MARCY. (H.O.)

THE CURE OF HERNIA.

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THE CURE OF HERNIA.

Temerity born of ignorance would seem the only judgment to be passed upon one who would offer any further contribution upon the cure of hernia. The eighty closely printed quarto pages of the "Index Catalogue" of our National Library, giving only titles and authors, would presuppose an exhausted subject. Notwithstanding, from the Fathers to the present, the cure of hernia has remained in large degree an unsolved surgical problem, and the sale of supports and trusses increases with each decade. This paper is of narrow limit and has but the one definite object—that of teaching a single method of cure which the writer would commend in operative cases; yet, the importance of the subject demands brief notice.

Although hernia in all classes and ages, from infancy to old age, is a matter of daily observation by our profession, the statistics of Dr. J. H. Baxter, giving 5 per cent. of the total population as subject to such a disabling and dangerous affection, will surprise most who are not special students of the subject. This gives nearly three millions of people, of all ages and conditions, in the United States alone, who are sufferers in a greater or less degree from this affection. One English firm manufactures over 50,000 trusses a year, chiefly for home supply. As quoted by Mr. Spanton in 1881, as referable to Great Britain, "the mean annual rate of mortality for the year 1879 was 45 deaths to every 1,000,000 living; and to make the significance of this more manifest, I may point out that while calculus killed 237 persons in the year 1879, and all malformations (except spina bifida) put together, 219; gout 662; and all uterine diseases only 1,068, hernia caused the death of 1,119 in the same period." Table II shows that

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out of 1,870 cases of operation, in hospitals, etc., for strangulation, there occurred 782 deaths, giving 41.80 per cent. of mortality. This has been greatly lessened by modern methods of wound treatment, but the injury to the intestine by the constriction still remains a danger to the patient, often far exceeding those incident to operative measures. We can do no less than second with all earnestness the plea so ably set forth by Mr. Spanton in England and Dr. Joseph Warren in America, to effect by operative measures a cure in a large class of these sufferers, especially in the young, rather than condemn them to lifelong discomfort from support and a perpetual risk of disability and death. The revolution in abdominal surgery, during the last decade, renders less imperative the need of enforcement, by argument, of proper antiseptic precautions by which peritoneal wounds are rendered almost devoid of danger; rules enforced in my earlier writings upon hernia, as a duty of religious exactitude; now, however, like the church dogmas, accepted in theory, but obeyed with a laxity which brings discredit upon the faith.

The etiology and causation of hernia cannot even be referred to here; but the fact that about one-eighth of the entire number occurs in childhood, renders it probable that a congenital lack of proper development is a fundamental factor in its production.

My first operation for hernia which involved the essential principles now advocated was done seventeen years ago. The year previous, I had returned from Edinburgh, a convert to the teachings of Prof. Lister. The omentum with a loop of the intestine was incarcerated, stercoraceous vomiting had ensued, and the patient was *in extremis*. The hernia was old, the ring large, the pillars weak; and the patient, advanced in years, had a very troublesome bronchial cough. The operation was antiseptic in method, and, owing to the cough, the deep pillars of the ring were stitched together with large catgut sutures and

the wound closed, to prevent a prolapse of abdominal contents, rather than with any thought of cure. The cough continued severe until the patient's death, six years later, but there was no return of the hernia.

I first published an article on hernia in 1871, advocating this method, with a report of this and one or two other cases. In 1878, I reprinted from a communication offered to the Association, a paper giving a considerable series of cases and a study of the histological metamorphosis which tendinous structures undergo when incorporated into the tissues. These observations were made upon two cases of the human subject in which I had operated some months previous and death had supervened from acute disease; also a series of studies upon rabbits and puppies. In 1881 I communicated to the International Congress in London further observations upon the same subject, with a list of cases, and emphasized the removal of the peritoneal pouch as important in preventing return of the affection.

There can be no doubt but that many cases which are reported cured by any of the various methods of operation, in the end prove failures; since a very considerable period must elapse before one can be at all sure of results. This should cause hesitation in tabulating cases until they have continued for a considerable period under observation. Only recently have I seen a case of double hernia, where I witnessed a very skilful operation by injection, and examined the patient with great care one year after without detection of a weakening ring; but now, four years having elapsed, the hernia has returned, and the patient must again resort to a truss. I am led to believe that, in a very considerable class of cases reported cured, especially in the blind operations of subcutaneous sewing and injection methods, the hernia returns, because the deeper tendinous structures remain unclosed and the peritoneal sac unobliterated. Since the days of Morgagni, it has been repeatedly

claimed that hernia was often produced by the elongation of the mesentery and a consequent prolapse of the intestines. This error is repeated even in our best text-books: as, for example, Bryant. The frequency with which the small intestines are found, at autopsies and in abdominal operations, in the pelvic cavity, would refute this supposition.

Mr. Treves' observations[1] are of much interest in their bearing upon this subject. He found the mesentery of the jejunum on the left side longer and looser at a point from six to ten feet from the duodenum. Here the mesentery attains a length of from nine to ten inches. In the right iliac fossa, at the lower part, the mesentery attains only about one-half this length. In one case out of the hundred examined, Mr. Treves found the intestines, in a woman of 70, could be drawn down eight inches below the crest of the ileum, and yet there was no hernia. If it is true that, in a majority of cases, the small intestines find easy lodgment as low as in the pelvic basin, the bearing of these considerations upon the cure of hernia becomes apparent. The pinching of the peritoneum over a weakened ring gives an effective lodgment of abdominal contents. The elongated omentum is continually slipping into the depression and acts as a wedge, driving the supporting walls apart, and often cases occur where it is wiser to remove an elongated, thickened mass rather than to replace and leave it to act as a future source of trouble. In a number of cases, I have removed considerable portions of omentum, for this reason, without bad result.

Interesting as is the anatomy of hernia, we can only refer to the inguinal canal, as a passage from the deep to the superficial ring, one and one-half to two inches in length, doubly oblique in direction, and closed in a valvular way, by close apposition and by

[1] Hunterian Lectures on the Anatomy of the Intestinal Canal and Peritoneum.

connective tissue attachment of its walls. In congenital cases, the tunnel-like projection of the peritoneum of pre-natal formation has not been obliterated, and the walls of the canal have become stretched and torn, until the valvular action of the canal is lost. Cure is effected by obliterating the peritoneal folds and closing from the very bottom the walls of the canal. In most instances, the sudden production of hernia is only the final yielding to forces which have been of indefinite duration. I have operated upon every variety of hernia, and with considerable modification of detail. The usual method is simple and is outlined as follows: A careful shaving and cleansing of the external parts, using carbolic acid or mercuric bichloride solution. Soap containg ½ of 1 per cent. mercuric bichloride is very convenient. Each step of the operation is taken with strict antiseptic detail, usually under irrigation. If the abdominal cavity is opened spray is used. In inguinal hernia, in no instance have I made the incision in the scrotum as advocated by Mr. Wood, and it is usually parallel with Poupart's ligament and a little, perhaps half an inch, higher on the abdominal wall than the opening through the ring. The elasticity of the tissues allows of easy manipulation of the parts, and brings the external wound a little way from the fold of the groin, which facilitates a safer dressing and causes less irritation in the subsequent wearing of a support. The incision should be free and sufficiently long to insure easy inspection and ample room. Secure, of course, any vessel which bleeds—and yet, my experience does not confirm Mr. Wood's views in his recent lectures published in the *British Medical Journal*.[2] He says: "With respect to the supposed advantages of the open method, enabling the surgeon to see the parts on which he operates, I have myself

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[2] June, 1885.

found that, after the first cut and the application of the sponge, the parts became so bleared with blood, that I was obliged to rely mainly upon the sense of touch, before I ventured to pass a needle through Poupart's ligament, the conjoined tendon, or the pillars of the ring. My experience is that this operation can be all done, and has been very frequently done by me, when the sac to be removed is not very large, through a scrotal incision two inches long reaching up to the superficial ring."

Having divided the external tissues to a sufficient extent, draw up the peritoneal pouch quite sufficient to cause its obliteration upon the inner side and sew it evenly with fine tendon sutures by the so called shoemaker's stitch. This encloses all the peritoneum and occludes it, while it has the advantage of a double thread and only one knot. Then cut away the redundant pouch and allow the peritoneum to drop back, in order not to include it in the deep suturing of the tendinous structures. In some cases, where the ring has been very large and the pillars much attenuated, I have folded the sac upon itself and incorporated it in the deep suturing, as a reinforcement to the tissues. However, I can but regard this as a doubtful measure; usually I have felt it wise to refresh the pillars before suturing as more likely to secure a firm union. The method of Mr. MacEwen, of suturing the peritoneal pouch in such a manner that it can be introflected upon itself—pursed up, so to speak—is, to say the least, ingenious; but it appears open to the objection of making an obstructive thickening of the peritoneum, over which normally the pelvic contents should easily glide without obstruction or lodgment. It cannot strengthen the ring, since it is returned through it. This method appears to be offered as a substitute for opening the peritoneum, and appeals to the earlier fear entertained in regard to the surgical treatment of these tissues. Sewing through the peritoneal pouch and its excision

is easier, equally safe and, in my judgment, offers promise of a better result.

The proliferation and repair of the tendinous structures, under favorable circumstances, are much greater than was earlier supposed. Formerly I used catgut, but for a number of years have preferred the tendon suture. That from the tail of the kangaroo is the best, since the fibres are more parallel and do not readily fray out as those of the ox, deer, or whale. With the finger within the ring, to protect the peritoneum and guide the needle, I introduce it quite one-half inch from the outer portion of the ring, and enclose the tissues to this width deeply to the peritoneum. The stitches are repeated at distances of about one third of an inch, including both pillars of the ring, until the opening is securely closed—in the female completely and a little within the inner border; in the male, the parts are closed so as to carefully protect and secure the cord from injury. The suturing is simple, and I first devised it for the sewing of the large pedicle of uterine myoma and in the excision of the uterus. The needle is set in a firm handle and is without a cutting point, with the eye near the end. A half to three-quarter curve is preferable. The needle, threaded, is introduced, and the end unthreaded, the opposite end is threaded and withdrawn; this is continued until the seam is complete in as many and as fine stitches as may be thought best. A little care is necessary not to overconstrict the tissues and thereby cause necrosis. I have deemed this method of sewing important, since the great objection to the animal suture is the knot, which in this way is reduced to one, no matter how many stitches are required. Moreover, thus applied, the pressure on the enclosed tissue is equalized and injury therefrom reduced to a minimum; and if it is true, as my experiments lead me to believe, that the tendon suture is replaced by a proliferation of connective tissue, this method of reinforcement is doubly

important. I have also used with satisfaction the over and o er suture with the Hagerdorn needle, which possesses certain advantages now well known to the profession. A twisted horsehair is generally used for drainage, and the external wound closed by a fine continuous suture. Iodoform dressing is carefully applied, but the great danger is the infection of the wound during manipulation rather than after its closure. Care to avoid over-strain should be exercised for a considerable period, A water pad truss is advised to be worn for some months, but too much pressure is injurious.

The above procedure is simple, effective, and safe; when properly done, in the great majority of cases, the cure will be permanent.

A brief review of our literature will show that the operative measures for hernia, like all other surgical procedures involving the abdomen and its contents, are being rapidly modified. The operation known by my name has had a varied experience. It was at first condemned on theoretical grounds as dangerous, unscientific, and more radical in method than the cure sought. A few surgeons tried it and gave it up, reporting to me that the catgut which they used yielded in a few days.

The first case of cure reported in Great Britain was by Mr. Charles Steele, of Bristol (*British Medical Journal*, November 7, 1874), three years after the publication of my cases. Mr. Steele stated to me in 1881 that the cure of his case remained permanent. He used catgut antiseptically. As might naturally be supposed, Mr. Lister has repeatedly operated with good result. Prof. Annandale, of Edinburgh, operates in this manner. He prefers to remove the sac when easily done. Prof. Stokes, of Dublin, returns the sac unopened, believing the excision of the sac unjustifiable because of danger. Mr. Banks and Mr. Alexander, of Liverpool, report cases and advise removal of the sac; also Prof. Buchanan and Sir Wm. McCormac.

Prof. MacEwen, of Glasgow, reported cures in 1880 from the use of chromicized sutures; also Mr. J. Whitson, in the *Medical Times and Gazette*. Prof. Czerny published in 1883 a paper in which he advocates the closing of the ring with sutures. Dr. Porter, of Boston, reports two cases thus cured, also L. Champonnière, of Paris, and others.

Subcutaneous wire suturing is of very ancient date. It fell into disuse and was condemned as dangerous, until within the present generation. Prof. J. C. Nott published a case of cure in 1845 from the use of the lead suture. Prof. John Wood, of London, a quarter of a century ago received a prize for an essay on the cure of hernia. His method is a subcutaneous closure by wire, the originality of the method dependent upon the way of introducing the wire. The remarkable skill of the operator, together with the shape of the needle, enabled Mr. Wood to secure and occlude the canal.

In that day, when septic infection of wounds, in hospitals, was the rule rather than the exception, subcutaneous surgery, even if blind, bungling, and imperfect, was commendable. With the record which Mr. Wood presents of a majority of cures, it is no wonder that he still, in large degree, advocates his methods, and it is very creditable to his spirit of enterprise that he is willing to adopt the tendon suture, instead of wire. "Latterly," he says, "I have used a stout piece of kangaroo, deer, or ox tendon, well antisepticized in carbolized oil, and softened just before using by soaking it in 1 to 40 carbolized lotion. The advantage of this is, that there is no necessity for disturbing the wound by the removal of the buried suture, as in the case of the wire and other methods."

From this it is apparent that he recognizes only the coaptation and constriction of the ligature, and not the re-enforcement claimed by the development of surrounding connective tissue.

The late Dr. McDowell, of Texas, by an equally ingenious method, using a needle of peculiar construction, subcutaneously wired the rings together, and reported a large percentage of cures. Shortly before his death he informed me that, in his judgment, his operation left little to be desired. Mr. Spanton, whose paper has already been referred to, has devised an ingenious modification of subcutaneous suturing, combining the needle and constricting material in the same instrument, which closely resembles a cork-screw. This is introduced so as to incorporate the rings, and is left for a period of time sufficient to secure a large exudative mass about the ring, and is then withdrawn. No serious results have followed the operation in his hands, and he reports a very large percentage of cures.

The injection methods of which Dr. Warren, of Boston, is the world-wide known advocate, aim at a somewhat similar result. A very large exudation into the surrounding tissues follows, and undoubtedly many cures have thus been obtained.

The criticism pertains, in a large degree, to all these subcutaneous methods, that they belong to blind surgery; at the best, depend upon the tactile sense which, cultivated by the long experience of a Wood or Warren, may be trustworthy; but an operation which is to become general must be based upon a few simple, well understood factors, to be safely entrusted to the general surgeon. Prof. Tilanus, of Amsterdam, reported to the International Congress of 1878 a collection of 100 cases by Continental operators, by the open method of dissection, for the cure of hernia, both under and without antiseptic precautions, with a mortality of about 11 per cent. Prof. Annandale, of Edinburgh, has more recently reported 71 cases with 4 deaths, by various operators, but all under antiseptic precautions; 66 cases are claimed as cured.

The inaugural Thesis of Victor Cuenod, published

in Lausanne in 1881, gives a detailed list of the cases operated on by his master, Prof. Socin, of Basle. He tabulates 34 cases, all of which were under repeated observation during many months; 22 cases remained cured, twelve failed in from six weeks to twenty-two months. He attributes failure, in most cases, to imperfectly prepared catgut and silk; following the use of the latter were very troublesome abscesses, although the silk was carbolized. In the entire list of failures (and the cases were all improved) there was not a single death. The catgut which was chromocized, or prepared in oil of juniper, proved satisfactory. The method was the open dissection with deep suturing of the pillars of the ring, under careful aseptic care and dressing.

In thirty operative cases recovery followed without serious symptoms. I have had two deaths; one a strangulated umbilical hernia, where I removed seven inches of gangrenous small intestine and joined it with a double row of fine tendon sutures. Death ensued about seventy hours after, from exhaustion, as the most probable cause, since there was no peritonitis and the edges were agglutinated by lymph exudation, so that the closed section held water. The other was a case of strangulated crural hernia, where the autopsy showed a slough of the returned constricted intestine, with the escape of its contents. These two cases are thus fairly excluded from the list.

In conclusion, I would advise operation by the above method:

1. In all cases of operation for strangulation.
2. In all cases where the abdominal contents are imperfectly retained by an instrument, unless the age and condition of the patient prevent.
3. In that large class of children when the conditions do not warrant a spontaneous cure.

This opinion is based upon the rigid enforcement of the aseptic principles of operative wound treatment.