

Jones (C. N. D.)

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RADICAL CURE OF HERNIA

BY
CHARLES N. DIXON JONES, M.D.,
SURGEON TO THE WOMAN'S HOSPITAL, BROOKLYN

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D. APPLETON AND COMPANY
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THE RADICAL CURE OF HERNIA.*

HERNIA exists in all ages and conditions of life; there is, therefore, no necessity to plead the importance of a subject so full of general interest. From a remote period the cure of this affection has attracted the attention of the surgeon. It is a singular fact, apparent on perusal of the surgical history of the past as well as the writings of our own times, that of the various methods that have been devised in order to effect the radical cure of hernia, all, with one or two exceptions, have been abandoned as dangerous and unsatisfactory. It is most remarkable that the simplest and most direct operation is the last to be proposed and ultimately adopted. To cut down upon the cleft in the abdominal wall, to remove the trouble as we would any other deformity, to bring into apposition and unite the parts abnormally separated—should long ago have suggested itself. So late as the year 1881 I saw Mr. John Wood, of King's College Hospital, London, operate for the radical cure of hernia by his subcutaneous method, and yet he at this time was almost the only one attempting the cure of hernia by a radical operation. Not until 1879, when Czerny presented a report of several cases of operation by the open

* Read before the Medical Society of the State of New York at its eighty-first annual meeting.

method at the meeting of the Berlin Congress, did surgeons generally adopt the radical operation. The introduction of antiseptic principles in surgery marks a new era in the treatment of this disease; it is one of the greatest surgical triumphs of this decade to have offered to many a safe and efficient cure for a most distressing malady. A few years ago the subcutaneous operation was the only surgical interference attempted, whereas now, under the influence of Listerism and stimulated by the success with which the abdominal cavity is invaded for a variety of affections, we find surgeons on all sides devising bold operations for the relief of all the different forms of herniæ.

In considering the propriety of an operation of this kind, the danger to the life of the patient must be taken into consideration. The risks vary, of course, with the method adopted and the condition of the hernia. Much also depends on the skill and experience of the surgeon. That these are not unimportant considerations is shown by the results of other operations, such as laparotomy or ovariectomy. In the history of these operations, as well as that for the radical cure of hernia, it is shown that the rate of mortality and failure of the earlier operations were very much greater than at a later period, when experience had taught the skill and care necessary to deal with the difficulties of each case. This fact is admirably illustrated in the gradually decreasing rate of mortality in the operation performed by Mr. Wood.

In a recent article on the radical cure of hernia by Anderegg,* the statistical results of 136 operations performed at the surgical clinic at Bâle are given. These operations were performed on 128 patients; the mortality percentage in the cases of non-incarcerated intestine was 3·6 per cent.

* "Die Radical-Operation der Hernien," "Deut. Zeits. f. Chirurg.," 1886, Bd. 24, Hft. 3, N. 4.

Comparing these figures with the results reported by Ségond and Leisrink, the author finds that in 273 operations the mortality was 5.1 per cent.

Svenen and Erdman* have recently reported the results of 106 operations for the radical cure of hernia. The operation consisted in the ligature of the sac as high as possible and its extirpation, followed by suture of the aponeurotic pillars. The mortality of the operation was absolutely nil. There was a recurrence in 20 per cent. But even in the cases where the hernia supervened, the operation was useful in that the protrusion was easily reduced, and the painful symptoms were relieved.

Dr. J. Lucas-Championnière, in a recent valuable and interesting contribution to this subject,† reports ten operations performed by himself, with no deaths and only one recurrence; in this case the hernia was easily supported by a truss. He maintains that a mass of statistics collected from different sources has no value whatever. A few cases reported by one individual have a much greater value. "Malgré la grande compétence de leurs auteurs, je crois ces statistiques entachées d'un vice radical. Malgré des chiffres nombreux, elles ne démontrent rien du tout." He states, as a result of his experience, that the radical operation, performed with strict antiseptic precautions, is not only free from danger to life, but that it should not be followed by those accidents which frequently attend wound healing, such as suppuration and the formation of fistulæ. These complications are due in all cases to imperfect antisepsis, conclusions with which I fully agree. I can not read the report of the series of cases operated upon by the distinguished Czerny‡ without feeling that the antiseptic details in many particulars were sadly defective.

* "Nord. med. Arkiv." † "Cure radicale des hernies," Paris, 1887.

‡ "Berlin. klin. Wochenschr.," 4, 1881.

The direct radical operation is now established on a scientific basis, and surpasses in every respect every other mode of treatment designed for the cure of hernia. If the patient is not permanently cured by an operation, his condition is in no way rendered worse. If the hernia recurs, it is of a smaller size, capable of being comfortably supported by a truss, and is more amenable to a permanent cure by a subsequent operation.

What is the proper application of this operation? What are the cases in which a radical operation is indicated? Surgeons as yet are not of a unanimous opinion in their answers to these questions. It has been well established that a radical cure should be attempted in all cases of kelo-tomy for strangulation.

I believe that the radical operation is applicable to all the varying forms of hernia occurring in young and old. No one will dispute that an operation is perfectly justifiable in either of the following conditions:

1. All forms of irreducible hernia.
2. Congenital hernia with atrophied testicle.
3. Large herniæ which can not be restrained by the use of a truss.
4. All forms of painful hernia.
5. Hernia existing in persons whose occupation subjects them to the dangers of a strangulation.

Before considering the various modifications of the modern operation that have been suggested, a description of the general operative procedures, as illustrated in a case of indirect inguinal hernia, will be given. The method outlined is equally applicable to other forms of abdominal hernia.

OPERATION I. *Large Reducible Inguinal Hernia; Czerny's Operation; Removal of the Sac; Suture of the Canal.*—The patient whose history forms the basis of these remarks was a mar-

ried woman, forty-seven years of age, who for some time had suffered from a large reducible inguinal hernia. She stated that in 1870, after a severe labor, for the first time, she had noticed a small hernia on the right side. She had never worn a truss since the appearance of the hernia, but had supported the protrusion at times by means of a pad and bandage. On two occasions during the last year the hernia had become temporarily irreducible after unusual exertion. Receiving a severe fall on the ice in January, 1886, the hernia had protruded, giving severe pain and symptoms of strangulation. She was taken by ambulance to the Long Island College Hospital, where she was placed under the influence of ether and the hernia reduced. Since her fall the tumor had given her much trouble, and prevented her from performing her ordinary duties. When she first consulted me in February, 1886, the tumor was enormous, extending half-way down the thigh. As the patient would not at this time consent to an operation, I sent her to the Brooklyn Orthopædic Dispensary, where she was fitted with a truss.

In about four weeks the patient again returned, wearing a truss, but stated that it did not prevent the protrusion of the hernia. The inguinal canal was now so large that I think it would have been impossible to retain the hernia by means of mechanical support. She now readily consented to an operation. On March 26th I performed the following operation:

The patient was prepared for the operation by having her bowels thoroughly evacuated, and for twenty-four hours preceding the operation being placed on an exclusive diet of pancreatized milk. Before commencing the operation, the integument in the neighborhood of the inguinal region was thoroughly washed with soap and warm water, cleanly shaved, dried, washed with ether, and finally covered with lint saturated in a 1-1,000 bichloride solution. After the patient was etherized, towels saturated with 1-2,000 bichloride solution were placed over the parts in the region of the groin, leaving exposed only sufficient space for the incision. An incision six inches in length was made in the axis of the tumor. A careful dissection was then made, until the distended sac of the hernia was reached. All hæmorrhage was arrested by ligatures of Kocher's catgut.

The sac was exceedingly thickened and hardened, hypertrophy having been induced by long-continued pressure. The sac was separated and elevated from the adjacent tissues, thus requiring an elaborate dissection and leaving a large wound fully ten inches in length. The finger was then passed along the neck of the sac, separating it from the margins of the internal abdominal ring, while traction was made on the sac, so that it might be ligated as high as possible, in order to obliterate the pouch of peritonæum at the mouth of the sac. The hernial sac was then opened, its contents were inspected, and it was reduced within the abdominal cavity. The neck of the sac was transfixed with a needle armed with a double ligature of stout silk, and tied with Tait's Staffordshire knot. The walls of the sac were so thick and vascular that, foreseeing the danger of subsequent hæmorrhage, I would not trust to the uncertainty of a catgut ligature. This afterward proved a source of trouble. The fundus of the sac was then cut away beyond the ligature. The skin was so stretched and redundant that I found it necessary to remove a large elliptical-shaped portion, in order to secure its approximation with any degree of neatness, and at the same time secure some additional support for the tissues beneath. The tissues forming the pillars of the inguinal canal were then freshened and closely approximated by means of two silver-wire and two silkworm-gut sutures. These were introduced as follows: A needle was threaded at each end of the suture and introduced from within outward, including the pillars of the ring and the external integument. By means of these strong sutures and several fine interrupted catgut sutures the internal abdominal ring and inguinal canal were completely obliterated. A rubber drainage-tube was inserted and the skin-wound closed by a continuous catgut suture. Iodoform was sprinkled over the wound, and an antiseptic dressing firmly secured in place, after which the patient was put in bed. The temperature never at any time rose above 100° F. The dressing was not removed until the eighth day, and then only because the nurse allowed the patient to soil a portion of the dressing with her urine. The wound was found to be completely united except where the drainage-tube had been inserted. The drainage-tube was removed and an

antiseptic dressing reapplied. The wire sutures were removed on the twelfth day; it was then discovered that a small fistulous tract remained at the site of one of the wire sutures. This at the end of a week had apparently closed. At the end of three weeks the patient resumed her ordinary duties. In about a month the patient again presented herself; the cicatrix had become hard and firm, but the small fistula had again opened; it continued to discharge a few drops of pus until May 20th, when I opened the cicatrix in the tract of the fistula. An incision was made through the old cicatrix, following by direction the fistula, which led down to the silk ligature encircling the neck of the sac. The ligature was removed by a careful dissection, in order to avoid opening into the peritoneal cavity. The Tait knot was removed entire. The softened tissue surrounding the track of the ligature was curetted away, the wound packed with iodoform gauze, and allowed to heal by granulation. The patient made an easy recovery, and in a short time was again able to go to work. In August I examined the patient; the line of union was firm and resisting, and there was nothing to indicate a return of the hernia.



FIG. 1.

I herewith present a photograph, which I took after the patient had been etherized, showing the site and size of the tumor. Owing to the fact that the patient's bowels had been thoroughly evacuated of feces and intestinal gas, the tumor is not distended to its full size.

The patient remained well up to November, when, after she had passed through a severe attack of bronchitis, a slight bulging appeared in the region of the cicatrix. This is admirably shown in Fig. 2, although the size of the tumor is slightly exaggerated. On November 29th I performed a third operation for her relief, which is described further on.

There are several practical points which are worthy of note in the above case. When the sac is very large, as in the case related, it is recommended that the neck be simply ligatured, and that the body of the sac be left *in situ*. It is maintained by many that the extent of tissue disturbance caused by the complete removal of the sac is often great, and adds materially to the danger of the operation. There are several objections to this procedure. In the first place, the presence of the sac in the inguinal canal prevents accurate approximation of the pillars. Again, there is danger that the vitality of the sac may be lost, and supuration follow. I am convinced that a large incision, with strict antiseptic precautions, increases very slightly the danger of the operation, and that this is more than counter-

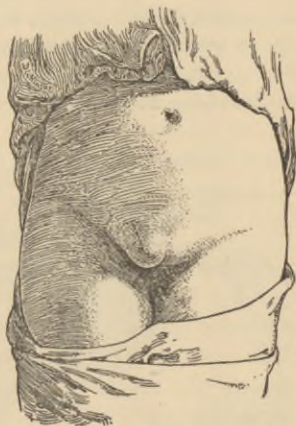


FIG. 2.

balanced by the advantage of working in an open space instead of a small, deep cavity. It is also maintained that a large, firm skin cicatrix offers a greater resistance to the recurrence of the hernia than the natural elastic skin. In the treatment of the sac I followed the method recommended by Banks and the German surgeons. In order to secure a good result, the sac, the neck, and even a part of the peritonæum within the abdominal ring, must be completely extirpated. To accomplish this effectually, the sac must be carefully separated from the subjacent tissues and from the margins of the internal abdominal ring. While firm traction is being made on the sac, the neck is transfixed with a needle carrying a double ligature as far within the abdominal cavity as possible. The ligature is then tied in a double loop, or several ligatures may be passed through the neck of the sac at different points, and tied so as to form a chain ligature. The shoemaker's stitch, as recommended by H. O. Marcy, would serve a good purpose in the ligature of the hernial sac.

In regard to the material of the ligature, it is generally recommended that catgut be used; the only objection to this material is that it becomes softened and stretches. Several surgeons have reported hæmorrhage due to this cause. Some of the Liverpool surgeons have ligated the sac with silver wire. The disadvantage of wire is that it is apt to act as a foreign body, and has to be removed at a subsequent period. Olshausen has tested silver wire and silk-worm gut side by side, and found the gut less irritating than the wire. Several of the English surgeons use silk-worm gut for sewing up the abdominal wound after ovariectomy. Mr. Parker has reported several cases of suppuration due to the large ligature used, and other surgeons have reported similar accidents. As Championnière* well says,

* *Op. cit.*

the single detail of a badly prepared ligature is sufficient to convert a benign operation into a serious calamity. The ligature used in my case had been boiled in a sublimate solution, but I believe that it became infected subsequent to its introduction. I see no reason why carefully prepared silk is not perfectly innocuous. Billroth has adopted it almost exclusively in his practice. I believe that chromic catgut for the subcutaneous tissue, with silk for uniting the skin, will give the best results.

The method of treating the sac, as employed by Czerny, has been modified in various ways, most of which are intended to obviate the danger attending its removal, and to effect a more permanent cure. Mr. Charles Ball, surgeon to Sir P. Dun's Hospital, Dublin, dissects the sac from its attachments, seizes the neck high up with a clamp forceps, and then twists it, executing, as a rule, three complete revolutions. The advantages which he alleges for this operation are three: First, a more perfect closure of that portion of the sac situated in the inguinal canal. Second, the twisting has the effect of tightening and throwing into ridges the peritonæum for a considerable area surrounding the abdominal opening. The funnel-shaped puckering of peritonæum presenting at the internal abdominal opening is obliterated. Third, the danger of septic peritonitis is diminished. After disposing of the sac, the pillars of the ring are approximated by silkworm-gut sutures, which are made to transfix the stump, in order to prevent its untwisting. Hardie has suggested that the ligature be carried around the transversalis fascia as well as the peritonæum. Dr. J. D. Bryant* has employed a method of treating the sac which has not hitherto been described. After the sac is tied, two parallel incisions are made in the pillars on each side. The sac is then interwoven into these openings, so

* "Operative Surgery," 1887.

as to approximate the boundaries of the abdominal ring, and at the same time introduce additional layers of peritonæum in front of the weakened point of the abdominal wall.

Championnière * insists that the total eradication of the sac is the basis of the operation. He does not lay so much stress on the suture of the pillars; still, his practice is to bring them closely in apposition, and suture with catgut.

The greatest advance in the radical treatment of hernia has recently been practiced by Macewen, of Glasgow.† His improvements in the method of operating are three: 1. The use of stout catgut sutures, which may be left in the tissues without danger of irritation. 2. Forming out of the sac an internal abdominal peritoneal pad or bulwark. 3. The restoration of the valve-like arrangement of the inguinal canal.

Disposal of the Sac.—Instead of tying and excising the sac, as above described, it is dealt with as follows: Separate and lift the sac from its attachments in the inguinal canal. Then, with the tip of the finger introduced alongside the sac, separate the peritonæum for about half an inch round the whole abdominal aspect of the circumference of the internal ring. A strong catgut ligature is then securely tied in the bottom of the sac, the free end, threaded on a curved needle, is made to transfix the sac repeatedly, and finally to pierce the abdominal wall, from within outward, one inch above the internal ring. By traction on the ligature it is evident that the sac becomes folded upon itself, like a curtain, and drawn completely within the abdomen, there to remain as a bulwark to prevent the future descent of the hernia. Whether this method of disposing of a thickened and inflamed sac is advisable in all cases is to me still a doubtful question.

Suture of the Ring or Canal.—To my mind the most

* *Op. cit.*

† "Annals of Surgery," August, 1886.

important part of Macewen's operation is the valve-like closure of the inguinal canal. The sutures are first passed through the conjoined tendon or internal pillar, and then through Poupart's ligament in such a manner that, when tightened, the inner pillar is drawn under the outer pillar, and two flat surfaces are placed in apposition for union. Macewen has used in his operations a peculiar form of hernia-needle and method of introducing the sutures, a description of which appears somewhat tedious. I have simplified the operation in one case by using a "double-needled suture." Both needles are made to penetrate the conjoined tendon at two points three fourths of an inch apart, passing from within outward, so as to leave the loop on the inner surface. The needles are then passed in a similar manner through Poupart's ligament, and the aponeurotic structures of the transversalis and the internal and external oblique muscles. The needles are passed through these structures at points on a level with the corresponding structure in the conjoined tendon. Several sutures may be introduced in a similar manner at points lower down the inguinal canal. When these sutures are tightened and tied, the outer pillar is found to overlap the inner, so that the edge of the conjoined tendon is drawn under and in contact with the surface of the external pillar. The needle of Reverdin, as recommended by Championnière, the eye of which is closed by a sliding lever, would



FIG. 3.

serve an excellent purpose in the introduction of these sutures.

The success attending Macewen's operation has been most remarkable. He reports thirty-three cases in which the operation was performed for the radical cure of inguinal hernia, in which the ages of the patients ranged from five to fifty-seven years. Of these not one had a return of the hernia, and only one wore a truss as a protection against its recurrence. In almost every case union occurred without suppuration.

On November 29, 1886, I performed the following operation:

OPERATION III. *Modification of Macewen's Operation.*—After preparing the skin at the seat of operation, an incision was made down to the hernial sac. It was my intention to deal with the sac according to the method of Macewen, but I met with unforeseen difficulties. The sac was so thin and adherent that, in my attempt to enucleate it, I opened several times into the peritoneal cavity. I then determined to make an elliptical section of the whole abdominal wall through the peritonæum, and including the region of the inguinal canal.

Macewen has reported that in several cases of femoral hernia the sac was so firmly adherent that it could not be separated and reduced. This operation was very instructive in several ways. A surgeon can hardly have a true conception of the nature of a hernia until he has performed a similar operation on the living subject. The condition of the widely separated pillars and relaxed peritonæum is clearly shown. It is generally believed that pulling down the sac and tying it off, at the peritoneal level, obliterates the funnel-shaped depression presenting at the abdominal ring. As a result of my dissection, I am convinced that this object in most cases is not accomplished. There is an abnormal laxity or fullness of the peritonæum in the neighborhood of

the inguinal canal; this is especially marked just above the pubic bone, the bony surface probably acting as an inclined plane and serving to direct the intestinal wave toward this weakened point. In tying the neck of the sac, the peritonæum, for a considerable area surrounding the abdominal opening, is thrown into ridges or radiating folds, and it is readily seen that a pouch or depression situated at a short distance from the seat of ligature is not effaced, however deeply the sac is tied. In order to meet the difficulties in the above-mentioned case, I removed all traces of the hernial sac and united the edges of the parietal peritonæum by a continuous catgut suture running in the axis of the inguinal canal.

Now follows what I believe to be the most important step of Macewen's operation—the uniting of the aponeurotic structures in a valve-like manner.

Instead of passing the suture with a needle mounted on a handle, as recommended by Macewen, I used a suture of catgut with a needle threaded at each end. Both needles were passed from within outward through the internal pillar and then through the external pillar; four sutures were thus passed, and, when they were tightened, Poupart's ligament was found to overlap the conjoined tendon, thus securing broad surfaces for union. The superficial tissues were united by fine catgut sutures. The several layers of tissue were then matted together by means of buried and quilted sutures. The whole wound united by primary adhesion, and the patient made a rapid and uneventful recovery. It is now over two months since the operation, the cicatrix is firm and unyielding, and there is no sign to indicate a recurrence. The final result is illustrated in Fig. 4.

Allow me to suggest, in this connection, that if Macewen's method of uniting the tendinous aponeuroses were adopted in ordinary cases of abdominal section, ventral hernia would be less frequent. Professor W. Gill Wyllie,

for several years, has insisted upon the careful coaptation of the abdominal fasciæ in closing the abdominal wound. In five cases of ovariectomy, where I have exercised much care in approximating the fibrous tissues, no sign of a ventral hernia has appeared in any case. The manner of treating the omentum is worthy of some consideration. It is believed that the descended omentum plays an important part in the production of hernia. In the radical operation, just before opening the sac, the hernia should be made to protrude; and if, on opening the sac, part of the contents are



FIG. 4.

found to be omentum, it should be ligated and excised as high up as can be reached. In tying off a portion of omentum, it should be transfixed with a double ligature and tied with a double knot on both sides. If the mass of omentum to be excised has a broad pedicle, a number of ligatures should be passed and tied with a chain knot. An additional precaution, to prevent hæmorrhage, is to place an extra

ligature so as to encircle the whole mass. The pedicle should then be dropped. Adherent omentum should be carefully separated and treated in the same way. I believe that the shoemaker's stitch of Marcy would be an excellent method of tying the pedicle in excision of the omentum.

If the hernia is complicated with an undescended testicle, the surgeon should not hesitate to perform castration. Such an organ is usually in an atrophic state and is of little value as a sexual organ. It is also a source of constant danger if left in the inguinal canal, and it predisposes to the recurrence of the hernia. It is also stated that an undescended testicle is especially liable to become the seat of malignant disease or cystic degeneration.

In cases of congenital hernia the lower part of the sac should be cut off and sewed up, so as to form an artificial tunica vaginalis. The upper part of the sac is divided longitudinally, separated from the cord, and then dealt with as the sac of an acquired hernia.

The following case illustrates the method of procedure in a case of umbilical hernia:

L. S., a female, thirty-nine years of age, married, no children. Patient stated that she had had a small protrusion in the region of the umbilicus for about ten years. During the past six weeks this had rapidly increased in size, giving rise to considerable pain, and attended with nausea and vomiting. Examination showed a hernial protrusion situated just below the navel. The integumentary covering was red and œdematous. The hernia was irreducible, and very sensitive to pressure.

Operation.—Antiseptic precautions. Incision in a vertical direction through the integument of the hernia. Sac carefully isolated and aponeurotic structures forming the borders of the ring exposed. Sac was then opened; hernia was found to consist of adherent omentum; this was separated, ligated with strong catgut, excised beyond the ligature, and the stump reduced within the abdominal cavity. The sac was excised at the

edges of the parietal peritonæum. The edges of the peritonæum were united with a continuous catgut suture. The edges of the abdominal ring then demanded attention. The margins of the aponeurotic structures were freshened and united according to Macewen's method. Three rubber drains were inserted, and the abdominal wound was closed, layer by layer, with continuous catgut sutures, antiseptic dressing applied, and patient placed in bed. Recovery without incident; bowels moved naturally on the fourth day.

A word in regard to the antiseptic method and mode of dressing. In all cases of operation on hernia the antiseptic method should be followed even to the minutest detail. This is necessary, not only for the safety of the patient, but in order to secure the success of the operation. An excellent description of general antiseptic details, by R. T. Morris,* may be found in the "Annals of Surgery" for December. I shall merely dwell on some of the more important precautions in connection with this operation. The thorough cleansing of the region of operation should occupy the earnest attention of the surgeon. A wound in this region is especially liable to infection, because of its proximity to the avenues of excretion. The skin should be thoroughly washed with soap and water and then shaved; it is then washed with 1-to-1,000 bichloride solution, or 1-to-20 carbolic-acid solution. During the etherization of the patient it is covered with a compress wet with one of the above solutions. During the progress of the operation the parts around the wound should be covered with towels wet in a hot 1-to-2,000 bichloride solution. Should any of the abdominal contents protrude through the wound, they should be wrapped in towels wrung out of a hot 1-to-5,000 bichloride solution, and be wiped with a clean sponge before being returned to the abdomen. If a

* "The Results of Antiseptic Methods in Treatment of Wounds, as shown in a Series of One Hundred Consecutive Operations."

portion of the omentum is resected, the stump should be wiped with a clean sponge before it is placed in the abdominal cavity.

After completion of the operation, the dressing should be applied as follows: If the wound is a large one, it should be covered with a strip of Lister's protective; around this a number of strips of iodoform gauze are placed. A number of handkerchiefs of bichloride gauze, shaken up into a loose mass, are then placed on the wound, and above this a large pad of bichloride or borated cotton. After a sufficient thickness of dressing has been applied, a spica bandage of wet gauze is snugly applied. The spica is made with much care; when this is done, the dressing forms a homogeneous mass. The dressing should not be removed under six days, and, when this is done, all antiseptic precautions, including the spray, should be employed.

The patient should retain a perfectly easy and recumbent posture during the first three or four days, in order to secure exact approximation of the parts and immediate union, with a firm cicatrix. It is thought by many surgeons that the cicatrix formed after a certain amount of suppuration is firmer and more resisting. Dr. R. F. Weir, in order to secure this form of cicatrix, packs the upper part of the wound with iodoform gauze, so as to secure union by granulation. I believe that the cicatrix secured by primary union is more perfect, and offers a greater resistance to the return of the hernia. It stands to reason that exact approximation of the parts, with rapid and immediate union, will insure a firmer abdominal wall than can be obtained after the parts have been subjected to all the wound disturbances which must accompany prolonged suppuration.



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