THE TREATMENT OF MID-LINE VENTRAL HERNIA

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A new surgical operation or modification has often the unhappy knack of leaving complications or ill effects in its trail, often so marked as to render null and void what at first promised to be a surgical success. It is a curious fact that since Lister's time, when abdominal operations first became prevalent, incisional hernias should have been and still remain such an unfortunate complication. No surgeon, of whatever standing, can claim exception to this misfortune; for as long as surgeons operate so long will it occur. It has been truly said that the sole method of avoiding incisional hernias is to avoid operating.

A small ventral hernia does not present any great difficulty in its repair. It is the large umbilical and incisional hernias which present difficulties to the surgeon, and I wish to direct attention to these and to report the results of my operation in these cases.

There are three layers of the abdominal wall which have to be taken into account in the repair of a ventral hernia: the fascia transversalis, the muscular layer, and the rectus fascia, all of which must be replaced in their natural position. Of these three the muscle is by far the most important, and, strange to say, it is this layer which has been neglected in almost all types of operative repair. To guarantee a successful operation it is of paramount importance not only to mobilize the recti muscles the whole length of the hernial opening, but to see that they are approximated in the mid-line. Failure to achieve this will result in the rectus fascia having to shoulder the entire resulting strain. Fascia, however dense, will stretch in time, and a recurrence will invariably follow.

Another consideration of great importance is that of tension. If at the completion of the operation any layer is under undue tension failure is almost certain to ensue. Tension causes strangulation of the tissues that results in sloughing and eventually the formation of scar tissue, which is a useless barrier to protrusion of the bowel. To quote Dickson (1935) on this subject: "It is much more important to direct effort to relieving wound tension than it is to devise some new type of suture material. A wound which is completely relaxed and without tension will have a good blood supply, and no matter what suture material is used, whether absorbable or non-absorbable or, it might be said, whether any at all is used, the wound will heal."

Scar tissue is a third factor which must be taken into consideration in the repair of a ventral hernia. It results from previous sepsis or interference with the blood supply at the neck of the sac. Such tissue is poorly supplied with blood, stretches easily, and forms a very inadequate medium for repair. If the operation is to be successful it is essential to excise all scar tissue and unite healthy normal tissue on both sides.

From the foregoing, three aphorisms arise that are essential for sound operative technique in the repair of a ventral hernia:

1. Like tissue must be replaced by like tissue.
2. There must be no undue tension on the wound at the completion of the operation.
3. All scar tissue must be excised.

Considerations of Operation

When confronted with a large umbilical or incisional hernia there are many points which have to be considered before embarking on an operation—the age of the patient, the condition of the heart and lungs, the blood pressure, the condition of the kidneys, the amount of obesity, and the general condition as a whole. Again, are we dealing with a simple hernia, or is there an obstruction or strangulation of the bowel beneath? Operations of this calibre in the aged (the type of case usually met with) are serious undertakings, for if the operation is carried out thoroughly it is a long and shock-producing procedure. With so many factors to be taken into account it is obvious that no single type of operation can be suitable for all cases. When conditions are favourable and the patient not too old no operation can compare with the Gallie (1923) graft. I think this has been one of the great discoveries of the past decade, and must have brought relief to countless sufferers. When carried out thoroughly the results are brilliant, and operations which before the advent of the Gallie graft were impracticable have now become commonplace.

But what of the patient whom we consider too great a risk for an operation of this length? What of the case with an underlying obstruction which we want to finish as quickly as possible? And again, what of the case to be operated upon for some other abdominal condition in which there can be no justification for spending a long time over the repair? If these patients can be cured of their hernias without endangering their lives it is obviously our duty to do so.

For some years I have been practising an operation that I have found eminently suitable for the "risky case" and for those cases complicated by obstruction or strangulation, or in combination with other abdominal operations. It fulfils my three aphorisms, does not add a great deal of time to the operation, and, above all, the results have been most satisfactory and so far the hernia has not recurred.

Pre-operative Precautions

It is advisable to have these patients flat in bed for some days before operation provided there is no acute complication. This allows the bowel to settle in the abdomen and to get accustomed to its new position.

A second point we must guard against is increased post-operative intra-abdominal pressure, which is a real danger to life following these operations. Pressure on the diaphragm interferes with respiration and predisposes to hypostatic pneumonia. It also produces cardiac symptoms from pressure on the heart and abdominal vessels. Acute dilatation of the stomach and ileus are fairly frequent complications. Ileus is a mysterious and grave complication of this operation. It is akin to the ileus associated with a tight spica plaster with which all orthopaedic surgeons are well acquainted. It is almost exclusively confined to hernias in the upper abdomen, and occurs whether the peritoneum has been opened or not. I have had two recent cases of ileus following the Gallie operation, and strangely enough the peritoneum was not opened at either operation. One of the patients unfortunately succumbed, while the second recovered after several anxious days. This type of ileus is undoubtedly associated with increased intra-abdominal pressure caused by sudden compression of the upper abdomen, for when it appears in conjunction with a spica plaster the mere act of splitting up the plaster will relieve the ileus. How increased intra-abdominal pressure actually brings about an ileus I do not know, nor

have I ever had a satisfactory explanation of it, but that it is a grave complication there is no denying.

As a precaution against post-operative ileus it is advisable to strap the upper abdomen for some days prior to operation. The strapping should be gradually tightened each day until the abdomen is firmly compressed. I believe that this gradually increasing pressure is a safeguard against post-operative ileus.

The Anaesthetic

Either local or spinal anaesthesia alone should be used in patients over 40 years of age. The older the patient the safer the operation becomes if local anaesthesia is used. A wide field of infiltration is often required, but this should not be a deterrent to its use. Spinal anaesthesia is very fine to work with, but it has many contraindications in the aged.

The Operation

For subumbilical hernias the modified Trendelenburg position is a definite aid in stout subjects, while the reverse position is true for upper abdominal work. The skin incision should extend well beyond the hernia at both ends of the wound, and any previous scar should be excised. In the case of umbilical hernias where the umbilicus has been obliterated or distorted a new umbilicus should be provided for when making the skin incision, as practised by Bonney (1935). The sac, when reached, is freed from the subcutaneous tissues; the rectus sheath is then opened in a vertical direction, and this incision should extend into the normal area of the abdominal wall at each end of the wound. The sac can now be completely freed. Unless the sac is large, as in an umbilical hernia, it is quite un-

Fig. 1.—Showing the releasing sutures in the recti sheaths after the peritoneum has been closed and all scar tissue removed.

Fig. 2.—Showing the recti sheaths and muscles approximated by interrupted catgut sutures; each suture passes through the muscle and fascia.

necessary to open or remove it; if the sac is left an enormous amount of time can be saved. When such a sac is opened the bowel or omentum is often found adhering to it. If any attempt is made to free such adhesions large areas may be left that require reperitonizing, which is time-absorbing and shock-producing to the patient. If it is possible the sac should be inverted and the fascia transversalis sutured.

The next step is the excision of all scar tissue associated with the rectus fascia. This must be all very carefully removed as far laterally as the rectus muscle on either side, so that when the fascia is sutured normal healthy tissue is left. It is of paramount importance that this part of the operation should be carried out with great care at each extremity of the wound, for these are the danger-points and the most likely sites for recurrences to take place. The recti muscles are now freed from the peritoneum, special care again being taken to mobilize the muscles thoroughly at either end of the wound. The subcutaneous tissue is next dissected back to the lateral border of the recti muscles and a vertical incision is made in the rectus fascia near the lateral border of the muscle, as shown in Fig. 1. The wound is now ready for suture. It should be noted that the anterior sheath of the recti muscles is not disturbed; this is important in aiding the approximation of these muscles.

Interrupted No. 5 catgut sutures are inserted, each suture passing through the recti muscles and fascia on either side, as shown in Fig. 2. Figs. 3 and 4 show a cross-section of the wound before and after the insertion of these sutures. The wound is then closed with drainage, which should not be omitted.

Fig. 3.—Showing a cross-section of Fig. 1.

Fig. 4.—Showing a cross-section of Fig. 2. Note how the muscles return to their normal dimensions when approximated in the mid-line.

Commentary

Several points of interest arise in connexion with this operation. First, what is the effect of the aperture left in the rectus sheath? Does it cause any weakness of the abdominal wall, and will a hernia occur at this site? Does it remain devoid of fascial covering, or does the fascia regenerate? So far as I can ascertain from examination of these cases some time after operation there is no weakness of the abdominal wall at the site of the incisions in the recti sheaths. This bears out what has always been my contention—that it is the rectus muscle which is the important constituent of the abdominal wall in the prevention of hernia. Fascia has for ages past proved quite inadequate in preventing the protrusion of the bowel unless the muscles are approximated at the same time. Failure to appreciate this point has led to disastrous results in the past. The main function of fascia in the body would appear to be to facilitate the free and smooth working of muscle, to prevent any undue mobility, and to protect it against any undue pressure. It is strongest where pressure is likely to be greatest, as in the palm of the hand and sole of the foot, and weakest where muscle play is greatest, as over the biceps and calf muscles. That the absence of fascia is no great handicap is shown in the thigh when strips of fascia lata are removed for the Gallie operation. In a similar way the absence of fascia over a portion of the recti muscles leads to no ill effect. I am certain that it will never lead to a hernia at this site, and my results so far have borne this out.

It is difficult to dogmatize about the gap in the rectus fascia, but in all probability it is filled by scar tissue. Nature generally attempts repair by this method.

A second question that arises is what are the merits of this operation as compared with the Gallie graft, and should it take the place of this operation?

I do not think this question can be answered on such a small series of cases as I can present, for I have performed this operation only on cases which I have not considered suitable for the Gallie graft. The Gallie operation is so brilliant that one hesitates to suggest any other operation to displace it. In future I intend to apply my operation in all cases of ventral hernia. I do not say this to belittle the Gallie operation in any way, but merely to explore the results over a larger series of cases. I feel convinced that there is a definite place for such an operation as I have described, particularly in the aged, when acute conditions are present, and also in connexion with other abdominal operations.

A third consideration of importance is that of increased post-operative intra-abdominal pressure, which may be a grave complication of the Gallie operation in upper abdominal hernias. As already stated, I have had two such cases recently, one of which ended fatally. In the operation I have described there is no tension on the wound at the completion of the operation, so this complication is eliminated.

Finally, my operation is based on the fact that muscle, if properly mobilized, will stretch to any extent when supported by fascia, and that fascia itself has practically no elasticity. When the muscles are freely mobilized there is rarely any difficulty in approximating them in the mid-line, and the additional support of the fascia will prevent the possibility of the sutures cutting through the stretched muscles after the operation. That the fascia will not stretch to the mid-line without undue tension is obvious, but when the rectus fascia is incised as I have described tension is non-existent.

Results

I can report but thirteen cases of this operation. All the patients are alive and free from recurrence. These cases extend over a period of six years, so that the majority have had several years' freedom from their hernias and may, I think, be looked upon as cured.

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HEREDITARY SEBACEOUS CYSTS

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(WITH SPECIAL PLATE)

Sebaceous cysts are common, yet it is remarkable that little is known of their exact mode of origin. It is known that these cysts on occasion may be inherited. Paget (1870) noted that "perhaps in the majority of cases the bearers of these have known one or more members of their family similarly endowed." We describe below a family in which multiple sebaceous cysts occur in five members of three generations. We know of only five similar families reported in the literature.

Paget (1870a) refers to a case observed by Mr. James Reid. The patient was a woman aged 80 years, who had numerous sebaceous cysts on the scalp. Three of her daughters showed similar cysts. Two and a half years before the death of the patient one cyst became inflamed; it was opened, and a discharge of sebaceous matter followed. A tumour developed at the site, and grew to a mass nearly five inches in diameter before she died. Klausner (1917) described two families showing inherited multiple sebaceous cysts. In one family two brothers aged 18 and 24 years, and one of their three sisters aged 15 years, were affected; the cysts had existed from "earliest youth." In the second family cysts occurred in three generations. Two brothers, aged 32 and 31 years, had cysts from childhood. Their mother and grandmother had similar lesions in the skin. Prakken (1933) described a case of multiple sebaceous cysts in a man aged 48 years. The cysts had been present from the age of 12. His sister and his father were similarly affected. Parkes Weber and Schlüter (1936), at the Royal Society of Medicine recently, showed two brothers aged 50 and 59½ years who suffered from multiple sebaceous cysts. The swellings were first noticed