



# MODERN OPERATIVE SURGERY

EDITED BY THE LATE

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*(By courtesy of Sir Harold Stiles, Mr. Henry Wade and the Edinburgh Medical Journal.)*

## CHAPTER XXIII

# OPERATIONS FOR HERNIA

By G. GREY TURNER

**History.**—Operation for the radical cure of hernia is one of the oldest of surgical procedures, and many methods have been employed. Those known by the names of their authors, Wood, Czerny, Annandale, Mitchell Banks, Ball, Macewen, and Kocher, to mention only a few, described during the period 1876–90, have now mainly an historical interest. Incidentally, it is important to remember that a great deal of the detail of modern wound treatment has been evolved in connection with the radical cure of hernia. The greatest advance in the operation resulted from Bassini's work, first described in 1888.\* The fundamental steps consisted in dividing the fibres of the aponeurosis of the external oblique sufficiently to expose the whole of the inguinal canal, separating the sac from the cord to the highest possible point, transfixing and tying it at the neck, removing the sac, transplanting the cord, and suturing the conjoined tendon behind the cord to the inner surface of Poupart's ligament. This soon became the standard operation, and forms the basis of most methods at present in use. Modifications have arisen from time to time, the most important being the Wölfler operation, similar in all respects to Bassini's, except that the cord is not transplanted, and resembling the Bevan operation, which has a particular value in the cure of congenital hernia in children with incomplete descent of the testis.

Halsted, in 1890, modified the Bassini operation by dividing, not only the external oblique, but also the internal oblique and transversus muscles and the transversalis fascia to a point 1 in. external to the internal ring, forming a new internal ring external to the original one, transplanting the cord, which had been stripped of most of its vessels, and uniting all the divided muscular and aponeurotic structures behind the cord, which thus came to lie directly under the skin. Lockwood displaced the neck of the sac, after transfixion and ligation, high up under the transversalis muscle by passing the long ends of the ligature through the transversalis and internal oblique muscle from within outwards, and tying the ends together on the surface of the internal oblique under cover of the aponeurosis of the external oblique. Polya, in 1905,† realizing that recurrence takes place, if at all, at one of two points—(a) at the lower angle of the canal or (b) at the entrance of the cord to the canal—adopted the Halsted method of resecting the redundant vessels of the cord, and displacing the latter.

\* On December 23rd, 1884, Bassini carried out the first of the operations for hernia now known by his name. Four and a half years later the patient was found to be free from recurrence which was considered a remarkable result at that time.

† *Centralbl. f. Chir.*, 1905, No. 9, xxxii, 210.

To strengthen the weak spot at the lower angle of the canal he opened the sheath of the rectus for a distance of some two inches from its pubic attachment, mobilized this muscle, and sutured it to Poupart's ligament.

Thus, for over sixty years the root idea of Bassini's operation has been accepted, and such variations as have been suggested have had for their object the strengthening of degenerated structures or details of technique. Bassini's operation is admittedly adequate where muscular development is satisfactory, e.g. in the ordinary oblique inguinal hernia of congenital type occurring in children or healthy young adults. When the hernia is associated with or has resulted from weakness or degeneration of the abdominal muscles, particularly of the conjoined tendon, additional steps, such as the overlapping of the external oblique aponeurosis, the use of the rectus muscle or sheath or the employment of fascial or other special sutures are indicated. Especially is this the case in direct inguinal hernia.

From time to time surgeons have supplemented their efforts at radical cure by the use of metallic suture material. In 1909 Lawrie McGavin published\* an account of silver wire filigrees buried in the hernial sites, where they are intended to remain, and after incorporation with the tissues to act as barriers against recurrence. The lapse of time is showing that this plan has attained more success than has previously been acknowledged. In their search for some yet better method Gallie and Le Mesurier† experimented with strips of fascia lata used as sutures. This was soon recognized as a new principle, for it was proved that the strips become incorporated with the tissues and survive as a permanent addition to the architecture of the areas in which they are employed. Their first paper was published in 1924 and since that time the method has been subjected to an extensive world-wide trial and is recognized as a great addition to the solution of the hernia problem.

A revival of interest in the old method of injection for the cure of hernia took place some years ago and was conscientiously subjected to further trial, notably by Delisle Gray and A. E. Porritt‡ in this country.

In every decade there are surgeons who become dissatisfied with the results of operations designed for the radical cure and this attitude is always intensified in war time. The winter of their discontent does nothing but good, for it is well that the attention of the profession should be focused on those procedures which, lacking the elements of novelty, are too often treated with dangerous complacency. But all who have looked into this question with unbiased minds have often to admit that the degree of non-success which they deplore is due to causes which are preventable. Too often the operation for the radical cure is regarded as trivial or unimportant, and left to enthusiastic but inexperienced juniors, who have often but a superficial knowledge of the anatomy of the parts concerned and a poor

\* *Brit. Med. Journ.*, Aug. 14, 1909.

† *Brit. Journ. Surg.*, 1924, xii, 289.

‡ *Pro. Roy. Soc. of Med.*, 1938, xxxii, 893.

understanding of the essentials necessary for repair. Even with ampler knowledge they often lack the technical skill which should be brought to every detail of this operation which is often of such importance for the comfort and welfare of the patient and for his economic position.

The history of the operative management of hernia throughout the last half-century has emphasized the fact that all hernias of any group are not necessarily the same and that individual consideration is required in planning their management. Unfortunately the basis for the management of hernia remains hypothetical, for with the exception of the presence of a congenital sac or the assumption of inherent weakness the cause is not known. The anatomical aspect of the problem has been minutely studied in still life throughout the ages but there is much more to be done on the study of the living functional anatomy. Such studies should be made in the conscious patient and when in the vertical as well as the horizontal position. Lytle\* of Sheffield has already made contributions along these lines.

**Methods available.**—There are only two methods which hold out a prospect of permanent cure in hernia—open operation and closed injection. The latter only requires mention in a work on operative surgery. It has the one outstanding advantage that it is ambulatory and, in fact, many patients continue to follow their occupation while undergoing treatment. The method is usually limited to inguinal hernias that are completely reducible and can be efficiently controlled by truss which *must* be worn continuously throughout the treatment. Whilst the size of the hernia seems to be of little importance, provided it is completely reducible, an excess of subcutaneous tissue is a contra-indication. From 8 to 12 injections are required at twice-weekly intervals. Complications are few, but local inflammations and even peritonitis have occurred. The recurrence rate is stated to be about 8 per cent., but it is said that some of these can be successfully treated by a further series of injections. No large series of cases appears to have been followed up over a period of several years.

In spite of anything that can be said in its favour the method has never been generally adopted in this country. In America the method has been fairly extensively used (*a*) in vigorous healthy young men who wish to escape hospitalization, and (*b*) in old feeble subjects in order to avoid the possible risks of open operation and the necessary confinement to bed.

**Principles of operation.**—The principles underlying the radical cure of all hernias are the same, namely, the complete isolation and removal of the whole sac, and the restoration and strengthening of that part of the abdominal wall through which the hernia has protruded. To attain these objects very numerous plans have been adopted and modifications are constantly being introduced, but the prospect of their success depends on the observance of these principles.

\* *Brit. Journ. Surg.*, 1945, xxxii, 441.

**Indications for the radical cure of hernia.**—In these days there are very few cases of hernia that need be refused operation. Apart from the inconvenience which hernia causes, the real danger is strangulation, which still claims a mortality of about 20 per cent., whereas the mortality of operations for radical cure is considerably less than 1 per cent. This alone is a very cogent argument for operation. An attack of strangulation, even if the patient recovers without surgical interference, is always an indication for subsequent operation, for this complication is very apt to recur. With the methods of treatment now available, diabetes, or renal and cardiac disease are no longer absolute contra-indications, though they each require special measures to render operation justifiable. The greatest barriers to success are ruptures of so great a size that the contents cannot be comfortably returned to the abdomen; persistent and incurable cough; or advancing obesity which cannot be controlled by diet.

In old-standing cases it is necessary to be sure that the hernia is not just a cloak for some other disease which is the cause of symptoms the patient unwittingly attributes to his obvious encumbrance. For instance, fat women with umbilical hernia often suffer from gall-stones but invariably attribute their biliary attacks to the rupture. Similarly, elderly men who have endured the inconvenience of a hernia for years will often begin to think of a radical cure when symptoms due to enlarged prostate become troublesome. Many other combinations occur such as obstructive symptoms due to carcinoma of the rectum or the general weakness associated with diabetes which have both been attributed to long-standing hernia.

There is a recurring urge to simplify the operation and many conscientious surgeons revolt at disturbing the anatomy of the canal in healthy young adults. They claim that it should be enough to completely and thoroughly remove the sac and to do nothing more. But this is a fallacy: it is the old operation in common use before the Bassini method was generally adopted, and those of us who are sufficiently senior recall the large proportion of recurrences which invariably followed. The writer has often been witness to the revival of the practice and always with the same result.

**The object of intervention.**—In children and healthy young adults operation can be undertaken in the confident expectation that the hernia will be permanently cured. In elderly and less robust members of the community and in those suffering from very large hernias operation may still be the best treatment, not only to remove the dangerous risk of strangulation, but to add to comfort and to promote well-being, but it cannot be undertaken with the same prospect of lasting cure. These patients should be warned that if signs of recurrence become manifest they should report for advice. Recurrence in the young adult usually justifies further operation. In the more elderly it may be wiser to fall back on a properly fitting and well applied truss. If the apparatus is used when the relapse first appears

it will prevent deterioration of the condition and may enable the patients to fulfil those activities for which they are otherwise fitted. In this way operation may be the means of exchanging a heavy burden for a manageable inconvenience.

Though the surgeon should not be easily deterred he should hesitate to make rash promises about the prospects of radical cure. Apart from other factors age is not necessarily a bar to successful intervention but the prospects of radical cure become less likely as the years advance. The advantages of the operation have proved so great that its reputation can sustain the opprobrium which naturally attaches to the occasional recurrence.

**Suture material for the operation.**—Many surgeons use chromicized catgut throughout, No. 3 being suitable for the deep sutures and No. 1 for the other parts of the operation. The Halsted school still use very fine black silk, and there are an increasing number who follow the Kocher technique and use thin Chinese twist silk. Floss-silk for lattice repair, various kinds of metal-wire and wire gauzes are also though less frequently employed. Kangaroo tendon seems to have quite gone out. But surgical memories are short and it is apt to be forgotten that every now and again troublesome sinuses follow the use of unabsorbable material. Whatever is used, it must be realized that the final success of the operation does not depend on the suture material but on the power of the tissues to unite. To give them the best chance, accurate and close apposition without tension and healing without infection are essential.

The use of living sutures introduced almost a new principle in the treatment of hernia.\* The method was very carefully worked out by Gallie and his co-workers in Toronto. Their experiments showed that the lateral approximation of muscles to fibrous structures results in only a feeble union by scar-tissue. They found that living auto-genous sutures of fascia or tendon survived and became permanently incorporated with the tissues. They used this method in certain types of hernia, especially the direct inguinal variety, umbilical and ventral hernias, incisional hernias and recurrent cases. The sutures are cut from the fascia lata or from the external oblique bordering the inguinal canal. When the fascia of the thigh is employed it is either exposed by a long incision on the outer side, the strips being cut with a sharp scalpel or strips are cut by a special instrument called a fasciatome which can be introduced through a small skin incision at either end of the proposed suture. Generally speaking the open incision and the use of scalpel or scissors has been the most satisfactory. The strips are about 10 in. long and one-quarter of an inch wide and in an ordinary case two, or at most three, suffice. The gap left in the fascia is closed whenever possible, but little inconvenience has followed when this has not been done, provided, of course, that the skin incision is carefully sutured. Occasionally a large bulging

\* Gallie and Le Mesurier, *Brit. Journ. Surg.*, 1924, xii, 289.