Interstitial herniae and their treatment / by W. McAdam Eccles.

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AND THEIR TREATMENT

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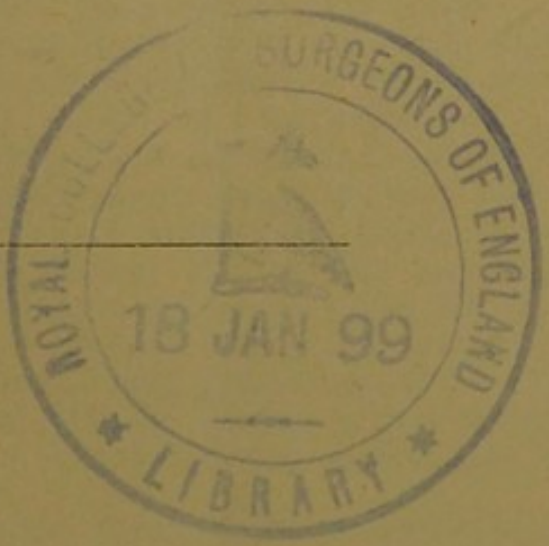

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INTERSTITIAL HERNIÆ AND THEIR TREATMENT.[1]

I HAVE to thank you for the honour you have done me in allowing me to read a paper before this ancient medical society, one of the oldest in the kingdom, founded as it was in the year 1794. The subject which I have chosen is one that I hope will prove of interest, for so far as I know it is not often dealt with and yet it is of considerable importance. Herniæ are sadly too common, inguinal herniæ form a large proportion of these protrusions, and inguinal herniæ assume an immense number of variations. It is to one class of these that I would direct attention in this paper—interstitial inguinal herniæ.

By the term "interstitial" is meant an inguinal hernia, a part or the whole of the sac of which lies in the planes of the abdominal wall. Normally—if one may use such an expression for a lesion—the parietal peritoneum which in an inguinal hernia is stretched and displaced until it traverses the inguinal canal remains either confined to that passage or transgressing the outlet, the superficial ring, reaches the scrotum or labium. Here is the well-known complete inguinal hernia. But suppose that for some reason—and what these reasons are will be observed later—this peritoneal pouch instead of making its exit from the canal dissects up one or other of the planes of the anterior abdominal wall; it is then justly spoken of as an interstitial sac. Such an abnormal position of the sac of an inguinal hernia is not so very rare and it is because its presence may lead to very grave consequences that I venture to bring forward the subject. Interstitial herniæ are usually classified under three varieties: (1) where the adventitious sac lies in the plane between the internal and the external oblique muscles of the abdominal wall; (2) where the sac is placed between the external oblique muscle and the superficial fascia and skin; and (3) where the peritoneum forms a

[1] A paper read before the Plymouth Medical Society on Nov. 9th, 1898.

pouch in the extra-peritoneal tissue and therefore between the peritoneum and the fascia transversalis. Of these three forms the first is undoubtedly the most frequent and the last that which is the least often recognised.

Causation.

As to the causation of interstitial herniæ much speculation still exists. Congenital inguinal herniæ occur in large numbers and in the male infant they are generally associated with some want of proper development. This defect not infrequently shows itself in the arrest of a testis, sometimes in the inguinal canal, sometimes just external to the superficial ring, and occasionally within the abdomen. Now interstitial herniæ in the male sex are so commonly accompanied by an abnormal position of the testis that it would seem that there is a causal relationship between the two conditions. But interstitial herniæ occur also in women and, comparatively speaking, more frequently in this sex than in the opposite one. If 1000 cases of inguinal herniæ in females be taken—and perhaps I may remark here in passing that inguinal herniæ in the female subject are more frequent, if all ages be taken into account, than are femoral herniæ,—if 1000 cases therefore are examined in the female it will be found that about 6 are of the interstitial variety. But if a similar number of inguinal herniæ in the male sex be observed it will be only one that is of the interstitial form. The occurrence of interstitial herniæ in the female sex obviously disposes of the fact that partial or complete rentention of the testis is the sole cause of an interstitial hernia being formed. But the question that will at once present itself is, Are these cases of interstitial herniæ in women associated with a congenital herniation of the ovary? As far as I know this has not been demonstrated to be the case.

What, then, is a common factor which can be found in both sexes and one which may be taken as a cause? It will, I think, be found in the circumstance that in almost every instance of interstitial hernia, at any rate of the first or second varieties, there is a patent processus vaginalis or canal of Nuck. The case may therefore be stated thus: given a male infant who has a fully descended and properly developed testis, even if he has a processus vaginalis, yet he is very unlikely to be the subject of an interstitial hernia, though he is likely enough to acquire an ordinary variety of such a

protrusion. On the other hand, take a male child, particularly of a few years of age, who has still an open process and an only partially descended testis, then will be present just the conditions which tend towards the formation of an interstitial hernia. The unclosed process of peritoneum allows the descent of viscera, the abnormally situated testis prevents the passage of the same into the scrotum. As an instance of this I may allude to the case of a young man, aged twenty-six years, whom I recently saw with an interstitial hernia of the first variety. As long as he could remember he had had a swelling in the right groin and at the age of ten years he commenced to wear a truss for the same. He was also confident that up to the age of sixteen years he had never been able to feel the right testis in the scrotum, not even at its upper part. When I saw him at the age of twenty-six years he had a well-marked interstitial hernia and the right testis, although smaller than the left, was well into the scrotum, at a position where the patient averred that he had only been able to feel it since he came of age. In this case probably the sequence of events was as follows. He was born with his right testis just within the superficial ring, together with a patent processus vaginalis reaching to the end of the canal. Into this there protruded at an early age some of the viscera of the abdomen. Then seeing that the testis blocked the way at the exit of the canal and that the intra-abdominal pressure was ever at work above the peritoneum was gradually stretched in the line of least resistance—namely, into the plane of the abdominal wall between the internal and the external oblique muscles. Still later the force of the protruding contents of the sac led to the testis, although tethered by its cord, being forced through the ring into the upper part of the scrotum, with the formation of a short scrotal portion of sac.

But I have now to consider what is the second cause at work in the female sex in the production of an interstitial hernia. It has already been seen that in this sex, as in the male, there is usually present a patent process of peritoneum, but there is no herniated ovary to take the place of the partially descended testis. In the female, and especially in the female infant, the superficial ring is less of a real opening than it is in the male. In this fact, then, probably lies the cause that we are in search of, for as in the male the testis blocks the way, so in the female the narrow aperture bars the exit of the hernia and the peritoneal pouch is forced again in the line of the least resistance. In females interstitial herniæ

rarely assume any large proportions till adult life has been reached.

There are two other possible causes of interstitial herniæ and these may both of them act in either sex, but perhaps only in adult age. The first of these is the action of an ill-fitting or improperly adjusted inguinal truss. If, as is so frequently the case, it happens that a measure is taken for the truss which is of too great a length it will necessarily follow that the pad of the instrument will come to lie over the superficial ring. The effect of this in an oblique inguinal hernia may be to effectually prevent the descent of the viscera through the exit of the canal, but to offer no protection against their prolapse into the canal itself through the deep ring. Thus the intra-abdominal pressure may gradually provoke the formation of a secondary pouch from that part which lies in the canal. Again, supposing that a truss, properly formed and accurately measured for, is adjusted too low down so as to lie once more over the superficial ring, and not over the deep ring and the canal, exactly the same circumstances may occur. The second cause that should be mentioned is *réduction en masse*. If this is produced by forcible taxis, so that the original sac is dislocated from below into the tissues constituting the abdominal wall, doubtless a rare form of this not frequent accident, it will follow that in reality an interstitial hernia is formed and one which may be termed a traumatic interstitial hernia. Interstitial herniæ are more common on the right side of the body than on the left, probably for the reason that the right testis is more frequently arrested than the left.

Signs, Symptoms, and Diagnosis of Interstitial Herniæ.

1. The first variety of this form of inguinal hernia has a ventral swelling, but one that is not so apparent as that which occurs in the second form. The swelling that is so distinct in the adult will in the infant be but slight and it is this fact that leads to this class of hernia being overlooked in its early stages. But if the conditions which are favourable to its production are present it may be surmised that it is probable that the hernia may be developing. The projection in its more advanced stage presents itself as a flattened oval tumour, which lies above and parallel to Poupart's ligament and extends upwards and outwards

towards the anterior superior spine of the ilium. Occasionally the direction is towards the umbilicus or nearly vertically upwards. The reason of the passage of the sac outwards is probably that it is the line of least resistance, since the muscles are less closely applied to one another in that region than towards the linea semilunaris. If a patient who is the subject of this form of hernia be requested to assume the horizontal posture most if not all of the swelling will disappear, but if then he be asked to cough a characteristic sign will present itself. As the expulsive efforts are made the viscera descend and then gradually, as it were, dissect up the plane of the abdominal wall towards the anterior superior spine. I have seen one instance where this dissection was very slow, but in the end reached almost to the level of the umbilicus. Sometimes in addition to the portion of the sac that is seen on the abdominal wall there is a part that reaches into the scrotum or labium. If such is present often a very distinct groove marks the limit between the two. The muscles which lie in front and behind the sac in the ventral region are not infrequently much atrophied, so that when they are put into action no very great amount of hardening is felt over the swelling. This first variety of interstitial hernia is usually completely reducible, for the mouth of the sac is generally of some considerable size. Strangulation, however, does occur and when present it may be very severe. There are but few conditions which are likely to be mistaken for this form of inguinal hernia. Indeed, the characteristic shape of the tumour, its evident connexion with the abdominal cavity, and the way in which it appears when the patient coughs, all go to make its recognition a matter of ease. An abscess of the abdominal wall, a collection of pus which has had its origin within the abdomen, a large hydrocele of a patent processus vaginalis of a partially descended testis and a hæmatoma are all swellings which may occur in the same region, and although it is unlikely that any one of them should be taken for the hernia yet it is not so uncommon for the hernia to be thought to be one of them. Obviously an error in diagnosis of this kind might lead to very serious consequences.

2. The second variety of interstitial hernia has also an external swelling and one that is usually, at any rate in its later stages, very well marked. The projection has, moreover, the appearance of being more superficial and can be traced to the superficial ring, which is often of considerable

size. Like that of the first form it has a tendency to progress towards the anterior superior spine of the ilium, but the reason why it should take this course is not so clear as in the former case. It may be that the superficial fascia is less firmly fixed to the aponeurosis of the external oblique than elsewhere. The swelling is not so flattened and there is no hardening of muscle over it as in the first form. There is much more usually a part of the sac in the scrotum in the second variety. It is probable, because adhesions have formed at the upper portion of the scrotum or labium, that the secondary sac has been added to the original one. Occasionally the swelling may be so large and pendulous as to hang over, that is in front of, Poupart's ligament and thus to simulate a femoral hernia. This peculiarity may lead to a vertical incision being made for the relief of strangulation, especially in the case of women. The second variety of interstitial hernia is rather more liable to strangulation than is that which has been above described, but the contents of the adventitious portion of the sac are usually reducible. The differential diagnosis of this form of inguinal hernia is analogous to that of the preceding save for the fact that it may have to be distinguished from a femoral hernia. This may be readily done by observing that the bulk of the swelling has its site well above Poupart's ligament and that the base of the tumour is in the same region. In the male subject it is generally easy to slip the forefinger into the inguinal canal and thus prove that it is empty and that a femoral hernia exists, but in the female this is not so readily accomplished.

3. The third variety of interstitial hernia, in which the additional sac lies in the extra-peritoneal tissue, has no external or ventral swelling, and, as has been indicated, it is rare for this to be recognised except as the result of operation or after death. The secondary pouch in these cases is most usually found in the loose tissue of the iliac fossa, but sometimes it passes between the bladder and the body of the os pubis. In most of these instances of pro-peritoneal herniæ, as they have been termed, there is a sac in the scrotum or the labium. It is difficult to decide in many cases which is in reality the first part of the bilocular sac to be formed. There is the original process of peritoneum in the inguinal canal and probably in most instances this is prolonged into the scrotum or labium, and then possibly as the outcome of adhesions and irreducible contents the secondary sac is gradually

formed in the lax tissue of the sub-serous layer of the abdominal wall. One of the chief interests of this third form of interstitial hernia is the fact that this hidden portion of the sac may give rise to the production of one of the varieties of *réduction en masse*. If a scrotal hernia is not reducible spontaneously and taxis is applied the contents of the lowest part of the sac may be reduced, not into the abdominal cavity, but into that part of the sac which lies above in the iliac fossa. Naturally in the case of a strangulated hernia this result is of very grave import, for the surgeon may conclude that satisfactory reduction has been accomplished, whereas what has really occurred is that the contents have indeed changed their location, but they are still strangulated at the neck of the sac. This circumstance which may arise in almost any case of complete inguinal hernia, though undoubtedly it is infrequent, is one of the arguments for the performance of herniotomy in all cases of strangulation in preference to taxis if not otherwise contra-indicated. In a few rare instances a secondary pouch from a femoral hernia has been found lying in the subperitoneal tissue between the os pubis and the bladder. In the matter of diagnosis of the third form of interstitial hernia, seeing that the secondary sac is hidden and unknown, there cannot be any condition from which to distinguish it, unless strangulation is in evidence. Then the case becomes one of intestinal obstruction associated with a hernia which itself may not show many, if any, of the signs of strangulation. I shall allude to this again.

The Treatment of Interstitial Herniæ.

The treatment of interstitial herniæ may conveniently be divided into two sections: (1) one where the contents of the hernial sac are reducible; and (2) the other where they are strangulated and therefore irreducible.

1. *The treatment of reducible interstitial inguinal herniæ.*— As in the case of any reducible hernia its treatment may be either mechanical or operative. An interstitial hernia is not by any means an easy one to control thoroughly by a truss, particularly if from neglect or otherwise it has assumed somewhat large proportions. There is a tendency for the viscera to "ooze" as it were down into the sac in spite of the pressure of the instrument. In an adult where from any cause an operation is not expedient

an interstitial hernia of the first or second variety will have to be treated by the application of a suitable truss. If the ventral swelling is but slight it may be that an ordinary inguinal truss with the usual-sized pad will be sufficient to retain the viscera within the abdominal cavity. As, however, in adults the sac has reached such dimensions that this form of truss is not very efficient it is generally necessary to employ a variety of instrument fashioned after the model of the inguinal pattern with the pad in the form of an interstitial plate. This extends upwards and outwards from the limits of an ordinary inguinal pad. When such a truss is adjusted to the body the plate will lie over the inguinal canal and cover in addition the area which lies directly above and external to it. A like pattern of truss is often a useful one in those cases of traumatic ventral herniæ after some operations for suppurative appendicitis. It may also if made in vulcanite be employed with great advantage after inguinal colotomy. In some instances of the second variety of the interstitial form of hernia a rat-tail truss may be of very good service, especially where there is some considerable scrotal or labial protrusion. The slightly modified shape of the rat-tail, known as the forked-tongue truss, is more satisfactory in other cases. Passing to the operative treatment of these herniæ, it must be said that they are some of those in which operation is not only justifiable but strongly to be recommended, provided that there are no contra-indications. In young male children the subjects of commencing interstitial herniæ, particularly if they have an arrested testis, have a lesion which can be most satisfactorily treated by operation. In dealing with these there are two important points to be discussed. The first is, what should be done with the secondary sac?, and the second, in a male subject what is the line to be adopted with regard to the arrested testis? When a radical operation is performed for an ordinary scrotal hernia it is not usual at the present day to disturb the portion of the sac which lies outside the superficial ring but to make the incision at once over the line of the canal and then to cut off the sac right up at the deep ring. The same principle may be followed in the case of the interstitial hernia. A free incision exposes the ventral portion of the sac but only that part of it which occupies the place where the inguinal canal should be. The region of the deep ring is then laid bare, the peritoneal pouch at its narrow part is removed flush with the anterior parietal peritoneum, but the greater part of the adventitious sac is left *in situ*. There is

much less risk in doing thus than in widely dissecting up the planes of the abdominal wall. When the secondary sac lies in front of the external oblique one has to deal with a case which is quite similar to an ordinary oblique inguinal hernia. The neck of the sac is still within the canal and this is freed and cut through, while that portion of the sac which is external is untouched. In the instances of young males it is but seldom necessary to introduce many or even any sutures into the muscles, for when once the stretching force has been removed these structures naturally contract and fall into their proper relations. There has been a congenital opening in the parietal peritoneum ; this has been closed and there is no further tendency to the production of an acquired hernia. The second point that ought to be considered is what is the proper line to be taken with regard to the arrested testis. In many cases in children it would be almost impossible to determine accurately whether the testis is normally developed for the period of life. In the adult this is an easier question to answer, but even then it is difficult to say whether a small ill-developed testis may not have the power of secreting spermatozoa. In dealing with cases of arrested testis in radical operations for hernia my usual plan is, if the patient is a child, to always replace the testis in the subserous tissue, while in adults, if the gland is very small, to remove it altogether, provided that the patient consents. By this plan of removal, only of course if the opposite testis is well formed, a very thorough operation on the hernia can be carried out, for the inguinal canal need not in any way be preserved. I do not think that there is much or any benefit, even in infants or young males, to attempt to bring the ill-developed testis down into the scrotum. It is seldom that this can be done perfectly and my own experience is that but little good accrues to the testis which has been so manipulated. Further, I do not think that there is any danger from returning the testis to the extra-peritoneal tissue, where it will lie in comfort and certainly not be more liable to malignant infection than one that is normally placed.

2. *The treatment of strangulated interstitial inguinal herniæ.*—Like any other form of hernia, it is when strangulation occurs that the chief danger arises in interstitial herniæ, but there is even greater gravity in the strangulation of these special herniæ than there is in those of the more ordinary varieties of protrusions. Here there are often

sacs, part of which may lie hidden and part of which may contain bowel which is nipped while other portions are free from the constricting force. For the two former forms of interstitial hernia the treatment when strangulated differs but little from that which would be followed in the case of an inguinal hernia which presented no peculiarities. Taxis is not to be recommended, I venture to believe, in the majority of strangulated herniæ, but it is particularly to be avoided if possible in these interstitial ones. Operation should be undertaken at the earliest opportunity and an attempt made after relieving the constriction and returning the contents of the sac to radically obliterate its neck. Great care has to be exercised if taxis is employed not to mistake the reduction of the contents of one part of the sac into another portion as complete return of the viscera into the abdomen. Again, the same caution must be taken when operating to be fully satisfied that all secondary parts of the sac have been thoroughly explored so that no imprisoned bowel may remain unobserved. In instances where there is a true pro-peritoneal sac in addition to a scrotal, or labial, one, the condition which occurs when strangulation takes place in the hidden part is a difficult one to diagnose with certainty. Generally speaking there will be all the signs of intestinal obstruction, but without the local ones of strangulation in the visible sac, which, however, may present some signs of inflammation. These cases should always be explored in the inguinal region without delay and if no secondary sac containing intestine is found then the case resolves itself into one of intestinal obstruction, the cause of which must lie within the general abdominal cavity, and an immediate laparotomy is called for. The actual strangulation in the third variety of interstitial hernia is usually at the common neck of the sac, but occasionally it is to be found at the entrance to the secondary hidden sac. In cases where *réduction en masse* has occurred and is evidenced by the continuance of symptoms of strangulation it is necessary to perform an operation and that without any delay. Thus the strangulation of an interstitial hernia is to be regarded with extreme suspicion and the prognosis which is given to be one of a guarded nature.

In conclusion, I hope that even if this paper has in it not much that is new, yet that there may be something of practical interest to each one of us, for we may be any day called upon to treat such a form of protrusion as that known as an interstitial inguinal hernia.

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