

been entirely inadequate. My reference was brief, not because I had not studied Dr. Pavy's writings, still less because I desired to be discourteous to him, but simply because I was under the impression (an erroneous one as it turned out) when I wrote the article that Dr. Pavy himself was also going to contribute an article on the subject in the same issue of the *Practitioner*, and would therefore be able to deal with his own views at greater length. I regard Dr. Pavy's discovery of the carbohydrate radical in the protein molecule, and his work on phloridzin diabetes, to mention only two of the many researches which he has undertaken, as of the highest importance, and later in my article in the *Practitioner* I agreed that in phloridzin diabetes the blood proteins may act as sugar carriers. I, however, am still doubtful if this is the case in all varieties of diabetes; and if it is admitted that the sugar may be carried in two ways in disease it is quite possible that when the quantity of sugar is smaller (i.e., in health) it may still be transported in two or more ways.

Facts are one thing and the interpretation of facts is another; and legitimate differences of opinion are inevitable in the present state of our knowledge. We are all anxious to arrive at the truth on this matter as on so many other disputed problems in physiology. I value Dr. Pavy's work; I consider his opinion worthy of the fullest consideration, but I nevertheless continue to hold the view prevalent among physiologists, which as I said before is of the nature of a compromise between opposing theories.

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## THE TREATMENT OF INGUINAL HERNIA IN CHILDREN.

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THERE are certain points in connexion with the treatment of inguinal hernia in children on which surgeons are generally agreed, and there are certain other points on which opinions are still widely divided. The points on which agreement for the most part has been reached are, first, that for a certain time after birth a spontaneous cure of an inguinal hernia may result by a continuance of the natural processes of growth which have, for some unknown reason, been delayed, and that the assistance of a truss is generally needed; and secondly, that after this period of time has elapsed a radical cure of the hernia should be performed. There is still, however, a great difference of opinion as to the length of time during which attempts may be made by means of trusses to prevent the descent of the hernia, and so to favour obliteration of the canal of the funicular process; and there is also no agreement as to the exact form of operation required for the radical cure of the hernia when the time has come to operate. The main objects of this paper are two: in the first place I wish to make clear what is the period of time during which, in my opinion, it is wise to try the effect of a truss in the hope of what may be termed a natural cure of the condition, and in the second place to describe that form of radical cure which in my experience is best suited to prevent a recurrence of the hernia.

In a normal child, whether male or female, the obliteration of the processus vaginalis, or funicular process as it is better called, takes place only a short time before birth, certainly within the last month of foetal life and generally within the last two weeks. This obliteration commences at the peritoneal end of the funicular process and it is rarely complete at birth. Delay of a week or two in this obliterative process will result in the persistence of the patency of the canal at birth. There can be little doubt that the canal at birth is very commonly open, so that it may be regarded as hardly abnormal that the closure of the process may commence after birth. Common though it may be that the canal may have delayed its closing until the child is born, yet it is exceptional for the opening to be sufficiently large to admit the entrance of any intestine, so that a congenital hernia is much less common than a patent funicular canal. The natural process of closure may come to completion weeks or even months after birth; but every

month that passes by without closure having occurred reduces greatly the chance of closure occurring at all, and when six months have elapsed from birth the chance of a spontaneous closure of the canal, even if aided by the wearing of a truss, is highly improbable. Still, it would be unwise to lay down as an absolute rule that a cure without operation of a congenital inguinal hernia cannot occur even until somewhere about the end of the first year. For this cure to occur it is essential that on no single occasion any intestine should descend into the sac. For should this happen even once, the obliterative process is checked and the whole of the work has to be done over again. Therefore we cannot expect a non-operative cure unless the greatest care is taken by means of a truss to prevent the descent of the bowel. The question then arises what form of truss is the most suitable for the purpose. I should say at first that however successful the woollen truss may be in restraining the descent of a hernia when it is applied by skilled hands, it is utterly useless to expect any real good from it when it is put on by the mother or nurse. The truss which I consider of the greatest value in congenital inguinal hernia is that which is usually known as the Godlee truss, though I think that a wider pad renders it more valuable. The truss should be made of rubber and should be worn both night and day, and even in the bath.

If, then, a suitable truss has been fitted, the child has worn it for some six months, and during the whole of that time there has been no descent of the hernia, an attempt may be made by disusing the truss to see if a cure has resulted. If the hernia comes down at once it may be taken as certain that a spontaneous cure is exceedingly improbable, and then the question would arise when should an operation be performed.

In the ordinary case of congenital hernia it is usually unnecessary, in my opinion, to advise the performance of an operation during the first year of life, for during the greater part at least of that time a non-operative cure is still possible, and even if it is not likely, the general health of the child may make it advisable to postpone operative treatment. There are, however, certain exceptions. If it is found that no form of truss will suffice to prevent the descent of the hernia, it is obviously useless to attempt or to expect a cure by any method other than operation. Again, there are cases in which the skin has reacted intensely to the pressure and irritation of the truss so that it is in an acutely inflamed condition. In circumstances such as these it is quite impossible to continue truss treatment and means must be taken to effect a cure of the morbid skin condition before further treatment is carried out. After an interval, such as is necessary for this, it is of little use to recommence the use of a truss, even if care has been taken by confinement of the child to bed to prevent the descent of the hernia. In cases such as these an operation is distinctly advisable so soon as the skin has been restored to a thoroughly sound state.

I would lay it down, then, as a rule that during the first year of life operative treatment for congenital inguinal hernia is not advisable except in exceptional circumstances, though when the operation is undertaken the case usually does well. It is often asked if a child while still breast-fed is suitable for a radical cure. Of course, in hospital practice weaning has to precede the operation, but in private practice when there is nothing to hinder the mother being with the child a suckled infant will stand the operation well. In fact, I consider that suckled children stand operations better than children who are being hand-fed.

In the cases which I have been considering the child has been seen during the first few weeks or months of life; but it may happen that an opinion is first asked after the child has reached the age of a year. In these children there is little hope of a cure by truss treatment. Still, it may be tried if any circumstances suggest the postponement of an operation. After two years I think truss treatment is almost useless as a means of cure.

We have now to consider what method of operation is most suitable for these cases of inguinal hernia in children. In this connexion it is important to bear in mind that all these cases are really congenital in origin. I need not enter fully into the controversy whether the presence of a sac or weakness in the abdominal wall is most essential for the production of a hernia, but I may say that, in my opinion, the answer to this question is determined chiefly by the condition of the hernia. In early

life there can be little doubt that the true cause of a hernia is a persistence of a part or the whole of the funicular process, for the inguinal canal is perfect. But the case is far otherwise in those who have hernia of long standing. The two inguinal rings have come opposite to each other, so that for all practical purposes the inguinal canal has ceased to exist. In these latter cases the sac is of little importance; the essential factor in the production of the hernia is the weakened abdominal wall.

We have to deal, then, in the treatment of inguinal hernia in children with a hernia which is entirely due to the presence of a sac, and the problem of its radical cure is best answered by a complete removal of the sac without any attempt being made to modify in any way the inguinal canal. That this total removal of the sac is a satisfactory method of treatment is evident by the results, for, so far as I have been able to ascertain, in no case has recurrence occurred amongst those children on whom I have operated. The preparations for the operation are few. It is desirable that the child should be under observation for a few days before the operation is undertaken, so that any of the specific fevers if present in the incubation stage may have time to develop before operation. It is, I think, a mistake to operate without this interval. About the cleansing of the parts there is little to be said, except that I think it is undesirable to apply for many hours a compress soaked in any strong antiseptic to the tender skin of a child. It suffices to employ careful cleansing of the part and the application of a 1 in 10,000 solution of perchloride of mercury for three or four hours before the operation.

The incision should be made high up, the lower and inner end of it reaching only just beyond the external abdominal ring, while the outer end of the incision should pass as far as the site of the internal abdominal ring. When the external ring is defined the sac is searched for, and when found it is carefully separated from the other constituents of the spermatic cord amongst which it usually lies. This separation should be carried out thoroughly, everything being cleared off the sac as far as the internal abdominal ring. To allow this to be done a double blunt hook is made to draw the outer border of the external ring upward and outwards, and this is rendered more easy by flexing slightly the thigh so as to relax the abdominal wall. The separation of the sac from the rest of the cord may be very easy, but sometimes it is extremely difficult and great care is needed to do it effectively, but the more thoroughly and completely it is done the more complete is the obliteration of the sac. When the separation has been finished the sac is opened in order to see that it is empty. It is then drawn gently downwards and a ligature is applied as high up as possible. This ligature is of fine silk, and there is one point on which I would insist, and that is that it is unnecessary to tie it with any extreme tightness. The amount of force which is required to bring into firm apposition the two walls of the sac is extremely slight. Any force beyond this will only tend, unnecessarily, to strangulate the tissues and will certainly predispose to the production of irritation. I consider that silk ligatures are only thrown out of a wound for one of two reasons. Either sepsis is present or the silk has been applied with such a degree of tension as to be incompatible with the continued life of the tissues inclosed by it. The sac having been ligatured is cut off, but not too close to the ligature, at least half an inch from it. The ends of the ligature are divided and the stump of the sac is allowed to retract into the canal. If this be followed by an examining finger (the little finger is best) it will be found that the stump is well within the internal ring, so that not even the faintest trace of a depression on the peritoneal aspect is left. When this is done the operation is almost completed. It remains only to ligature any vessels that may require it, to suture the edges of the skin, and to apply dressings. But a few words may be said bearing on these points.

The hæmostasis should be complete, for in the soft tissues of the groin even a minute vessel may form a considerable hæmatoma. If the surgeon is in any doubt whether to ligature a vessel or not it is far safer to apply a ligature. Fine silk may be used and again I may mention that the ligatures should be applied gently. There is at the present time a great tendency with many surgeons, especially in America, to employ catgut ligatures for everything beneath the surface of the skin, because, they say, silk ligatures are

liable to work out. But there is little doubt that it is far easier to sterilise silk than it is to sterilise catgut and if only attention be paid to extreme gentleness in the application of the ligature and to the use of ligatures sufficiently fine no complaints would be heard of the defects of silk. The skin may then be sutured and it matters little what form of suture is applied. Silk is convenient, as the surgeon can be fully assured of its asepticity, but catgut, if not unduly hardened, has the signal advantage that the stitches do not need to be removed but come away with the dressing, and this is a point of some small importance in dealing with children. No drainage is needed, for no antiseptic has been employed in the wound, and the operation has been aseptic from first to last. As to the dressing, the most convenient consists of three or four layers of fine, dry, aseptic gauze, over which a solution of collodion or of celluloid in acetone is painted. This is simple and prevents the risk of the dressing becoming soiled. It is worth bearing in mind that children are in the habit of slipping their fingers under an ordinary dressing, a practice which is not conducive to aseptic healing. When the sealed dressing is dry a little gauze and a spica bandage are applied over it.

The details of the operation will not be materially different whether the hernia is of the variety called total funicular, in which the vaginal process is absolutely unclosed, or whether it be of a partial funicular variety, in which some attempt at obliteration of the sac has been made. In the former case the lower portion of the sac may be ligatured so as to form a tunica vaginalis to the testis, while the upper part will be dealt with as already described. In the after treatment of the case there is little worthy of mention. It is well to keep the child in bed for a week, though it is by no means easy to keep him quiet, for he feels little from the operation. After that, he may be allowed to move about as he chooses, but it is advisable that for at least a couple of months he should wear a carefully applied spica bandage.

The results of the operation are all that can be desired. The sac has been so completely removed that there is nothing to induce the re-descent of the bowel, and the well-formed unaffected inguinal canal also offers no inducement to the formation of a hernia. The risks of the operation in experienced hands are almost negligible. Apart from the dangers of the anæsthetic, which can hardly be considered to belong to the operation itself, there is but little risk. With due antiseptic precautions, careful sterilisation of the instruments, of the ligatures, of the sutures, of the patient's skin, and of the hands of the surgeon and his assistants there is no practical fear of sepsis. The most objectionable result that I have had in my cases has been the onset of scarlet fever in one patient three days after the operation. The child had to be removed to a fever hospital, but he recovered completely from the fever, and when I saw him again some months later the condition of the site of the operation was perfectly satisfactory.

So far I have spoken of congenital inguinal hernia in boys, but the condition is by no means uncommon in girls. The operation necessary is for all practical purposes identical with that which I have already described and the results are equally good.

I may sum up my opinion on the matter of the treatment of inguinal hernia in children as follows: First, attempts may be made during the first year by the careful application of a truss to induce an obliteration of the funicular process. But these attempts should not be continued beyond the end of the first year unless some condition is present which renders an operation undesirable, while, on the other hand, it may be necessary to operate at even an earlier age if the hernia cannot be satisfactorily restrained by a truss. Secondly, that a simple removal of the sac if thoroughly carried out is all that is needed to prevent a recurrence of the hernia in children.

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THE SOCIETY FOR THE STUDY OF INEBRIETY.—The next meeting of this society will be held in the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Tuesday, Jan. 12th, at 4 P.M. (afternoon meeting). Dr. A. R. Cushny, professor of pharmacology in University College, London, will open a discussion on the Action of Alcohol. Each member and associate will be at liberty to introduce a visitor.