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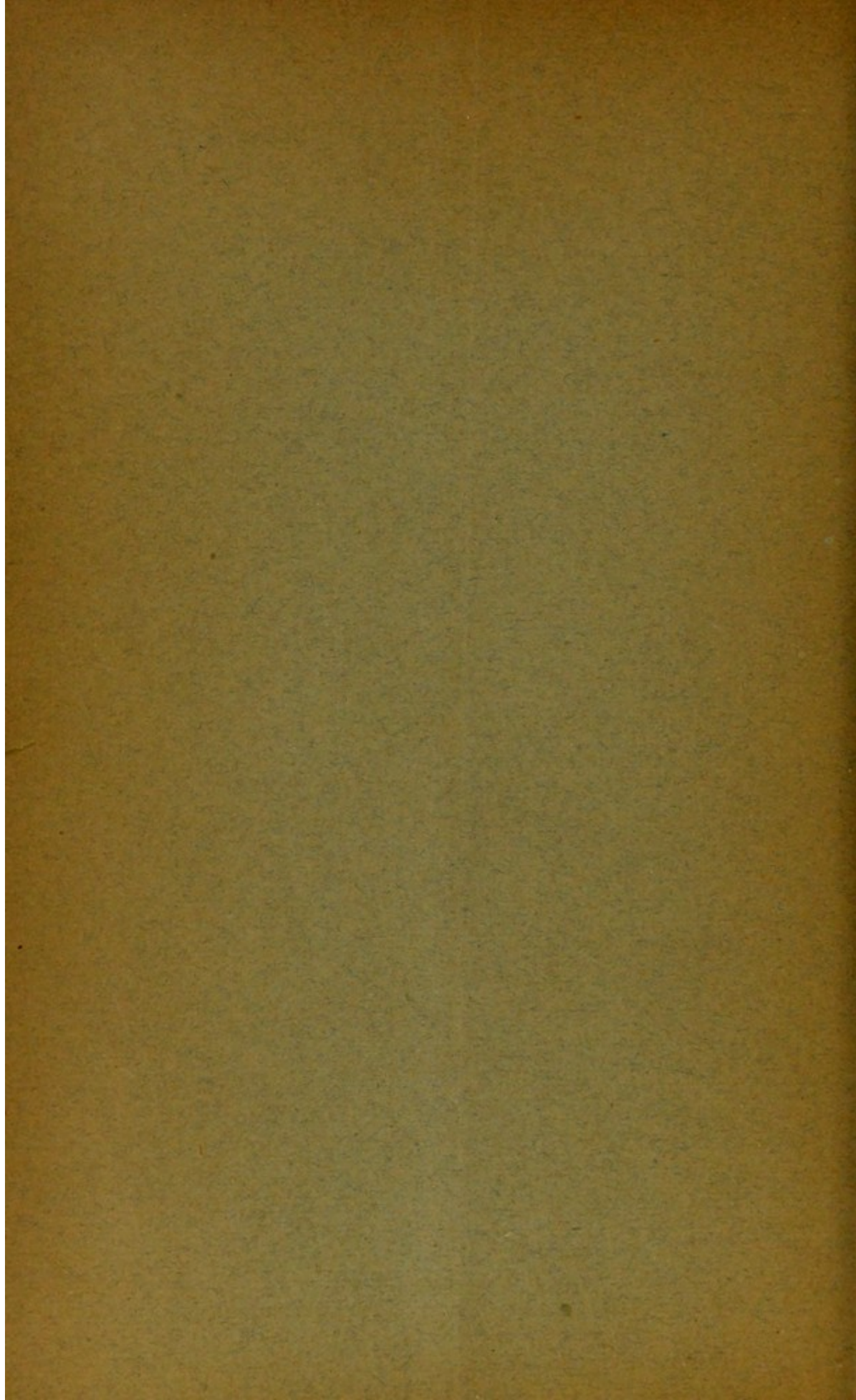


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RADICAL CURE OF HERNIA.

BY
W. MITCHELL BANKS, F.R.C.S.,
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THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

NOTES ON THE RADICAL CURE OF HERNIA.

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IF in writing these notes I may appear to be somewhat dogmatic, I must offer by way of apology two reasons:—first, that where it is necessary to be brief, one can hardly be otherwise than dogmatic; and secondly, that I am speaking not from a theoretical point of view, nor from the knowledge gained from a few cases, but from a fairly extended experience. I have now performed the operation for radical cure on twenty-five cases of inguinal, seven cases of femoral, two cases of umbilical, and three cases of ventral hernia; as well as on thirteen cases of strangulated inguinal, eleven cases of strangulated femoral, and two cases of strangulated umbilical hernia. In all, sixty-three cases of every kind, ranging from the simplest possible variety, to some that may almost be termed gigantic. As regards the cases of strangulated hernia, the application of the radical cure being merely an accessory, it must of course be admitted that we do not derive from them any information as regards the safety of the operation, but, on the other hand, we obtain the same information as to its subsequent utility that we gain from cases primarily operated upon for radical cure.

The term "radical cure" misleading.—The term "radical cure," implying as it does a thorough and perpetual cure, has, I suspect, been rather deterring to the progress of the operation than otherwise. People have been led by it to expect too much, and

have in consequence naturally been disappointed. It is popularly understood that a patient upon whom a radical cure has been performed, need never again wear a truss, nor ever again be in danger of his hernia coming down. This is unfortunately far from being the case. The instances where a light truss can be dispensed with are the minority; and, as regards a return of the hernia, I argue that any man in whom a hernia occurs, is naturally a man of lax fibre and patulous abdominal apertures. Now, it is not to be expected that you can make him better than he was before the rupture occurred; so that if you only make him as good, then you only make him a man of lax fibres and patulous abdominal apertures once more; and such a man ought always to wear a truss as a protection. No operation will ever convert him into a hard-fibred, tight-ringed man, so long as his anatomical construction is what it is. Whatever may be the case with children, we ought in adults only to hope to put the patient in the *status quo ante descensum*; in such a state, to wit, that a light support will keep any hernia from coming down. By viewing the operation in this light, we shall neither disappoint ourselves nor our patients, and we shall form a much truer estimate of the value of operative proceedings. For "radical cure of hernia," one ought to substitute "curative treatment of hernia by operation."

No little harm has been done by surgeons who have been so anxious to rush into print that they have at once published their one or two cases the very week the patients have left hospital. These are duly labelled "cured" and are reported as leaving without any trace of rupture. Such cases are simply worse than useless as regards the determination of the ultimate value of the operation. Let us see how the patients are twelve months afterwards, and let us know what they have been doing in the meantime, and then some good purpose will be served. In August, 1882, I read a paper at the meeting of the British Medical Association at Worcester, on this subject, in which a table was given of over thirty cases, with what had become of them during periods of two years to five or six months. The present article not being a statistical one, I do not bring forward

any figures, but I have under observation nearly every one of the cases I have treated, and trust before long to give a detailed report of their condition after the lapse of a sufficient period. At present, I only desire to say that I consider the operation a very valuable and useful one, and am sure that, as it gets more and more perfected, it will be the means of enabling many persons to live in comfort who have hitherto lived in distress, and will ultimately lead to a saving of human life; only too much must not be expected from it.

The cases suitable for operation.—As I am strongly of opinion that the majority of persons, even after the performance of the so-called radical cure, ought to wear a light truss, it follows that any person troubled only with a hernia of a moderate size, which can be comfortably and securely kept up by a truss, ought not to be subjected to any operation whatever. His condition will not be *very* greatly improved, and he will have been exposed to the risk of a surgical proceeding. I have not unfrequently been consulted by patients who were willing to undergo the risks of an operation, merely to get rid of the bother of wearing a truss, even although admittedly quite easy and comfortable; but I have always refused to operate, telling them that after the operation they would be hardly any better off.

Again, nearly all cases of congenital inguinal or umbilical hernia occurring in children, are curable by the prolonged wearing of a truss, and, in the case of respectable parents who can afford to purchase good instruments and have the intelligence to apply them, no further treatment need be contemplated. The great difficulty is with bad congenital inguinal herniæ in the infants of poor people, who can seldom get good trusses, and who are too negligent and too ignorant to apply them properly, even when they are given to them. Such cases are constantly turning up at hospitals and dispensaries, and when aggravated become legitimate subjects for operation. But before performing any radical cure, every possible means should be tried to secure the wearing of a truss, which can very generally be done, if only the mother can be got to throw herself into the treatment with the least approach to intelligent enthusiasm. The following may serve as

an example of the sort of case which really stands in need of operation. The patient, aged $2\frac{1}{2}$, was a thin, miserable, pallid creature, whose mother was extremely poor, and as regards carrying out any surgical treatment, practically anencephalous. He had two large double scrotal herniæ, and as he was always yelling and crying, for reasons only known to himself, the scrotum looked generally as if it were at bursting point, while the inguinal apertures were greatly dilated. On the left side, I first tried Spanton's operation, keeping the screw in for about twelve days. A good deal of suppuration and a great deal of thickening resulted. For some weeks it seemed as if this were going to succeed, but by degrees the adhesions gave way, and the gut came down as badly as ever. So on the right side I removed the sac and stitched up the ring. The sac was extremely delicate and the cord very minute, so that it was a work of considerable difficulty to clear the former. A portion of sac was retained and sewn up, so as to make a tunica vaginalis, and the upper part was stripped up and cut away. Then we waited about three months to see how this would do. Although the child's conditions were exactly the same as before, the bowel could not force its way down now. So the left side—the one upon which the Spanton's operation had been done—was subjected to the same proceeding, and now, after two and a half months, holds thoroughly. As a truss fits quite easily, the child is to be provided with one and sent home, for, although there is not the slightest impulse on coughing, I don't think he ought to be trusted without support; it would only be courting the spoiling of a good job. If he wears a truss for four or five years he will be safe. In noting the failure of Spanton's operation it is not with the view of decrying it, as I think very highly of it for cases of inguinal hernia of mild character where there is no adherent omentum. But so serious was the rupture in this case, and so great the amount of expulsive force which the child seemed able to bring to bear, that no operation, which depended solely upon inflammatory adhesion and nothing else, could possibly hold up against the strain. At the Liverpool Children's Infirmary, where much excellent work in the way of radical

cures has been done, I believe that the opinion is that for really bad cases of congenital hernia Spanton's operation is not sufficiently curative, and that the only thing is removal of the sac and closure of the pillars of the ring.

If it be admitted that in adults the only ruptures which need be tackled are those which cannot be satisfactorily kept up by a well made truss, we must next note the reasons why the said ruptures are not amenable to the operation of a supporting instrument. The first consists simply in the enormous size of the rupture itself, combined with great patency of the hernial aperture. Many ruptures by reason of neglect become so huge that no instrument can possibly hold them up, except by the exercise of a pressure which soon becomes unbearable. There is no doubt that these great herniæ most emphatically stand in need of radical cure, but there has been a natural tendency to fight shy of them on account of the magnitude and danger of the operations which have to be performed. I have lately been attacking specimens of very great size, and am beginning to get over my dread of them, but there is no doubt that some of the operations have been very extensive, and have given rise to no little anxiety. Like ovariectomy, they were certainly of a kind that forty years ago would have subjected anyone who did them and failed to a criminal prosecution. In the case of very large ruptures, it is, therefore, only right fully to explain to the patients that they run a not inconsiderable amount of risk, and to leave pretty much with themselves the decision of what is to be done. For, after all, one must remember that a person with a very big and very troublesome rupture may live long enough, and do plenty of good work; consequently, a death from an "operation of convenience," which, perhaps, has been urged upon the patient by the surgeon, is a source of great regret and mortification to him, as I myself experienced in the only fatal case which I have yet had. Of course, in this, as in every other surgical operation, one must take into account the age and strength of the patient. To operate upon a broken down used up old man of three score and ten, with a rupture as big as his head, is only to court destruction. The operation is one which

must not be done recklessly, but which must have a strong motive for its performance and an almost certain promise of success.

One of the largest cases I have attacked, was in the person of a very big fat woman of 45, who came some months ago from the Isle of Man. She had a rupture which no instrument could keep up, and which was rendering her useless, so she was willing to submit to anything. It was a right inguinal hernia, which had made its way down into the labium. From the inguinal ring to its lowest point, it measured 15 inches, and its girth at the widest part was 20 inches; in fact it reached most part of the way down her thigh, and practically obliterated the vagina. The tips of four fingers could be pushed into the ring. The contents consisted of bowel alone and were completely reducible, which was very fortunate. Before commencing the operation, I reduced the hernia, and then entrusted to an assistant the duty of keeping it up, which he accomplished by stuffing the fingers of both hands into the ring, and pressing up as hard as he could. The process of dissecting out so large a sac was, as might be expected, a long and tedious one, involving the tying of innumerable small vessels. Luckily, however, there was no spermatic cord to trouble about, as I gathered up with the sac any vestiges of round ligament that remained, so that there should be nothing to pass through the canal afterwards. During this proceeding the ether caused the patient to retch and cough a great deal, and so tremendous was the force exerted, that twice the bowels rushed down into the partially dissected sac, in spite of the utmost exertions of the assistant at the ring to hold them up. Had the sac been opened they would have been all over the table; however, chloroform was administered and then the patient became quiet. I have very often had to leave off ether in these cases, owing to the impossibility of going on with the operation while the patient was coughing and straining. When the sac was completely dissected out, the neck was so large that I did not venture to tie catgut round it, but stitched it through and through from side to side, cut it off, and then stitched it over the cut edges again. Then the pillars were pulled together in all

their extent by five very thick wire stitches ; and, finally, a great piece of loose skin, about the size of a page of this journal, was swept away. A bystander jocularly remarked that the sac would have made a very respectable peritonæum for a five year old child. The parts healed excellently, and the patient is now at home in perfect comfort, wearing a good firm truss to prevent any descent.

The second reason why certain ruptures are not amenable to the action of trusses is the presence of adherent omentum in the hernial sac, by which the ring is always kept open, and a sort of inclined plane produced, down which the hernia is always free to descend, seeing that no truss can possibly stop up the hernial aperture in an effectual manner. In the majority of cases of femoral rupture, the first thing to descend is a small piece of omentum. This becomes adherent to the sac, and cannot be returned. It grows hard in texture, and its neck becomes narrow and pedunculated, so that it has all the feeling of a deep-seated enlarged gland. In that condition it may remain for a long time, the patient being unable to wear any truss, until some extra exertion forces down a small knuckle of bowel, which straightway becomes acutely strangulated. From the rapidity with which the sharp edge of Gimbernats's ligament cuts into the bowel in these cases, they are usually most dangerous. From which it comes about that a patient with a small femoral hernia consisting of adherent omentum goes about in constant danger of his life, never sure that a piece of bowel may not at any moment follow. Now, the dissecting out of these small femoral sacs, and the separation and removal of their contained adherent omentum, is so easy and so safe a proceeding that I should have no hesitation in always strongly recommending an operation in such cases. The instance of E. A., a housemaid, aged 32, is tolerably characteristic of these cases. Nearly four years before her admission to the Infirmary, in March, 1881, she discovered by accident that there was a small lump in her groin. It seemed to go away, or at any rate it did not give her any trouble, and so she did not pay any attention to it. In June, 1880, after a good deal of exertion, she was attacked with severe pain in the groin,

lasting for some hours. In August occurred another similar attack, and then she applied to a medical man, and was fitted with a truss. Again, in November, two more attacks, and now the lump in the groin became stationary, and she wore her truss upon the top of it. In January and February, 1881, the lump gave her so much pain and trouble after any exertion, such as lifting furniture, that she applied for assistance. I cut down upon it, opened the sac, and found a piece of adherent omentum in it about the size of a large marble, which, along with the sac, was tied and cut off. I saw the patient the other day, three years after the operation. She has been at work as a housemaid, not wearing any truss, but simply taking care not to give herself any violent strains. There is not the slightest impulse on coughing and she has been therefore perfectly cured. The usual history of such cases, when left alone, is that some day an extra effort is made, great shock and sickness follow, and the patient has to be cut to relieve a little knuckle of bowel, often no bigger than a walnut, but acutely strangulated by the knife-like margin of Gimbernat's ligament.

Turning to inguinal herniæ, it will almost always be found that those which, being of a small or moderate size, cannot be supported by a truss, have at the bottom of this difficulty the fact that there is present a thin, flattened piece of adherent omentum, which is really quite irreducible, but which, when the bowel is put up, feels only like a very thick sac. Its presence, however, is most potent for evil, as it quite nullifies the retaining power of any truss. P. S., a strong healthy sailor of 32, on admission to the Infirmary told us that, about five years previously, he first detected a small lump opposite the external inguinal ring, which used to disappear when he lay on his back. Very slowly it increased in size, until at last it no longer went back of its own accord, but had to be pushed back. For four years he had worn a truss, which seemed to act efficiently at first, but latterly was not of much use. A week before admission he had occasion to jump some feet. The hernia suddenly bolted down, and could not be got up for some hours, until he had had morphia and a hot bath. He suffered such pain during these few hours, that he felt obliged to come and request that some

permanent relief should be given him. I dissected out the sac, and, on opening it, found a piece of condensed omentum intimately adherent to the neck and the part immediately below. This was separated and removed, and the usual operation performed. He was seen the other day, about eighteen months after the operation. There was not the slightest impulse on coughing. He is in perfect comfort and at his work, and only wears a light truss for the sake of security. The piece of adherent omentum was the cause of the failure of the truss, and, as his experience of the week before admission clearly showed, kept him in constant danger of strangulation. Its removal has enabled the other steps of the radical cure to take due effect, and has practically put him in safety.

To condense matters, therefore, my experience would lead me to say that an operation should be recommended (*a*) in children only when it is impossible to get the parents to pay any attention to the complaint—in short, in the children of the poor and ignorant; (*b*) in small femoral herniæ composed of irreducible omentum, always; (*c*) in inguinal herniæ incapable of support by reason of the presence of adherent omentum, always; (*d*) in all herniæ whose great size renders support by a truss impossible. Ventral and omental ruptures come in the same category as (*c*) and (*d*).

Points in the operation.—Before every operation for femoral or inguinal hernia it is of the greatest importance that the pubes, scrotum, and inner side of the thighs should be shaved, and carefully disinfected by repeated washings with carbolized water. Unless this is done thoroughly, any attempt at carrying out antiseptics, properly so-called, must end in failure. During the process of cutting down upon the sac, the very minutest vessels should be tied, and this should be most carefully done during the whole operation, so that, when the sac comes to be opened, no blood may flow into the peritonæal cavity. The great mistake in one's first operations is in thinking that the sac has been reached long before it has. In this way two or three extensive strippings are often made, and then, after all, another layer or two are found. By these strippings the cellular tissue is torn up, as a result of

which troublesome sloughing and suppuration are apt to occur. At its lowest part the sac is always more or less adherent to the tunica vaginalis in inguinal hernia, and at that point requires very careful separation, otherwise the tunica and its contained testicle are apt to be pulled bodily out of the scrotum. No very serious harm results from this, even when it does happen, but it tends to that tearing up of the scrotal tissues which has just been deprecated. As regards the structures of the cord, the only one about which there need be any anxiety is the vas deferens. Very early on in the process of clearing the sac it ought to be found, and kept carefully in view during the whole operation. As for injury to the vessels or other constituents of the cord, this does not seem to affect the testicle at all. In the case of congenital inguinal herniæ, there is always much more difficulty in separating the cord than in any other form, and in young children, in whom the peritonæal tube is very thin, it is most difficult. In congenital herniæ it is necessary to divide the tube a little way above the testicle, so as to make a tunica vaginalis, which ought to be stitched up with fine catgut. The rest of the tube is then stripped up to the ring, and tied and cut off in the usual manner.

The treatment of omentum contained in the sac.—When the sac has been dissected out, and the contained bowel pushed up into the abdomen, there is often a strong temptation to ligature it at once without opening it. I do not consider this a prudent thing. I think the sac should always be opened and examined, because, although one may feel absolutely certain that no bowel remains, there is often a very thin slip or fag end of flattened omentum lying just outside the ring, and adherent around the neck of the sac. Now if this be cut across with the sac, its inner end still remains attached to the abdominal wall opposite the internal inguinal aperture and acts as a pioneer for more omentum and for bowel to come down. Concerning the removal of omentum, whether adherent or not, not the slightest dread need be entertained of cutting away any amount of it. Recollecting what a source of anxiety a bit of omentum used to be, and how one was always warned against meddling with it if

possible, I cannot but regard with astonishment the way in which one in the present day cuts away pouches of peritonæum and sweeps off huge masses of omentum apparently with impunity. Now that I look back upon it, this dread of omentum was without doubt the reason why many cases of operation for strangulated herniæ proved fatal. For instance, the sac being laid open, bowel and a piece of adherent omentum were found. The stricture was freely divided, and the bowel returned. Then the omentum, if adherent, was left lying in the sac, unless, indeed, it was so gangrenous that its removal was obviously imperative, and even then it was cut away with fear and trembling. Septic suppuration having taken place in the superficial tissues, spread to the sac, crept up along the omentum to the peritonæal cavity, and so caused death from putrid absorption.

One great comfort about large masses of omentum is that, however big they may be, they are always tolerably narrow at the neck of the sac, if they have been down for any length of time. It is quite satisfactory to find how, after two or three ligatures have been tied, a great bulk of fat can be cut away, only requiring that a comparatively small stump need be replaced in the abdominal cavity. Small pieces can of course be removed by one catgut ligature, but large masses must be split up into half-a-dozen portions if necessary, and these tied separately either with thick catgut, or, when hard and dense, with carbolized silk. I have removed many pieces as large as the fist, one three-quarters of a pound in weight, another a pound and a half, and another two pounds all but three ounces. The solitary point of danger is the bleeding. The amount of omentum removed and the number of ligatures put on seems of no consequence, but at any sacrifice of time and patience every possibility of hæmorrhage must be securely provided against before the stump is returned. In separating adherent omentum from the body of the sac, bleeding may be disregarded, provided no blood is allowed to run up into the peritonæal cavity. But at the neck of the sac, where adhesions are very prone to occur, the greatest care in separation should be exercised. It is most important that the adhesions at this part

should, if possible, be broken down, as, if this is not done, the omentum stump remains fixed to the abdominal wall at the inner opening of the ring or even in the canal, and so remains as a persistent guide for something more to come down in its track. The omentum stump should be cut quite adrift from the abdominal wall, and when pushed up should tumble loose into the abdominal cavity. As far as I can see it does not matter how tight the ligatures are tied:—the tighter the better. Only the omentum should not be cut off too close to the ligature, lest it slip. A good large stump should be left for safety's sake. In splitting the omentum up to allow of several ligatures being put on, too great care can hardly be exercised not to split up a big omental vein. These veins are excessively thin, and a very little pressure empties them. An empty one can be quite easily torn longitudinally, and then, as one side goes to each tied-up pedicle, it is kept permanently open, and when the stump is returned, and all pressure taken off, it bleeds furiously. This very accident once happened to me, and gave me a very great fright. The patient, Edward Hancox, aged 41, was admitted with a strangulated inguinal hernia, upon which I proceeded to operate. Having dissected out the sac, I opened it, divided the stricture, and reduced the gut. There remained a considerable mass of adherent omentum, which I split into three pieces with my fingers, and having tied each piece with catgut, I cut off the mass and restored the stump into the abdomen. No sooner was this done than venous blood began to pour out of the external ring. Thinking my incision for dividing the stricture had cut some abnormal vessel, I slit up the neck of the sac and the external ring, and saw the nick I had made, from which no blood was coming. The bleeding evidently came from the abdominal cavity, as was shown by the fact that when a coil of bowel came down and plugged up the inguinal ring it stopped, but the minute this coil was pushed up by the finger the blood gushed out again. It was clear that the bleeding could only come from the stump of the omentum, which had been returned into the abdominal cavity, and that this must be found at all hazards. So I ripped up the inguinal canal, and then the abdominal wall along the outer edge of the rectus

for a good way, but the omentum would not come in sight, so the ripping was continued to a point higher than the navel. By this time nearly all the bowels were rolling about the table or over the man's abdomen. At last the omental stump was found within an inch of the transverse colon, and from it blood was issuing, although the great gushing had stopped. I was in too great a hurry to note exactly what had happened, but put two catgut ligatures around the omental stump, and at once proceeded to replace the bowels; a task which took all hands to accomplish, as they slipped about like water. The peritonæum was stitched together with five catgut sutures; after that fourteen silver wire stitches were employed to unite the muscles, and then the skin was sewn up. Finally the sac was cut off and tied, and the ring pillars were brought together with a couple of wire sutures. Once or twice during the operation the patient seemed at death's door from shock and hæmorrhage, but by keeping his head low, and injecting him with ether, he was kept going. Fortunately he made a most excellent recovery, with only a couple of degrees rise in temperature during the first three days. He works as a painter and wears an abdominal belt to support the great line of incision, but no truss, as no hernia comes down. A case of this sort naturally gave one great anxiety for the moment, and I have ever since been scrupulously careful both in splitting up omentum, and in tying it afterwards.

Removing the sac and stitching the ring pillars.—The sac having been thoroughly separated and opened, and its contents having been disposed of, it should be well pulled down and tied as high up as possible, whether at the femoral or at the inguinal apertures. The great object of the whole proceeding is to restore a uniform surface to the peritonæal wall, and hence the higher up the sac is tied the better is the chance of this being permanent. When this operation was first undertaken the theoretical critic at once started the objection that as the peritonæum was an eminently elastic membrane, you might take away the sac as cleanly as it was possible to do, but the distensile membrane would be immediately pushed out into another sac opposite the weak aperture. As a matter of fact this is not so,

but apart from that the reasoning was not quite correct. The movement of the bowels over the front of the abdominal wall is, so to speak, a liquid movement. It is the searching sweep of a great wave slowly rushing up the face of a breakwater. If the breakwater can only preserve a smooth surface, with every joint well cemented, then it will stand, although there may be more than one weak place in its backing. But the moment the surface gives way at any point, there the water persistently presses in and in till the stones around are undermined and a breach is made. Clearly, then, however we may strengthen our bulwark behind by stitching up the ring and applying a truss, the first thing to do is to keep its water surface—its peritonæal surface—free from any inviting pouch or depression. Indeed, in the case of femoral, umbilical, or ventral ruptures this is all we can do.

Turning next to the pillars of the ring, I employ two, three, or four silver wire sutures to pull them together, inserted with a curved needle in a handle. Room must, of course, be left at the lower part of the ring for the spermatic cord to pass through. The wire should be thick—so thick that a single knot on it will suffice to make it hold without any second knot or without twisting. Then it should be cut very close to the knot, so as to leave no sharp projecting ends. In the few instances where I have seen a wire suture work its way out, this point had not been attended to, and its sharp ends had irritated the tissues till they ejected it. With the ends cut close off, it is simply a minute circle of silver, than which there is nothing less irritating. I adhere to the silver suture and strongly recommend its use for the one reason that its hold is certain and enduring beyond that of any other suture, while it is as harmless as any. Of course the theorist, who wants to use the latest novelty in sutures, has his cut and dried objections to the somewhat old-fashioned wire. It *must* be clumsy and cumbersome; and it *must* come out; and it *must* do this and the other. The simple answer is, it doesn't. It quietly embeds itself and is no more seen except in the rarest instances, where a great deal of suppuration has taken place. In the case of the mau who had hæmorrhage from the omentum,

recently narrated, some sixteen silver sutures were put in, and we never saw any of them again. Of course every surgeon may use what suture he pleases; all that I object to is that persons should evolve out of the depths of their own consciousness arguments against the wire suture, when they have never tried it and don't know anything about it. Personally, I have tried all sorts, and have decided upon the silver wire as the best.

When an inguinal hernia is not very large the approximation of the ring pillars is quite easy. But in the case of great ruptures all the parts about the ring and canal are widely separated and displaced. In such cases I always feel very carefully about with the forefinger of the left hand for the epigastric artery before thrusting the needle through the tissues. On one occasion I did discover it, and it was just where I was about to push in the needle. It would almost certainly have been pierced, a circumstance which might have given rise to not a little trouble and delay.

Descent of large intestine in inguinal hernia.—The discovery of a piece of large intestine (not transverse colon) in an inguinal sac is one of the most troublesome conditions I know. I scarcely think it can be of frequent occurrence. At any rate I have only seen it twice in my own practice. The following instance will show what occurs. The patient was an extremely big fat man, 32 years of age, who had had a left inguinal hernia in progress for several years. No truss had the slightest command over it, and it was becoming a serious hindrance to him in his work. As he lay in bed the tumour was about the size of a very big cocoa-nut. It was evidently composed mainly of omentum, but there was a considerable amount of bowel also. Steady squeezing reduced some of the bowel, but not all. He was kept for a fortnight on his back with the pelvis elevated on pillows, and a bag with about four pounds of small shot over the tumour. This certainly lessened it somewhat, but only, I suspect, by draining it of its blood and fluids generally. Accordingly an operation was agreed to. I cleared the whole of the front of the sac, which was of great size. It happened to be an extremely thin one, and in

doing this I made two holes in it, out of which omentum tumbled in such quantities that I thought it best to get quit of it at once before further clearing the sac. The omentum formed a great mass, and had to be tied off in several portions with carbolized silk; weighing two pounds all but three ounces when removed. The sac was now quite empty, but it was evident that behind it was something thick and soft, to the front of which it was adherent. A little further clearing up showed that this was a piece of large gut, probably sigmoid flexure, extending down about three inches below the outer ring. The sac formed its peritonæal covering in front, but posteriorly it had none, and when it was gently detached from neighbouring parts its muscular fibres could be quite clearly seen. On the first occasion, when a condition of a similar sort occurred to me, I thought I had adherent bowel to deal with, and laboriously worked away for a long time stripping off the peritonæum till I discovered my mistake. This time, fortified by experience, I simply loosened the free posterior surface of the bowel, and, with my finger, freed the sac round the outer inguinal orifice. Then I carefully stitched up the holes in the sac with catgut, and finally, by steady pressure, pushed bowel and sac up into the abdomen. Then the pillars were brought together, which was a work of some trouble, as the hole was so big that the outer one practically did not exist, so I pulled the inner one down to Poupart's ligament just in front of the femoral vessels. The case was only done a few weeks ago, but, as soon as the man can bear it, he will be fitted with a powerful truss, which will almost certainly enable him to get about his work in comfort, whereas his former condition did not offer the faintest prospect of relief by support, but must have steadily continued more and more to disable him.

In such cases the one point is to be able to recognise early that it is great gut that is down—bare behind but having the sac coating it in front—and not to begin stripping it of peritonæum, under the impression that one is dealing with inflammatory adhesions, but to sew up the sac and push it and the bowel bodily into the abdomen.

Ventral and umbilical herniæ.—The management of these

forms of rupture I have found the most difficult of all. Seeing that those of them which require radical cure are invariably of large size and old standing, it happens that by long-continued pressure the skin is usually adherent to the sac. Sometimes, even, there has been ulceration, and then the sac is covered only by cicatricial tissue. They almost always contain omentum, which becomes intensely adherent to the sac, and gets kneaded and worked up into hard, knotty masses with fibrous cords between them, and even small spaces, until the whole resembles a fibro-cystic tumour with pieces of fat scattered throughout it. It is most troublesome to clear away. Then the abdominal aperture is always of great size, and its margins are so thin and fibrous in character, that any attempt at paring its edges and pulling them together is hardly practicable except in a few instances. I have been obliged to content myself with removing the sac as close to the aperture as possible, and then carrying away all superfluous lax skin, so as to tighten up the abdominal wall as much as possible. An abdominal support must invariably be worn afterwards. The first case I did strongly impressed me with the necessity of this. The patient was a young powerful married woman, 25 years of age. She had a ventral hernia of large size which gave her great trouble. I operated upon it, and when she left the hospital everything seemed excellent; no tumour, and no impulse on coughing. She came back a month or two afterwards, and things were quite satisfactory. She was warned to wear a support, and she said she would. Then I lost sight of her for two years, but found her out again. She had taken to drunken ways, had never got any support, as she was told to do, and had neglected everything; so that her hernia had come back and was as big or even bigger than before. As an example of a very bad case, I may cite one upon which I operated some two or three months ago. The patient was a stout healthy married woman of 35. Just below the navel were two large tumours. They were not unlike two great elongated mammæ, diverging below, but united above, where they seemed to run into each other at a common neck. They both obviously contained bowel, and the left one omentum also. On straining in the

erect position they became fuller and tenser, while in the recumbent position a certain amount of their contents could be returned, but not much. The great bulk was irreducible. The left one had given the patient a great deal of suffering for years, owing to constant ulceration of the skin covering it, so that there was hardly a bit of real skin on it: nothing but cicatricial tissue. There was in progress an ulceration about the size of a penny. The patient's life was rendered very wretched by this condition of things, and she was willing to encounter any reasonable risk for its cure. I attacked the left tumour and with the greatest care made a superficial incision over it. It was fortunate one did not go very deep, for it soon became apparent that over the most prominent parts of the tumour, where friction and ulceration had been greatest, the bowel was covered only by cicatricial tissue closely adherent to it; not even the sac could be distinguished. The bowel was transverse colon. Then ensued a most difficult and tedious job, that of separating this adherent cicatricial covering from the gut, so that it might be returned into the abdomen. It took nearly an hour to do it, and eventually at one spot I went clean into the bowel and made a hole in it which would admit the little finger. I turned its edges inwards and stitched it carefully up with catgut. By patient work the bowel was at last freed and pushed into the abdomen, an antiseptic pad being placed over the hole to keep the bowels in and the blood out. Then the omentum was pulled away from the sac, divided into sundry pieces, and tied as deep down as possible in the aperture. Having finished the left tumour I turned to the right one, but fortunately it turned out a much easier matter to manage than its fellow. It contained small gut, which was only slightly adherent, and was easily separated and reduced. Curiously enough, although there were two tumours, they both came out of one large aperture. Some fibrous bands had given a bias to the great intestine and omentum in one direction, and to the small intestine in another, and so they had formed separate sacs for themselves, having a common neck. This thickened neck I first stitched through and through from side to side, as close to the hole as possible, and then, shearing it away, stitched it again over

the cut edges. I did so because thorough union and adhesion of the neck of the sac were imperative, seeing that the hole was so big that it was with difficulty that the bowels were kept in by the hand during the operation. A violent fit of coughing or retching afterwards would have sent everything flying, unless this had been obtained. Finally a great piece of skin was swept away, which had covered the two tumours, leaving only one long transverse line across the abdomen, along which the skin was tightly braced up to give additional support. The patient suffered a good deal from shock, as the operation took nearly two hours to do, and was most troublesome in its details. She had nothing but ice and opium for some days, lest the hole in the bowel, which we had stitched up, should give way. She made an excellent recovery, however, and is now going to be fitted with an abdominal support which will keep her in comfort.

Inguinal hernia with undescended testicle.—In those cases where the radical cure is undertaken for hernia coming down behind an undescended testicle, the latter ought always to be removed. Such a testicle may almost always be considered to be practically a useless organ. It will neither go up nor down, and remains just outside the ring, effectually preventing the efficient action of a truss. I have done this in two cases, and as the removal of testicle and cord leaves nothing to come through the ring and so keep it patent, a really perfect cure, without the necessity of wearing a truss, may be expected in such cases. The two patients upon whom I performed this operation were both young sailors, and their testimony was almost identical. They each had an undescended testicle lying in the ring; they each fell a distance of some feet, giving themselves a considerable shock, and in each instance the testicle bolted down, followed by a knuckle of intestine. Great pain with symptoms of shock and strangulation followed. The bowel being reduced, the sac, testicle and cord were removed as far up as possible, and the pillars drawn together in all their extent. I saw both men more than three years after the operations. One was working as a fireman on board a steamer, and the other was a quarter-master; both most laborious occupations. They wore no trusses and had not a

trace of impulse on coughing, the rings feeling as firm as any other part of the abdomen.

After treatment.—As regards dressing, I always use a perfectly new sponge, wrung out of carbolic solution. Its elastic pressure is most efficacious at once in holding the disrupted parts together, and in resisting the shock of straining from subsequent coughing or sickness. In spite of all antiseptics the cellular tissue of the scrotum and cord often suppurates pretty freely. After the second day or so, when one is pretty sure that the neck of the sac where ligatured is firmly adherent and closed, if suppuration should take place, the more complicated dressings may be left off, a few stitches taken out, the wound well syringed and dusted with iodoform, and then left to granulate up like any other wound.

The application of the radical cure to cases of strangulated hernia.—As regards the application of the radical cure to cases of strangulated hernia it is certain that in due time it will come to be considered as a necessary part of the operation, wherever sufficient help is obtainable. But there is no doubt that in the case of a large inguinal or umbilical hernia the stripping of the sac and all the subsequent details of the radical cure involve a great amount of operative work, as compared with the simple process of opening the sac and returning the gut. Many a country surgeon does herniotomy over and over again during the middle of the night, with a single assistant, perhaps, and with the light of a couple of candles. Under such circumstances it cannot be expected that he should undertake an elaborate operation. But in hospital practice, or where there is plenty of assistance, the radical cure should always be undertaken, because, in addition to preventing further descent of the bowel, it renders herniotomy infinitely less dangerous. The old idea used to be that patients died from general peritonitis after herniotomy, chiefly on account of meddling with the peritonæum. This was a mistake. Peritonitis, pure and simple, is probably not a dangerous affair, as one may constantly observe in uterine affections, where the pelvic peritonæum is repeatedly inflamed, without any necessarily disastrous consequences. Moreover, the old bogey—the dreadful danger of

even scratching the peritonæum—is defunct. It seems to be a very harmless membrane, and will stand all sorts of rough treatment, provided you don't put poison into it. But to that it is amazingly sensitive, and sucks it up as sand does water. I have seen a good many autopsies after herniotomy, and my general impression is that in nearly all of them the external wound was dirty and often sloughy, that sanious pus had crept up the sac, that the peritonæum for some way round the inner ring was covered with flaky lymph, that the strangulated piece of bowel and some neighbouring coils were also inflamed, and often glued by soft adhesions round the ring, and that, perhaps, an injected condition, or some peritonitic lymph might be found over some coils of small gut elsewhere. But that is not enough *inflammatory* mischief to kill a man. No, it is not the peritonitis but the septic absorption that kills. Many years ago, long before the radical cure was put in practice, I was convinced of this, and after reducing bowel and omentum, used to wash out the sac thoroughly, and then carefully stitch up the opening in it, so as to shut off the abdominal cavity. If, then, in a case of strangulated hernia the bowel is thoroughly wiped and cleansed, if no blood is allowed to run up into the abdomen, and if the sac is tied off, then the peritonæal cavity is securely closed against the entrance of all infection from without and the chiefest source of danger at once removed. To add to the safety of this proceeding the incision made to relieve the stricture should be of the smallest dimensions, and, in very many instances, none need be made at all. By a little patient boring with the forefinger, a large number of strictures will yield to dilatation. They are often only of the flimsiest nature, although from their situation quite sufficient to prevent all attempts at manual reduction.

As regards the fatalities which have occurred in the 26 cases of strangulated hernia upon which the radical cure has been performed, they are, of course, of no use whatever in determining the danger to life of the radical cure *per se*. But they are distinctly of service in showing whether the addition of the radical cure to the ordinary operation for strangulated hernia has rendered that operation more dangerous or more safe. Out of the

26 cases there have been 3 deaths, or as nearly as possible 1 death in every 9 cases. This I imagine is a very good average, especially as there were some extremely bad cases among them. In 12 out of the 26 cases omentum had to be removed, the masses in some instances running from half-a-pound to a pound in weight. One was a case where eight inches of bowel were removed; another was the case of bleeding from the omental stump, mentioned in the paper, where the abdominal wall had to be slit up. In one patient the hernia had been reduced *en masse* twenty-four hours after its first appearance, but, being believed to be safely returned, it was only the continued persistence of marked symptoms of strangulation which caused the patient's removal to the Infirmary a week from the time the bowel was first nipped. In another the sac contained bloody serum along with 9 inches of gut of a very dark claret colour, covered with lymph and with extravasations of blood beneath its peritonæum; so bad, indeed, that returning it into the abdomen seemed a very risky proceeding. Of the patients who died, one was an old, worn-out bronchitic man of 77, who succumbed a week after the operation, more from bronchitis than anything else. Another was a woman over 70 with a large umbilical hernia, involving the removal of a great deal of omentum; and the third was a gentleman over 60, with a very weak heart. At the time of life of these patients any surgical proceeding, even the smallest, might kill, far less such a serious matter as a strangulated hernia followed by operation. In none of the three did the general symptoms point to septic poisoning.

The fatal case, among the 36 instances of uncomplicated radical cure, occurred in a male child of two years and two months. He had a congenital inguinal hernia, which, at the time of birth, was as big as an egg. It had increased to about twice that size. About six months before his admission he had for some reason been tapped, which I suspect made matters worse, and helped to produce the adhesions subsequently found. He had been in a hospital for ten weeks, where every effort had been made to get a truss to act, but in vain. The hernia seemed to consist of bowel alone, but was absolutely irreducible, so that

no truss could possibly be worn. At the operation there was found small intestine adherent firmly to the sac, and also great intestine, which looked like a piece of ascending colon. Great difficulty was found in separating the small intestine, and many points on its surface bled so sharply that they had to be tied with fine catgut. As for the great intestine, I did not in this case quite recognise the relation of it to other parts, and attempted to strip it of peritonæum when I ought to have left it alone. The operation took a very long time, and the child never got over the shock. It lay in a kind of stupor, moaning at intervals, and died about thirty hours afterwards. After death a piece of the small gut was found, with the ligatures on it, congested and with bright spots of ecchymosis on it. For about two inches the peritonæum had been stripped from the ascending colon and the exposed surface was covered with flaky lymph. There was no general peritonitis. About a teaspoonful of pus was found beneath the skin of the scrotum. To operate on this child was really a necessity, as the hernia, which was quite irreducible through adhesions and quite incapable of support, would have certainly rendered him practically useless in after life. But this was only small consolation. The number of cases reported in England is as yet too limited to form any just judgment of what the mortality from the radical cure is likely to be, and can only be satisfactorily determined by individual men publishing their own complete lists of cases, whose number shall be sufficient to give the necessary average: just as was done by Spencer Wells and Keith with ovariectomy. To try to get any average from isolated cases reported in the journals is of no use. I have known many a surgeon publish a couple of successful ones, and, after that, meeting with a fatal one, the "*subsequent proceedings interested him no more.*" As I have never yet operated unless there was a very clear call for curative measures, the result has been that most of the operations have been by no means trifling, and in not a few instances very serious in character. I have, therefore, no hesitation in detailing my failure, seeing that one death in 36 cases, occurring during the period when one is getting one's knowledge and experience, is not such a serious

matter. It is to be hoped that in future a death will be much rarer still, but that the operation will ever be pronounced free from danger cannot reasonably be expected.

In conclusion, I must once more apologize if I have appeared at all egotistical in the observations just made, seeing that it is almost impossible for anyone to write the history of his own experiences, and what they have taught him, without laying himself open to that imputation. I do not consider that my views are by any means final, but trust that every year will add to our power of perfecting a valuable piece of surgery.