A STUDY OF FIFTY CONSECUTIVE CASES
OF
OPERATION FOR THE RADICAL CURE OF
NON-STRANGULATED HERNIÆ.

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A STUDY of fifty consecutive cases of operation for the radical cure of non-strangulated herniæ, including all the first fifty I have performed, cannot, I venture to think, fail to be of some interest, although the ultimate results of the procedure should not be pronounced upon finally until several more years have elapsed. I have undertaken this study, I believe, without any strong preconceived notion, and simply with a view to learn as much as possible from the series for my own future guidance, and to impart the facts learned as fully as may be to others interested in the subject.

The surgical interest of this procedure centres, I think, round the following considerations :

1. Is it called for ?
2. Is it safe—(a) as regards the patient's life ; (b) as regards the contents of the scrotum ?
3. Does it secure against a return of the hernia ?

These are all vital questions, which can only be answered when we have had a much larger experience. In the meantime nothing can contribute so much to our forming an accurate estimate of the place which this class of operation is to take among the recognised procedures of surgery as the careful analysis and publication of completed series.

In putting these cases together I have purposely excluded operations for radical cure performed on herniæ already strangulated. The latter belong to a totally different category. And although my statistics would be, in some respects, favorably influenced if these were included, it has been considered more advisable to keep them out.

To the first question, whether operations for the radical cure of herniæ are called for, I think most surgeons nowadays would feel inclined, for a large group of selected cases, to give an affirmative answer. The dangers of ruptures, especially among the less favoured members of the community, are amply shown by the large number which are daily operated on for strangulation. The discomforts of the condition, too, and the disabilities entailed upon those suffering from it, are also so well known as to need no comment.

We must all admit, then, that some means of getting rid of herniæ are urgently called for in some cases at all events, if the cure can be accomplished with safety to the patient. Indeed, it may be urged that a certain amount of risk may be accepted by the patient afflicted with this defect and who desires an operation for his cure, seeing that, if nothing is done, he has daily to face the dangers of strangulation.

Admitting, then, that the cure of this condition is most desirable, what are the risks as to life which the patient has to face who is anxious for an operation for the radical cure of a non-strangulated hernia ?

I think upon this point the series of cases now before us gives clear evidence as far as it goes.

There has not been a single death among the whole

fifty operations, though some were very troublesome. And though in my next series of fifty additional cases, which will not be complete for some time, there will be at least one death, occurring in a peculiarly complicated case, the fact that in half a hundred operations on patients suffering from all the various forms of hernia not one death has occurred, shows that under the newer conditions of wound treatment the risks of operating for the conditions in question are very small.

Let us now glance at the question whether the state of these patients immediately after the operation and during the healing of the wound was at any time critical.

And first as regards suppuration. It is well to be clear as to what is meant by one of these wounds suppurating. In the first place, if a stitch is left a little longer than necessary and a drop of discharge forms round it independently of the rest of the wound, which has healed by first intention, this ought not to be described as a case of suppuration of the wound. Such a state of things after a hare-lip operation would not be so called.

Again, if a drain-tube is used and is left under a dry dressing say for ten days or a fortnight, and some soft aseptic lymph is then found in it or in its track, the rest of the wound being soundly healed, this, I presume, should not be called a suppurating case.

But if, on the other hand, any part of the wound has failed to unite, and from out of the field of operation pus is escaping even in small quantity, such a case is here described as suppurating, whether the temperature shows a corresponding rise or not.

Of such cases as the last there are in this series only two, Nos. 39 and 41: both of these suppurated beyond question, although they did well otherwise, and were none the worse of the delay in healing. All the rest healed by first intention. In No. 15, after union had taken place two deep sutures were discharged from a small chink at the upper end of the incision, and their escape was preceded by a few drops of discharge. In No. 30 the wound had

healed *per primam*, and the stitches had been taken out on the seventh day ; but the patient was a very wild little fellow, who was constantly pulling the dressings off and romping about, until he was at last tied down in the bed. Before this, however, on the eleventh day he had to some extent forced open the edges of the recently healed incision, and of course this spot had to granulate up, which it did rapidly.

There were, then, only two *bonâ fide* cases of suppuration. This is undoubtedly two too many. But the fact that thirty-nine cases were operated on before the first wound broke down, and that after the forty-first all healed as one would have desired, justifies the hope that in a second series of cases still better results may be obtained.

Having got rid of suppuration, almost all other sources of anxiety were eliminated after operation. Shock was not noticed ; hæmorrhage was of course absent ; and nothing was seen of the accidental wound infections, such as erysipelas, pyæmia, &c. As to the temperature in these cases, it varied ; but in many cases it rose a few degrees within the first thirty-six hours, especially in the case of children, even where everything was otherwise satisfactory. In No. 6, an exceedingly fat and intemperate woman, an attack of jaundice with rheumatic or gouty swellings of some of the joints retarded convalescence, but the state of the wound at the umbilicus gave no anxiety. In No. 15 pneumonia appeared on the day after operation, and ran a normal course in nine days.

These and one of measles are the only cases of intercurrent affections to be noted.

Accidents during operation occurred in two cases. In both after the sac had been tied, but before the rings were closed, a sudden struggle of the patient forced down several coils of intestine between the patient's thighs. The gut was in each case washed, dried, and reduced without difficulty, and not the least ill effect followed.

The duration of time until the removal of the skin

stitches was usually from the tenth to the fourteenth day, at which time healing may be said to have been complete and firm in nearly all cases. A few cases required a longer, but most a shorter period.

From this survey it would appear that the risks to the patient's life and general health from operations for the radical cure of hernia may be very slight indeed if due care is observed.

As regards the contents of the scrotum, no ill effects at all, either to the cord or testis, were observed to follow this operation so far. But it is interesting to note that in two cases with double herniæ the patients had been operated on by Mr. Wood on one side by the subcutaneous method before they came to me for operation on the opposite side. In both complete atrophy of the testicle was found on the side operated on by Mr. Wood, the other testicle remaining normal up to date.

The ages of the patients ranged from three months to seventy years. Three were under six months; two between six months and one year; thirteen were between one and five years; six between five and ten; one between ten and twenty; eight between twenty and thirty; two between thirty and forty; six between forty and fifty, and one over seventy.

Several varieties of rupture are included in this series. The largest number were inguinal, as might be expected. Of these, thirty were on the right, ten on the left side, including double herniæ, of which there were four cases.

Of umbilical herniæ there were three, of femoral two cases—one right, the other left. The cæcum was found in the sacs of two right inguinal cases.

The list includes forty-two patients, of whom four had double herniæ, and four were operated on a second time after recurrence. In these last four cases of re-operation the rings were sutured, in two with silk, in one with chromic gut, and in one with kangaroo tendon at the first operation.

The operation performed for inguinal herniæ was in twenty-eight cases the same. It was one designed by the

writer several years ago, and has been sufficiently described elsewhere. Five cases of recurrence are credited to this operation as now performed.

In one case Macewen's operation was done.

In the three umbilical cases I adopted in two a measure also designed by myself and published some years ago. One remained firm two years after operation, the second recurred.¹ In the third a less elaborate procedure was followed, and in this case recurrence was speedy.

Of the femoral cases, my own method of securing the stump of the sac was employed in one; in the other the latter was simply reduced within the ring, which was closed with silk sutures.

In most of the earlier cases the carbolic spray was employed throughout the whole proceeding, but not for the last year or two, and nothing has been lost by the omission, all other precautions to secure asepsis having been taken with increased care.

Drainage, too, has become less and less necessary as the details of drying the wound before the last act of suture has become better understood. I rarely now go beyond leaving a strand of twisted silk in the lower angle of the wound until the first dressing is removed, and then only when there has been an extensive dissection. As a rule the stitches in the skin are all inserted before the sponge is removed from the wound, and if the latter is then seen to be quite dry no sort of drain is used, and the threads are knotted firmly. In the majority of cases the first dressing on its removal about the tenth day has been found practically quite dry, and I always regard myself now as having been very remiss in some detail if such is not the case.

For the deep sutures in the rings I venture to think that carbolised silk ought always to be preferred. It is strong, easily sterilised, pleasant to work with, and gives a very secure knot. If it is tied too tightly round the

¹ Patient heard of since writing; is now said to be quite well (August, 1890).

fibrous tissues which it includes, it occasionally, however, works to the surface ultimately, even if perfectly sterile ; but this is not common. On this point the present series of cases gives some interesting evidence. But it must be remembered that all these patients were up and about a few weeks after operation without any truss, and many undertook very heavy labour soon after leaving bed, and also without truss.

In Nos. 2, 13, 15, 46, 48, and 50, one or more deep stitches worked their way to the surface, but without giving any further trouble at a period ranging from the thirteenth day to the ninth month. Considering that at least 200 deep stitches must have been left in the tissues in these fifty cases, the percentage which came away may be considered small. I think the fault has usually been attributable to using too much force in tying them on the included tissues, and for this reason I am now content if the edges of the openings are simply brought firmly together. If this is so the percentage of stitches which come away in the next series will probably be smaller.

As regards the efficiency of these operative procedures as a means of preventing the return of ruptures, we must wait for a final judgment until a much longer time has elapsed. But as far as they go I have spared no pains to find out the ultimate result. This, as is well known, is a difficult matter with hospital patients, who often change their abode, and cease to present themselves for examination in spite of urgent requests to do so. While writing this paper I have posted cards to the last known addresses of all the patients in the list whose condition has not been recently examined or heard of, and have embodied the results in the appended tables.

From these it appears that the results of thirteen operations cannot be ascertained at all, as the eleven patients on whom they were done cannot be traced since leaving hospital.

In eight the hernia returned, and in four of these a second operation was done with complete success so far as

is known. In one of the cases of recurrence kangaroo tendon was the material used in the first operation, for the rings, but it dissolved so rapidly that the rupture came down almost before the patient left hospital. In another, chromic gut was employed for the first operation. In the remaining two, silk was the material for suture. In the four other cases of recurrence no second operation has yet been undertaken. Two of them were umbilical herniæ, two inguinal.

In the remaining thirty there has been no recurrence when last seen or heard from : five were well and without hernia at between forty and fifty months after operation ; seven between thirty and forty months ; six between twenty and thirty months ; six between ten and twenty months ; and six between two and ten months.

In many of these cases the sutured part had, as I have already said, been subjected to severe strain, almost immediately after leaving bed. "Plate-laying" and "quarrying" have been undertaken in this way without bringing back the hernia, and "whooping-cough" and bronchitis have been passed through soon after operation without ill effect on the sutured area.

Except in the cases of umbilical herniæ all these patients have been told *not* to wear trusses on leaving bed, and only in two cases has this rule been departed from, for special reasons. In one or two of the other cases I should have recommended a truss had I known that the ruptures were returning under severe strain.

In not one of all my own cases have I ever seen or heard of any ill effects upon the contents of the scrotum.

In every case here set down the operation was only done when all the other usual means of controlling herniæ had been tried and failed for one reason or another ; and this is likely to remain my own guiding rule for the present. There may be exceptions to it, but I think we must be careful about admitting them. If I had operated in all cases in which I have been requested to do so my list would have been much longer.

If I have learned anything from this study I think it may be summed up as follows :

1. That the operation, if great care and attention to detail is observed, may be performed with very little risk of any kind.

2. That the spray ought to be dispensed with as very chilling, and not giving more security against sepsis than can be provided in less troublesome ways.

3. That drainage ought as a rule to be rendered unnecessary by careful handling of the tissues during dissection, so as not to bruise them and leave shreds likely to necrose, and also by arrest of all oozing before final closure of the wound, which should be dried out at the very last moment.

4. That trusses are not needed in the great majority of cases after operation, but should be ordered for those who have evidently very weak abdominal walls, and who are obliged to return to very heavy work, if there be the slightest sign of recurrence of the hernia.

No.	Name.	Age.	Nature.	Date of operation.	Operation.
1	R. Foster	44	Right oblique inguinal for 10 years	April 2nd, 1884; discharged April 24th	Sac opened; omentum removed; pillars sutured, strong catgut; drain-tube; spray; gauze dressing
2	Emily Huntingford	42	Umbilical, 5 years; pain, sickness	April 1st, 1885; discharged May 6th	Abraded skin included in two curved incisions and removed; ring size of forefinger; omentum and sac cut away; ring doubly sutured with eight silk sutures; drain-tube; iodine form and salicylic wool dressing
3	James Swanson	1½	Right oblique inguinal, acquired when 2 months old	June 17th, 1885; discharged July 1st	A. E. B.'s operation; silk sutures; gut drain; salicylic wool dressing
4	Anne Marshall	70	Left femoral for 40 years	July 8th, 1885; discharged Aug. 3rd	Sac opened; omentum cut away and gut reduced; neck of sac tied with catgut; femoral ring closed with two strong catgut sutures; skin stitched with gut; gut drain; Lister's gauze dressing
5	Charles H.	3½ mos.	Right oblique inguinal, acquired 3 weeks after birth	July 11th, 1885; discharged July 18th	Sac isolated with some difficulty; divided between two chromic gut sutures, but lower part not removed; one stitch was put into the pillars to draw them together (? material of suture); spray all the time; salicylic wool dressing; gut drain
6	Maria Tuck	46	Umbilical irreducible for 10 years	Sept. 2nd, 1885; discharged Oct. 21st	Same operation as No. 2; catgut drain; spray; skin sewed with chromic gut

Healing process.	Remarks.	Result.
Wound healed without accident. Temp. only touched 100° on 10th day	—	Could not be traced after leaving U. C. H.; house at address given pulled down.
1st dressing 3rd day, bloody serum only. 2nd dressing 6th day, only serum, feels very well. 3rd dressing, drain removed, also skin stitches. 4th dressing 15th day, brown serum. 5th dressing 16th day, no discharge. 6th dressing 19th day, one deep stitch came away at lower angle of wound. Left U. C. H. well on May 6th. Temp. only exceeded 100° on 3rd day, and fell on escape of serum from 101·2°; did not touch 100° afterwards. Convalescence free from anxiety	Not such a fat patient as is common in cases of umbilical hernia	Examined March 24th, 1887; no trace of hernia. Wears abdominal belt.
1st dressing 3rd day, no discharge, drain removed; quite well in every way. Temp. only touched 100·8° on 3rd day; after this was usually below 100°	—	Examined March 19th, 1887; no trace of hernia; no atrophy of testicle; child quite well.
1st dressing 7th day, wound healing by first intention. 2nd dressing 11th day, wound quite healed. Convalescence uninterrupted. Temp. did not once touch 100°	—	Could not be traced, though written to.
1st dressing 3rd day under spray; all well except soreness of skin of buttocks from carbolic acid; temp. 102·6°; next day temp. 98·4°, child quite well. 2nd dressing 5th day, wound healed up to gut drain, which was removed. 3rd dressing 7th day, wound perfectly healed. 8th day left hospital quite well	—	The father of patient, who is a medical man, says there is no trace of return of hernia, <i>i. e.</i> in Dec., 1889.
Back of jaundice and gouty swellings commenced 4th day, with temp. 101·4°. Edge of dressing raised on 8th day; some serum escaped from drain opening; not further disturbed. Hypostatic pneumonia on 13th day, lasting a few days. Wound dressed daily, quite free from all inflammatory reaction. By Oct. 7th wound healed, except drain opening. Patient well	A very fat patient of intemperate habits; was very difficult to manage during convalescence. Although wound did not close at once there was no suppuration, but a drain of serum, evidently from clots of blood contracting and organising in wound	For some months no return of hernia. I think I heard casually from a friend of patient that it has since come back. Patient has since had gouty attacks like that described. (Note since writing.—Patient heard of lately; is quite well.)

No.	Name.	Age.	Nature.	Date of operation.	Operation.
7	Fred. Ashworth	9	Left inguinal, oblique, acquired 6 years	Oct. 13th, 1885; discharged Nov. 4th	Sac not down; pillars sutured with silk, skin with chromic gut; salicylic wool dressing; spray
8	F. Ashworth. Re-operation	9	Same hernia	Jan. 8th, 1886; discharged Feb. 1st	Sac divided between two silk ligatures; stump reduced within six days, which was then sutured with catgut. During dissection one or two of the former ligatures were found; no trace of irritation about them. Catgut drain
9	John White	1½	Right inguinal, oblique, acquired at 6 wks. of age	Oct. 21st, 1885; discharged Nov. 13th	Sac divided between two silk ligatures; pillars sutured with the silk ligatures; catgut drain
10	Walter White	10 mos.	Right oblique inguinal, congenital	Nov. 13th, 1885; discharged Dec. 1st	—
11	John Foale (double)	4	Right inguinal, acquired 3 weeks after birth	May 7th, 1885; discharged May 22nd	Sac opened, then ligatured in two places, and divided between; stump reduced; pillars sutured with two catgut stitches; drain-tube and silk sutures in skin; spray; gauze dressing
12	John Foale	4	Left inguinal, acquired 3 weeks after birth	Dec. 11th, 1885; discharged Dec. 25th	Sac divided between two silk ligatures; pillars closed with three silk sutures; skin sewn with catgut; catgut drain; spray; salicylic wool
13	Walter Hunt	1½	Right inguinal, congenital, noticed when 6 weeks old	Jan. 8th, 1886; discharged Jan. 20th	Sac divided between two silk ligatures; stump reduced; rings closed with silk sutures; catgut drain
14	Richard Greenfield	5 mos.	Left oblique inguinal, congenital	Feb. 5th, 1886; discharged Feb. 24th	A. E. B.'s operation; sac divided between two silk sutures, the upper of which was then used to draw the stump within the inner ring and close the latter; then three other silk sutures in walls of inguinal canal; spray; salicylic wool

Healing process.	Remarks.	Result.
1st dressing 8th day, seemed to have healed by first intention. 2nd dressing 11th day, slight moisture, boracic lint. 3rd dressing 16th day, no moisture. Temp. never touched 100° from beginning to end at salicylic wool dressing removed on 12th day, wound healing by first intention. 2nd dressing 14th day, still healing. 3rd dressing 19th day, drain removed. 4th and last dressing 23rd day, wound quite healed. Temp. rose to 101° on operation day, and next night to 100·6°; the next to 100°, remaining below this until discharged	—	Hernia returned almost immediately owing to bad cough.
* dressing on 2nd day. 3rd on 6th. Temp. about 100° until 7th day, when it rose to 101°; cause undiscovered; again on 15th. Child remained well throughout	—	No return of hernia on March 26th, 1886, when patient was last seen. Could not be traced after this; letters in Jan., 1890, returned.
—	—	Patient could not be traced; letters returned 1888.
—	—	Patient could not be traced; letters returned 1888.
1st dressing 5th day, drain removed. 2nd dressing on 7th day, stitches in skin removed, edges of wound "a little sloughy," (2) testicle swollen. 3rd dressing 12th day; the wound has healed up except where drain-tube lay. 4th dressing, wound healed except at lower angle. Not dressed again	On 2nd day temp. reached 103°, on 3rd 102·6°, but afterwards was below 100° until patient was discharged	No return in Nov., 1885, in spite of bad bronchitis. Cannot be traced; letters returned Jan., 1890.
* dressing 5th day, hardly any moisture, drain removed. 2nd dressing 7th day, wound nearly healed. 3rd dressing 8th day, stitches in skin removed. Temp. rose to 103·4° on evening of operation, and next night to 102·4°. After this went down, and uninterrupted convalescence ensued	—	No trace of recurrence of hernia on Nov. 16th, 1888.
* dressing 5th day, wound healing. 2nd dressing 11th day, stitches in skin removed, a small moist spot remains where drain lay; dressed with boric lint, moist. Temp. 101° on night of operation and next night, then normal until discharged	On March 9th a deep stitch came away; spot of moisture soon healed	No trace of return of hernia on Nov. 12th, 1888. Cannot be traced; letter, Jan., 1890, returned.
* dressing, wound healed by first intention. 2nd dressing changed for wool and collodion. Stitches in skin removed on 12th day. Discharged on 18th day quite healed. Temp. rose on 2nd night to 101·2°, on 3rd to 100°, then remained below 100° until discharged, except on 15th day, when it was 100·4° and 101·6°	No truss was worn at any time after operation	No trace of return of hernia when examined on Dec. 24th, 1888, in spite of recent bad whooping-cough. Quite well when examined Feb. 26th, 1890.

No.	Name.	Age.	Nature.	Date of operation.	Operation.
15	William Self	20	Left inguinal, acquired 2 years ago	Feb. 27th, 1886; discharged April 4th	A. E. B.'s operation; three sutures in ring. T. vaginalis also opened; stitched up. Varicocele operated on at same time; excision of perine between ligatures; no spray; <i>Md</i> Bichlor. to wash wound; drain-tube
16	Harry Cooper	5	Right inguinal, oblique, acquired 4 years ago	March 3rd, 1886; discharged March 15th	A. E. B.'s operation; lower part of sac in this case removed, as it was small and had come out of scrotum; five sutures in rings; catgut drain; spray; c. gauze
17	William Pride (double)	1½	Right inguinal, congenital; large with wide ring	March 16th, 1886; discharged	A. E. B.'s operation; four silk sutures in rings. Just after tying sac and dividing it, patient struggled, and the ligature slipped, a couple of feet of bowel protruding between the thighs; reduced easily, no further trouble; catgut drain; spray broke down in middle of operation
18	William Pride	1½	Left inguinal, acquired six months ago	March 26th, 1886	Same operation; four silk stitches in pillars; catgut drain
19	George Pairvell	1½	Right inguinal, acquired	May 28th, 1886; discharged June 14th	A. E. B.'s operation; sac removed; no drain; spray
20	Mary A. Shay	1	Right inguinal, congenital	Dec. 15th, 1886; discharged Dec. 30th	A. E. B.'s operation; sac removed
21	William Whitbread	7	Right inguinal, congenital; large ring	September 2nd, 1886; discharged September 18th, 1886	A. E. B.'s operation; 5 stitches in rings; spray

Healing process.	Remarks.	Result.
1st dressing on 2nd day, coverings having slipped; tube shortened. 2nd dressing 5th day. 3rd dressing 6th day, the last having slipped; tube removed for good. 4th dressing 8th day, stitches in skin removed, healing by first intention; some swelling and redness remains. 10th day, a little pus can be squeezed out of chink of upper angle. 13th day, two ligatures came away from pillars. April 4th, perfectly healed; discharged	The 2nd day patient developed pneumonia of right base, with temp. ranging from 103° to 98·4°. Attack over in 9 days, and normal temp. from this on. At no time was patient's condition at all critical. He might have left U. C. H. sooner, but had to await turn for convalescent home	June 7th, 1886.—No return of hernia. Has been at work. There is still a tiny track leading to a ligature which has still to come away. Cannot be traced; letter returned Jan., 1890.
1st dressing 7th day, wound dry, drain removed. 2nd dressing 13th day, wound healed <i>per primam</i> everywhere	Temp. only rose to 100·2° on 2nd day, and on 4th to 100°, afterwards normal	March 18th, 1887.—No return of hernia on coughing or straining; health excellent. Cannot be traced; letter returned Jan., 1890.
1st dressing 5th day, wound healthy. 2nd dressing, wound healed; stitches in skin removed, and most of catgut drain. April 2nd, circumcised	Temp. first night 101·4°. 2nd, 100·6°, afterwards from 98·6° to 100·6°. Child's convalescence uninterrupted. The protrusion of the bowels did not seem to produce any ill effect	Nov. 16th, 1888.—No return of hernia. Died of diphtheria at beginning of 1889 at home.
1st dressing 12th day; 2nd, 13th, on account of wetting with urine which has produced eczema over abdomen. Discharged 17th day, wound being perfectly healed	Temp. 101° evening of operation; normal on and after 4th day. No untoward symptoms after operation	Nov. 16th, 1888.—No return of hernia.
1st dressing 5th day, wound almost dry. Stitches in skin removed. Wool and collodion. 2nd dressing 8th day, wool and collodion. 3rd dressing 11th day, wool and collodion. 4th dressing 14th day, healed by first intention	Convalescence uninterrupted. Temp. on 4th day 101·4°, which was the highest recorded	March 19th, 1887.—No return of hernia; no atrophy of testicle. Cannot be traced; letters returned Jan., 1890.
1st dressing 6th day, healed <i>per primam</i> . Wool and collodion	Temp. 101° on 2nd day	March 18th, 1887.—No return of hernia; health excellent. Cannot be traced; no address left.
1st dressing 14th day, healing. 2nd dressing 17th day, healed <i>per primam</i> . Discharged to-day	Convalescence uninterrupted. Temp. 101°, highest recorded	August, 1888.—No return of hernia. Child quite well.

No.	Name.	Age.	Nature.	Date of operation.	Operation.
22	Fred. Hammond	2	Left inguinal, congenital	August 26th, 1885; discharged September 2nd, 1886	Sac opened; ligatured with silk in two places, divided between; Stump reduced; rings closed with 2 chromic gut stitches; no drain
23	Fred. Hammond. Re-operation	2	Left inguinal; recurrence	August 20th, 1886; discharged September 2nd, 1886	A. E. B.'s operation; silk used everywhere this time; one suture for neck, two for rings; catgut drain
24	Chas. Andrews (double)	4½	Right inguinal, congenital	October 22nd, 1886	Sac tied at neck and divided; stump reduced; rings closed with 3 silk sutures; no drain; spray
25	Arthur Westley	3 mos.	Right inguinal, congenital in 1st week	September 15th, 1886; discharged October 6th	Sac divided between two fine silk sutures; stump reduced; rings drawn together with one kangaroo tendon suture; spray
26	Arthur Westley. Re-operation.	7 mos.	Left inguinal, congenital in 1st week; rings wide	January 4th, 1887; discharged January 29th, 1887	A. E. B.'s operation; three silk sutures; spray; no drain
27	Arthur Westley	10 mos.	Right inguinal; recurred	April 22nd, 1887	A. E. B.'s operation; four silk sutures; no drainage; spray
28	Mary L. Beach	41	Umbilical; acquired 9 months ago	Jan. 5th, 1887	Sac, skin, and omentum cut away; ring closed with five stout silk sutures

Healing process.	Remarks.	Result.
1st dressing 6th day, healed <i>per primam</i> . 2nd dressing 8th day, stitches in skin removed. Child sent home	Temp. 100·2°, only once; convalescence uninterrupted	Reappeared April, 1886.
Union <i>per primam</i>	Convalescence uninterrupted	October 24th, 1888.— No return of hernia in spite of whooping-cough, which has produced a rupture on opposite side.
1st dressing 5th day, everything quite dry. 2nd dressing 8th day, stitches in skin removed. Healing <i>per primam</i> . Wool and collodion	Highest temp. 100·4°	November 12th, 1888.— No return of hernia, but is getting a rupture on the opposite side, which was operated on by Mr. Wood at King's College Hospital. There is also almost complete atrophy of the testicle on this side. No return of hernia when seen Feb. 23rd, 1890; opposite testicle atrophied, other quite normal.
1st dressing 2nd day, free serous discharge. 2nd dressing 4th day, wound doing well. 3rd dressing 5th day, some pus (?) came out of wound. 4th dressing 6th day, no pus. 5th dressing 7th day, no pus. 6th dressing 8th day, wool and collodion. Discharged with wound healed on 19th day	Temp. 2nd day, 102·4°, and remained over 103° all night. On 3rd day temp. 100°	Returned after June, 1887; see below, No. 27.
1st dressing 10th day, wound healthy. 2nd dressing, wound healthy, some orchitis. Wound had to be dressed daily on account of wetting with urine. Stitches in skin removed on 14th day. Discharged well 21st day	Temp. reached 103·4° on 12th day, but convalescence was good.	
1st dressing 2nd day on account of soaking with urine; wound looked quite well; no serous discharge. 2nd dressing 7th day on account of urine; wound dry. 3rd and 4th dressings on 9th and 11th days for the same reason. Two stitches in skin removed on 15th, the remaining ones on 18th. Wound soundly healed	Temp. rose to 103° on 2nd day. Dressings soaked with urine. Convalescence uninterrupted without suppuration in spite of urine. Stitches removed by 18th day; wound soundly healed	No return of either hernia, June 14th, 1887.
1st dressing 7th day, wound healed <i>per primam</i> without trace of pus. Stitches removed 14th day, all quite dry. Discharged quite well on 23rd day	Hernia size of large orange, 3 inches by 4. Vomited first two days. Patient very fat. Temp. did not touch 100° during convalescence	Patient became enormously stout. Hernia returned by October, 1887, but not large in October, 1888. Cannot be traced; letters returned, 1890.

No.	Name.	Age.	Nature.	Date.	Operation.
29	Alfred Cooke Beach	6	Right inguinal, acquired when two years old	Jan. 5th, 1887; discharged Jan. 23rd	A. E. B.'s operation ; spray
30	Fred. McGregor	5	Left inguinal, acquired ; large ring	Feb. 2nd, 1887; discharged March 1st	Pillars stitched at once with three silk sutures, as sac had gone back no drain
31	Samuel Craker	23	Right oblique inguinal, acquired 9 years ago	April 6th, 1887	Macewen's operation, using silk in- stead of gut ; spray
32	Sidney Hudson	2	Right oblique inguinal, since birth	April 26th, 1887; discharged May 10th	A. E. B.'s operation ; four silk sutures; catgut drain ; spray
33	Sidney Hudson. Re-operation	2	Right oblique inguinal	Oct. 28th, 1887; discharged	A. E. B.'s operation, as before ; spray and drain-tube
34	Alfred Johnson	21	Right inguinal, congenital	April 27th, 1887; discharged May 28th	Operation as usual, except that sac was not divided below the point tied (? correct notes)
35	Frederick Newman	25	Right oblique inguinal, acquired 6 weeks ago	June 23rd, 1887; discharged	A. E. B.'s operation ; four silk sutures; spray

Healing process.	Remarks.	Result.
1st dressing 13th day, wound doing well; stitches removed. Wool and collodion. Discharged well 19th day. Wound healed <i>per primam</i>	Temp. rose to 101° on 2nd day, then fell to normal	Nov. 12th, 1888.—No trace of return of hernia on right. On the left, operated on by Mr. Wood three years ago, the testicle is quite atrophied. Quite well when seen on Feb. 23rd. No trace of hernia, 1890.
1st dressing 7th day, wound healed <i>per primam</i> ; stitches in skin removed. 2nd dressing 10th day, wound not so well, as boy is very wild and pulls dressings off. 3rd dressing 11th day, the edges have been burst open by romping. 13th day, wound granulating; boy tied down in bed. 18th day, wound healing. March 1st, discharged well	Except for rise of temp. to 103·4° on 12th day, probably due to iodiform, there is nothing to note about convalescence	Wound soundly healed. No return of hernia when seen on Feb. 27th, 1890.
1st dressing 2nd day; all quiet; 2nd dressing 13th day. Union <i>per primam</i> complete. Stitches in skin removed	Convalescence absolutely free from any abnormal symptom. Patient had been operated on for strangulated hernia two years ago	Rupture bulging to some small extent owing to heavy work. Worked without a truss always since operation. Truss ordered. Slight bulging when seen Feb. 23rd, 1890. Truss worn.
Dressings changed on 2nd, 4th, 5th, and 10th day. Union <i>per primam</i> everywhere	Convalescence free from any abnormal symptom	Rupture returned in about 4 months (no truss was worn). Cannot be traced; letters, Jan., 1890, returned.
Detailed notes mislaid	—	Cannot be traced since operation. Letter, Jan., 1890, returned.
1st dressing 9th day, wound healed <i>per primam</i> ; all but two stitches in skin removed. 2nd dressing 13th day, the two remaining stitches had cut a little. 3rd dressing 15th day, wound dry and healed; 21st day out of bed	Temp. did not rise above 100·4° all the time	Returned for examination Feb. 23rd, 1890. Says hernia came down soon after leaving hospital. Has worn no truss since. Very large hernia. Very weak abdominal wall.
1st dressing 15th day, wound healed perfectly <i>per primam</i> . Stitches in skin removed	Convalescence perfectly free from any abnormal symptom; 5 mos. later one of the silk ligatures worked its way to the surface; all of the others remained quiescent	April 15th, 1889.—No return of hernia. Wears a truss, as his work as a "plate-layer" is heavy. Letter, Jan., 1890, not replied to.

No.	Name.	Age.	Nature.	Date.	Operation.
36	Ellen Barker	6	Right oblique inguinal	July 1st, 1887	No sac found; rings closed in usual manner with three silk sutures; spray; no drain
37	James Stephens	22	Oblique inguinal, acquired	Aug. 10th, 1887; discharged Aug. 29th	A. E. B.'s operation; spray
38	Fred. Keeble (double)	4	Right inguinal, congenital; rings large	July 19th, 1887; discharged August 3rd	A. E. B.'s operation in usual way
39	Fred. Keeble	4	Left inguinal, congenital; ring large	Aug. 27th, 1887; discharged Sept. 27th	A. E. B.'s operation; five silk sutures in rings; lower part of sac left in scrotum; a few coils of gut were coughed out before sac was closed; easily reduced; no drain
40	J. W. H—, naval engineer. Private case	33	Right inguinal, congenital	Sept. 3rd, 1887; discharged Sept. 21st	A. E. B.'s operation; two strong silk stitches in ring; much omentum cut away after ligature in seven or eight places; no spray; lower part of sac closed by stitches to form tunica vaginalis; drain-tube
41	Sarah Parmer	39	Right femoral, acquired 7 years ago	Sept., 1887	A. E. B.'s operation; omentum adherent; removed with sac
42	Harry Gibson	4	Right oblique inguinal, acquired at birth	Nov. 15th, 1887; discharged Dec. 3rd	A. E. B.'s operation; five silk sutures in rings; silk drain
43	William White	2	Left inguinal, acquired when 6 weeks old	Nov. 11th, 1887; discharged Dec. 6th	A. E. B.'s operation; four silk sutures in rings; silk drain
44	W. F. Pearce	45	Right inguinal, acquired 16 years ago	Mar. 29th, 1888; discharged April 20th	A. E. B.'s operation; sac removed; spray; no drain

Healing process.	Remarks.	Result.
1st dressing 7th day; wound healed perfectly <i>per primam</i> ; stitches in skin removed; same dressing applied	Convalescence perfectly free from any abnormal symptom	Nov. 19th, 1888.—No return of hernia and no other trouble.
Wound healed <i>per primam</i>	Temp. 100° same night; normal next day; reached 100° on 3rd, 4th, and 5th day; after this below 100°	Cannot be traced; left no address in hospital. No reply to letter, Jan., 1890.
Wound healed <i>per primam</i>	—	Cannot be traced; left no address. No reply to letter, Jan., 1890.
1st dressing same evening; lower angle of wound opened to allow escape of serum. 2nd dressing 2nd day; lower stitches removed to permit free drainage. No old tenderness. 3rd dressing 3rd day. 4th dressing 5th day; wound not looking at all well; discharge of pus free; all stitches in skin removed; fomentations. After this did well	Temp. 103° on evening of operation, and next day 104·6°, then 102° 3rd day. On 24th day wound was granulating well, and all bad symptoms were gone. On 31st day wound quite superficial. Went home	Ditto.
Wound healed <i>per primam</i> under 3 dressings	Temp. rose two degrees day after operation; was subsequently normal. Convalescence free from any bad symptom	Nov. 2nd, 1888.—No return of hernia. Is back at duty. Is much pleased with result.
Healed <i>per primam</i> under two dressings	No abnormal symptoms of any kind. This had been a very troublesome rupture before operation	Nov. 12th, 1880.—No trace of hernia in spite of chronic cough. No reply to letter, Jan., 1890.
1st dressing 11th day, wound quite healed	Highest temp. 101° on 4th day. Convalescence free from abnormal symptoms	Cannot be traced. Letter, Jan., 1890, not replied to.
Dressings 2nd, 3rd, 5th, 9th day, when suppuration took place. By the 20th day all suppuration had ceased. On 26th day went home quite well	Temp. 101·4°	Father writes, Feb. 23rd, 1890:—"No return of hernia; boy quite well."
1st dressing 9th day; wound looked well. 2nd dressing 16th day; wound healed <i>per primam</i> . Stitches in skin removed. Truss applied. Sent home on 23rd day	Highest temp. 100·2°. No abnormal symptoms	Writes, February 23rd, 1890:—"Has no return of hernia in spite of very heavy work. Wears no truss."

No.	Name.	Age.	Nature.	Date.	Operation.
45	W. Beasley	40	Right inguinal, acquired 10 years ago; rings large	Sept. 7th, 1888; discharged Sept. 25th	A. E. B.'s operation; omentum adherent to sac and removed with later; no spray; silk drain
46	Agatha Minniford	20	Right oblique inguinal, acquired 5 years ago	Sept. 19th, 1888; discharged Oct. 3rd	A. E. B.'s operation; four silk sutures in ring; silk drain
47	George Hardy	9 mos.	Right inguinal, congenital; ring very large	Nov. 2nd, 1888; discharged Nov. 24th	A. E. B.'s operation; six silk ligatures in rings; silk drain; no spray
48	William Fulcher	25	Right oblique inguinal, acquired 7 months ago	Jan. 16th, 1889; discharged Feb. 6th	A. E. B.'s operation; seven silk sutures in rings; no spray; no drain
49	William Coates	10	Right inguinal, acquired	Feb. 26th, 1889; discharged March 8th,	A. E. B.'s operation; body of sac removed in this case; five silk sutures in rings; silk drain
50	John Thomas	21	Right inguinal, acquired 4 years ago	March 1st, 1889; discharged March 26th	A. E. B.'s operation; very large ring; six silk sutures to close them; no spray; no drain

Healing process.	Remarks.	Result.
1st dressing 4th day; drain removed, very little serum. 2nd dressing 8th day; accidental wetting with urine; wound doing well. 3rd dressing 11th day; wound quite healed <i>per primam</i> . Stitches in skin removed. Sent home 14th day	Temp. on day after 101·6°; afterwards normal	Cannot be traced; letters returned Jan., 1890.
1st dressing 9th day; wound dry; silk drain removed. 2nd dressing 13th day; wound perfectly healed <i>per primam</i> . Went home on 17th day quite well	Highest temp. 100·4°. No trace of any abnormal symptom	Writes, Feb. 25th, 1890: —“No return of hernia. Some deep sutures came away some weeks after leaving U. C. H. Now quite well. Wears truss by another surgeon's advice.”
Dressed 2nd, 3rd, 4th days on account of wetting himself. 5th day drain came away quite dry; wound quite healed. 6th day measles developed and ran usual course. Slight impulse on coughing	—	Cannot be traced; letter, Jan., 1890, not replied to.
1st dressing 3rd day, wound looks well, quite dry. 2nd dressing 9th day, wound healed <i>per primam</i> ; one stitch had cut a little. All stitches in skin removed. Dressings left off on 18th day; quite healed	Highest temp. 100·6°, 26 hours after operation; after this it was normal.	Examined Feb. 23rd, 1890. Hernia has returned under very heavy work without truss. Some stitches are working out during last fortnight.
1st dressing 6th day, wound healed and dry. Silk drain removed. 2nd dressing 8th day, two stitches in skin removed. 3rd dressing 11th day, remaining stitches removed	Temp. rose to 100·6°, 26 hours after operation, then fell for good	Cannot be traced; letter, Jan., 1890, not replied to.
1st dressing 8th day, union <i>per primam</i> . 9th day, stitches in skin removed. Healed soundly	Temp. 101·6° 8 hours after operation, then below 100° to end of case. At end of 1889 a stitch worked its way to surface	Seen January, 1890. Hernia is returning; stitches are working out.

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. ii, p. 94.)