases of radical cure of inguinal hernia exposes the gloomy fact that about 12 per cent. recur. This is somewhat disconcerting, and in most cases is due to one of the following reasons:—

1. **Faulty selection of cases.**—As a rule a radical operation, as the name applies, is only performed on a patient whose prospect of a cure is excellent. Patients suffering from constitutional conditions, such as bronchitis, enlarged prostate or pronounced constipation are unsuitable. Also local muscular weakness, such as follows injury to the ilio-inguinal nerve in an appendix operation with consequent paresis of the conjoined tendon (Fig. 1) or bulging associated

FIG. 1.

A direct inguinal hernia which followed appendicectomy with drainage, through a grid-iron incision, one year previously.

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with visceroptosis, are more suitably treated with a truss. In estimating the tone of the lower abdominal muscles a useful test is to expose the abdomen in the recumbent position and request the patient to raise his head and shoulders. Normally a hollow is seen between the outer border of the rectus muscle and the anterior superior iliac spine, which is replaced by a bulge if the musculature is deficient.

An irreducible hernia is an exception to the rule that operation is reserved for those who are constitutionally sound and possess adequate muscles. Provided the patient is reasonably fit an irreducible hernia must be operated on in order to exclude the constant risk of strangulation. Even if the hernia can only be "patched up" the application of a suitable truss and subsequent avoidance of strain should prevent recurrences.

2. **Flaws in technique.**—A radical operation is performed in three stages, exposing and freeing the sac, ligation at the neck, and (except in young children) repair of the inguinal canal. These will be discussed in detail later.

3. **Inadequate after-treatment.**—It is a general rule that an adult patient should remain in bed for three weeks after a radical cure, for the following three weeks he convalesces and for the next six weeks he avoids any strain or vigorous muscular effort. During convalescence he is wise to carry a walking stick as a constant reminder that he is a semi-invalid although he may feel robust, and if his surroundings entail ascending and descending stairs he should go up or down one stair at a time, stepping off with the leg on the opposite side to the operation. This has a psychological as well as a physical effect, and helps to remind the patient of his limitations. A further important part is that no sea voyage is permitted until convalescence is completed, as the vomiting associated with sea sickness may easily cause recurrence.

Operation.

The various difficulties and dangers can be discussed in connection with the three steps of the operation.

1. **Exposure and freeing the sac.** In children the sac is notoriously thin and closely adherent to the structures which form the cord. Care and patience are necessary in order to avoid splitting the sac in the region of the internal ring. In long-standing herniæ, which have been protected with a truss, and especially in recurrent herniæ, the sac is also firmly adherent to the cord. Veins forming two pampiniform plexus are prone to tear, but they can usually be ligatured without difficulty. The vas deferens has been torn or divided as a result of carelessness or impatience, in which case restoration of patency is most easily accomplished with the aid of a round-bodied needle. The two ends of the vas are threaded on the needle and approximated, so that the needle forms an internal splint. The vas is sutured with fine thread or silk and the needle is then pushed through the wall and removed. In adherent cases (as with diverticula elsewhere) opening the sac and inserting a finger is helpful in stripping off the surrounding structures. When the sac is isolated it is cleared as far as the internal ring. The neck is recognised as it is usually surrounded by a collar of canary-coloured extraperitoneal fat, and in the case of an indirect hernia, the deep epigastric vessels are sometimes seen on the inner side of the neck.

FIG. 2.

Hernie-en-Glissade.

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In the case of a sliding hernia (hernie-en-glissade) separation presents peculiar difficulties owing to retroperitoneal cæcum on the right side and sigmoid

colon and its mesentery on the left. (Fig. 2.) When the posterior layer of the sac is stripped from the back of the inguinal canal the bowel is carefully freed, but the greatest danger consists in damage to a sigmoid artery on the left side. Such an accident can only be remedied by resection and anastomosis of the corresponding portion of bowel, and a safety-valve cæcostomy.

A further danger in separation of the sac is injury to the bladder. An extra-peritoneal pouch is apt to be dragged into the canal on the inner side of the neck, particularly in large direct herniæ. Therefore isolating the neck on the inner side must be accomplished carefully and thoroughly, carefully so as not to tear the thinned bladder wall, and thoroughly so that the bladder will not be included when the neck is ligatured. The reddish muscular fibres of the bladder are readily recognised by an observant surgeon. Injury to the bladder is revealed by a trickle of urine, and no ill effects follow if the rent is closed with two layers of catgut sutures and a self-retaining catheter is kept in the bladder for ten days. Should a portion of bladder be inadvertently ligated and severed at the neck of the sac the consequences are likely to be serious, as extravasation of urine follows absorption of the catgut ligature five or six days later.

2. Opening and Ligation of the sac. Unless the sac has been opened in order to facilitate isolation or reduction of contents it is invariably opened before ligation. A probe is passed through the neck so as to guarantee that the supposed sac is not a loculus, or a peritoneal pouch in association with an infantile hernia. Contents of the sac are freed and returned to their former abode with the exception of a suspicious appendix or in some cases of omentum. Adherent omentum, or a large mass which is difficult to return, is removed. If the portion of omentum which requires removal is small, transfixion with catgut is adequate, but if at all bulky then a row of interlocking sutures is advisable, in order to obviate slipping of a greasy ligature and consequent internal hæmorrhage. After removal of a large mass of omentum hæmatemesis sometimes occurs owing to interference with venous drainage of the stomach (as after splenectomy). It is, however, comforting to know that after a few hours the venous collateral circulation adjusts itself, after which the hæmatemesis ceases.

In the case of a large neck closure with a continuous catgut suture is obviously required rather than transfixion.

3. Repair of the inguinal canal. In the majority of cases suture of the conjoined tendon to Poupart's ligament, either behind (Bassini) or in front (Halstead) of the cord, is easy and adequate. In the case of children this step is unnecessary, and some surgeons even consider that it predisposes to infection, and traumatises the tissues. Large herniæ frequently require some accessory means of strengthening the inguinal canal. The old-fashioned silver filigree is now obsolete, and the

method which finds most favour is repair with strips of fascia lata, which are threaded on Gallie's wide-eyed needle. (Fig. 3.) In cases requiring less extensive measures

FIG. 3.

Hernioplasty. Strip of fascia lata being used to darn the walls of the inguinal canal.

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the canal can be strengthened by a flap of rectus sheath which is turned outwards and sutured over the opening.

When stitches are inserted the outermost should be at the outer margin of the internal ring as this is the commonest site for recurrence. The ilio-inguinal nerve is usually to be seen as it lies on the internal oblique muscle, and it must not be included in any stitch. Damage to this nerve is liable to cause paresis of the conjoint tendon and consequent predisposition to recurrent direct hernia. As stitches are inserted into Poupart's ligament the needle should be passed between fibres at varying levels so as to mitigate against splitting the ligament. When all the stitches are inserted they are tied firmly but not tightly. If structures are approximated too tightly the stitches are apt to cut through should the muscles contract vigorously as a result of coughing or post-anæsthetic vomiting.

Puncture of the external iliac vein is an accident which is avoidable if the point of the needle is passed under Poupart's ligament before piercing it, so that the ligament is pierced in an upward direction. Should the accident occur Poupart's ligament must be divided so as to expose the torn vein, and if possible a lateral ligature is applied. If the vein tears and ligature is impossible then the surgeon may have to be content with the application of a pair of forceps, which are first loosened and then removed a few days later.

Repair of a sliding hernia is accomplished by excising the unattached portion of the sac and then stripping up the bowel or mesentery from the posterior wall of the canal. The bowel is then pushed within the abdominal cavity, and the peritoneum which covered it is sutured to the fascia of the iliac fossa so as to form a shelf which supports the bowel.

In males, closure of the inguinal canal and suture of the external oblique aponeurosis is performed with discretion, so as not to compress the vessels in the cord. Testicular neuralgia and even atrophy of the testicle follows too complete a closure.

Finally, in all cases meticulous hæmestasis is essential: infection of the wound and subsequent fibrosis of muscles, is the commonest cause of recurrences, and an extravasation of blood in any situation is apt to become infected and suppurate.