ON
HYPERPYREXIA AFTER "LISTERIAN"
OVARİOTOMY.

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(COMMUNICATED BY JONATHAN HUTCHINSON, F.R.C.S.)

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ON the 10th of last February Mr. Lawson Tait raised a discussion before this Society on the general question as to the influence of "Listerism" on the practice of ovariotomy in his hands. He did not admit all the advantages attributed to it, and at the end of the discussion stood alone in the position he had taken up.

My object in the present paper is not to treat the general question, but to limit myself to an examination of the claim that has been set up, that the chief characteristic of Listerism is an absence of pyrexia. It is this claim that I venture to dispute.

The evidence that I have to bring forward on my adverse view of the subject comes first from my own experience, and secondly from reports published by other operators.

1st. So far as my own practice is concerned the fact is this : that as regards temperature the Listerian method, in a series of thirty-six cases, shows in its favour only a difference of four tenths of a degree, taking the average of the first four days, over another series of the same number done previously. Before the adoption of Listerism I had performed ovariectomy in thirty cases. I then operated six times according to Lister's method, but using thymol instead of carbolic acid. As this substance has been rejected as a germicide I may add these six to the preceding thirty cases, making up my first series to thirty-six. I then began Listerism pure and simple, with the exception that I did not use the "protective," preferring the dry dressing, which in one form or other has since become so general even among Listerian ovariectomists. Thus I continued up to my seventy-second case. What then happened, as I shall have to relate, forced me to reconsider the question. By this coincidence we have an opportunity of comparing the results of the two different systems of treatment in an equal number of cases. Of the first set of cases twenty-seven recovered. Of the second twenty-eight. The average temperature for the first four days was, in the former $100\cdot3^{\circ}$, and in the latter $99\cdot9^{\circ}$, a difference, as already stated, of only four tenths of a degree. But the most striking fact is that the lowest temperature is found in one of the non-Listerian cases, in which it did not exceed $99\cdot6^{\circ}$. In every case of the second series the temperature reached the 100th degree. For the purpose of more exact comparison I have been able to bring together four sets of cases, of two each as nearly alike as possible on all points affecting the comparison. In the first pair, as is shown by the chart (see woodcut), the advantage is on the side of the non-Listerian by more than two degrees, while in the other three the advantage is only slightly on the same side. Of the non-Listerian cases the highest temperature was reached in one of the clamp cases and in a drainage case, in both of which it rose to $103\cdot6^{\circ}$. But this compares favourably

CHART OF TEMPERATURES. *Those in broken lines are Listerian, those in continuous lines, non-Listerian.*

with the last four of the Listerian, in one of which it rose to 107.2° . The slight difference of only four tenths of a degree in the two series of cases may be accounted for by my want of experience in the earlier series, and by their more severe character. Thus, ten of the first series required drainage, only eight in the second. But this indicates more than meets the eye, for in the first series I was not so fully aware of the value of the drainage tube, and did not resort to it with the same frequency as in the second. Again, in the first series there were three clamp cases, in all of which there was high temperature, two requiring the ice-cap. The whole of the second series were treated with the ligature. Thus, in my Listerian practice it must be admitted that the claim for exemption from pyrexia cannot be sustained.

2nd. As for the evidence of others, no one has taken up Listerism more zealously than Volkmann, and the result is that he has not only encountered a state of post-Listerian pyrexia, but has admitted its occurrence by giving it the distinctive name of "aseptic fever." Then again Thiersch, while believing the theory of Listerism to be perfect, met with so much irritation from the use of the carbolic acid that he felt obliged to substitute salicylic acid. Keith, whose authority no one can question, in his paper on "Ovariectomy before and after Antiseptics," tells us that "carefully prepared tables of temperatures of the two sets of cases show very little difference. There was, as a rule, the same moderate rise of temperature up to eight or ten hours after operation—more marked, perhaps, in both sets of cases in young subjects, especially if in too good condition; then a fall by next morning, and again a rise in the evening to about thirty-four hours after operation." Then he goes on in these words:—"In three cases (Listerian) the temperatures were the highest I have ever seen a few hours after ovariectomy. In one it rose to 104° , but was down by next morning. In another, five hours after operation, it was 106.2° . In another, 105.5° eight hours after." The two latter "were long

operations, and there was long exposure of intestine and mesentery to the action of the spray. Now, I have rarely, not more than twice, seen a temperature of 103° in the evening of the operation in any case before antiseptics." "I have rarely met with high temperatures in ordinary operations." "I had never, before antiseptics, found it necessary to use ice to the head to bring down fever in the first days after operation. The ice-cap was only used once in a case of acute septicæmia, and the temperature remained unaffected. Indeed, in all my cases before the spray not more than five or six pounds of ice were got for the whole number, and the most of that was wasted."

All this evidence, derived from my own practice, and from the experience of others, is in direct opposition to the Listerian maxim that there can be no fever after antiseptic operation. In the discussion already referred to, Mr. Mac Cormac remarked that "after antiseptic operations there was only a slight (if any) rise of temperature, and then attributable to other causes." Mr. Wells stated that "his general impression of the result of antiseptics in subduing pyrexia was opposed to Mr. Tait's experience." And Mr. Thornton said that "as a rule there is no fever at all after antiseptic ovariectomy."

How is this conflict of evidence to be accounted for? Is it because the advocates of Listerism do not fully recognise the facts that present themselves? Or is it that they allow theoretical "general impressions" to modify their observations?

Having, as I believe, established my assertion that pyrexia in various degrees does follow Listerian ovariectomy, it is worth while to inquire how this is to be accounted for by those who have given their attention to the subject. Keith attributes hyperpyrexia to operating on women overfed, or in too full health, with small tumours, or to imperfect cleaning, or not draining of the abdomen. Yet he is "unable to account for the rapid rise of temperature in two" of the cases already quoted. Thornton, in a recent paper, "On the causes of Occasional

High Temperature after Antiseptic Ovariectomy," accounts for it by "reactive, nervous temperament, metrostaxis from irritation of ovarian nerves, and nerve-tension from too tight ligature of the pedicle," and gives as the most serious causes "congestion of the kidneys, deranged circulation from removal of a large tumour with little hæmorrhage, local peritonitis, sweat rash, and failure in perfect aseptic operation." While admitting the efficacy of some of these conditions in producing hyperpyrexia, I maintain that one of the most important and frequently acting has been overlooked. I refer to the action of carbolic acid, either as a local irritant, or as a poison.

I purpose to treat these two conditions separately, and first carbolic acid as a local irritant.

There can be no doubt as to its action in this way, and it will, I am sure, be thought sufficient if I quote Mr. Lister alone on this subject, not that there is a scarcity of evidence. This evidence is contained in the single word "protective," the name given to the material which he interposes between the wound and the carbolic acid. In a clinical lecture,¹ delivered at King's College Hospital on Nov. 24th last, he devoted some time to a repetition of his views on this subject, and he took pains to show that a most elegant preparation called hyaloderma, which has come over to us from Russia, lacked the one essential property of the "protective," inasmuch as it allowed the antiseptic to pass through and thus gain access to the wound. The effect of such access would be irritation of the wound and consequent elevation of temperature. Let me add to this the frequently observed action on the skin, under the gauze, resulting in a copious pustular rash.

Second, carbolic acid as a poison.

It has been long known that carbolic acid produces, in addition to its direct local caustic action, profound constitutional disturbance which may prove fatal without any evidence of local action. The first sign of this constitutional action that has been observed is the well known

¹ 'Lancet,' December 20th, 1879.

dark discoloration of the urine. In the earlier days of the use of carbolic acid as an external application, this effect was frequently noticed by surgeons, until the strength of the solution was reduced. It was not long before constitutional symptoms were observed, such as great depression, loss of appetite, &c., and these symptoms were not necessarily in proportion to the discoloration of the urine.

It appears that carbolic acid may be introduced into the circulation in a variety of ways. Thus, it may gain access by inhalation, by absorption through the skin and mucous membranes, through recent and through granulating wounds, and through the peritoneum and serous membranes.

So long ago as 1870 Dr. Lightfoot is found referring to a case of death from inhalation of carbolic acid for toothache.

In the 'Berliner Klinische Wochenschrift' for October 6th, 1879, a case is recorded by Dr. Hannhorst in which the application of a 15 per cent. solution of carbolic acid, by means of pads of cotton wool, to a commencing phlegmon on the arm (in the person of a nurse) caused the most grave symptoms in a few minutes. The patient lost consciousness, she threw herself about in bed, her face was flushed, pupils contracted, pulse slow, and breathing laboured. A 3 per cent. solution was substituted. In an hour the patient had recovered consciousness, and she was able to explain that, immediately after the application of the dressing she had felt a pain in her arm, and then lost consciousness. She now complained of fatigue and frontal headache. There was complete suppression of urine. Here then the absorption was through the unbroken skin. In connection with this I may mention another fact communicated to me by a distinguished surgeon, viz. that after a Listerian operation he invariably feels a pain, for some hours, up the arms. To this class also belongs a case incidentally noticed by Mr. Lister,¹ in which the application

¹ Ibid.

of spray and gauze, after amputation of the breast, repeatedly, *i.e.* with each renewal of the dressing, produced symptoms of carbolic acid poisoning, such as general debility, loss of appetite, and other symptoms.

As to its absorption through the mucous membrane, I need only allude to the numerous cases proving fatal when taken by the stomach, and to a case (also referred to by Dr. Lightfoot) which occurred at the Worcester Infirmary, in which death resulted in twenty minutes from the administration of a carbolic enema.

Carbolic acid may also be introduced into the system through a flesh wound. Professor Parkes, of Chicago, related to me the particulars of a case of amputation of both legs, in which the patient suffered from great prostration, hyperpyrexia, and suppression of urine. At a later stage the urine yielded hyaline casts, albumen, and indican in great quantity. Mr. Allingham informs me that the injection of a 5 per cent. solution of carbolic acid in the case of a patient on whom he had just performed excision of the rectum proved fatal in a few hours with the usual symptoms.

In my own practice of ovariectomy this proposition is also established by several cases. But I need only bring forward three to show that the carbolic acid, being so introduced, may fairly be assigned as the cause of the hyperpyrexia which characterised them.

On March 26th, 1879, I operated upon a woman, *æt.* 38, removing both ovaries. There were extensive adhesions to the omentum and to the right half of the pelvis, including the back of the uterus, which was much lacerated and required several ligatures. To provide for the escape of some blood which continued to ooze after I had secured all the bleeding points that could be brought into view, I put in a drainage-tube. The operation lasted about an hour and a half. Two hours afterwards, two ounces of urine were drawn off, but thence to the end of the case not more than two drachms were obtained. Five hours after operation the pulse was between 150 and 160, and very

small, temperature $99\cdot4^{\circ}$. At the end of twelve hours the temperature was $103\cdot3^{\circ}$, and in four hours more $103\cdot8^{\circ}$.

The pulse was then 170 to 180 and very difficult to count, and the respirations were about 30. Stimulants were freely administered, but she gradually sank and died in twenty-seven hours. Post-mortem examination showed the kidneys enormously enlarged and deeply congested. There could be no doubt that the immediate cause of death here was the acute nephritis. But what was the cause of the nephritis? This was soon to be revealed, and was made clear fifteen days later by the case I now proceed to relate more in detail.

The salient points are these:—That the patient, *æt.* 55, had previous to operation been somewhat reduced by repeated tappings, which yielded 417 pints of fluid within eighteen months; that there was a large extent of raw surface from the rupture of adhesions; that the temperature rose to $107\cdot2^{\circ}$ within thirteen hours of the operation; and that there was complete suppression of urine for twelve hours, followed by symptoms of acute nephritis. Recovery was due to the use of the wet pack.

Mrs. W—, *æt.* 55, was sent to me by Dr. Fowler, of Cirencester, and was admitted into the Samaritan Free Hospital in April, 1879, the subject of a large ovarian tumour of over two years' duration. Previous to admission she had been tapped nine times at decreasing intervals, yielding in all over 380 pints of fluid, and although the last tapping had been so recently as three weeks, she was already, in consequence of pressure, suffering from dyspnœa, vomiting after meals, and want of sleep. Under these circumstances I was obliged to tap her again, which I did on April 7th, drawing off $37\frac{1}{2}$ pints of fluid. The left leg was much enlarged from an attack of phlebitis which occurred some months previously. The cyst began at once to refill. After two days' rest I removed the tumour on the morning of the 10th under strict "Listerism." Adhesions to the parietes and

omentum were very extensive; bleeding points were secured partly by compression forceps and partly by ligature; the pedicle was ligatured. The operation lasted about thirty-five minutes. At 2 p.m. (4 hours after), a small quantity of urine was drawn off; the patient was then rather depressed, pulse 112, resp. 30, temp. 98.8° . At 6 the tongue was rather dry at the tip and up the centre, skin not acting well, pulse 124, resp. 30, temp. 100° . At 8 o'clock $2\frac{1}{2}$ ounces of urine were obtained, sp. gr. 1020, acid reaction, slightly muddy, no albumen. At 9 the tongue was more dry, skin also dry, face flushed, slight headache, manner depressed, temp. 103.4° , pulse 132, respirations varying between 30 and 44. She was then taking small quantities of brandy very frequently with barley water. At 11, the patient becoming restless and the temperature having reached 103.4° , pulse 132, and respirations 48, sighing, I had her chest sponged with iced water till cold. At 12.30 on the morning of the 11th, she could with difficulty be kept covered, and was somewhat delirious, though capable of being roused to answer questions slowly, pulse weak, 132, resp. 38 to 40, sighing, tongue dry in centre in spite of its being moistened every quarter of an hour with barley water and frequent small quantities of brandy. A beef-tea injection tried at this time returned immediately. At 1 o'clock, half an ounce of urine was drawn off; temp. 104.4° . She was again sponged over chest, arms, and legs, and expressed great relief. In half an hour, however, she was more restless than ever, and was scarcely conscious, failing to recognise me. She still swallowed everything that was put into her mouth, and she was supplied every few minutes with the teaspoon. Matters were now becoming desperate. I ordered the brandy to be discontinued, notwithstanding the weakness of the pulse, and I had the patient stripped of everything but the dressings, and laid upon a mattress covered with a large sheet of mackintosh, on which was spread out a wet bed sheet. The latter was now drawn over her from each side and liberally

supplied with cold water. Small pieces of ice were also placed upon her wherever they would lie, and a thin blanket was lightly thrown over her. Before ten minutes had elapsed she was quite quiet, and she appeared to be asleep, breathing more naturally. The temperature was now taken in the vagina, and was found to be 107.2° . From this time the patient improved in all respects and the temperature came slowly down, at the rate of about a degree an hour, so that at 8 it was only 100° . As she now began to feel chilly, she was put back to bed. At 9 she was quite quiet and comfortable, mind clear, tongue moist; she took her food (milk and barley water) well; pulse 104, only just strong enough to be counted at the wrist; respirations regular, 26. The catheter had been passed several times but no urine had been obtained. I now prescribed Tr. Digitalis mj every half hour. At 11, two drachms of urine were got; temperature in vagina 99.4° , pulse 98. In the afternoon the temperature again began to rise; at 2 it was 102° ; at 7.30 it was 103° ; at 10.30, 103.6° ; and at midnight 103.2° ; the pulse improved in quality, and rose to 108° ; the respirations ranged from 30 to 36. Up to 10.30 p.m., six ounces of urine had been obtained in three separate quantities of two ounces at intervals of four hours, clear, amber-coloured, and containing a small quantity of albumen.

12th.—After midnight the temperature went on rising till at 4.30 it reached 105° ; the patient was restless and delirious, and she was again packed. At 7 she was again put back to bed, the temperature having fallen to 100.8° , accompanied with a feeling of chilliness. At 9 temperature 99.4° , and at 11, 99.2° , falling towards night to 98.8° . The digitalis was continued all this time, and the patient was fed with the same diet. The urine increased in quantity (to four ounces at a time), and still contained a little albumen. On adding nitric acid after boiling it turned dark, as if ink had been added. From this time the temperature continued normal.

13th.—Urine about thirty ounces in twenty-four hours,
VOL. LXIV.

containing hyaline casts and some albumen. Digitalis every hour. At night every two hours.

15th.—Urine over 50 oz., no albumen. Digitalis discontinued. Tongue very clean and red. Abundant desquamation on neck and back.

On the eleventh day the stitches were removed. On the twelfth I prescribed Tr. Fer. Mur. $\mathfrak{m}\mathfrak{v}$, Tr. Digitalis $\mathfrak{m}\mathfrak{v}$, three times a day. On the fourteenth she got out of bed. A few days after this the right leg was again painful and more swollen, and lest this might be attributed to the pedicle, I may as well state that it was on the opposite side. The phlebitis subsided after a few days more, and with the aid of a bandage the swelling went down. The desquamation was the most abundant I had ever seen. The patient left the hospital on the forty-seventh day, and since her return home has been in very good health.

I shall not weary you with the details of other cases, in one of which the temperature rose to 104.4° within twenty-four hours after the operation, with all the symptoms of acute nephritis, necessitating the use of the ice-cap.

More numerous, however, are the instances of poisoning through a granulating surface. Such cases are met with in great variety. Of these, perhaps the most interesting, as far as I know, is that reported by Dr. De Agostini in the 'Gazzetta degli Ospitali' for February 1st, 1880. A man, $\text{æt. } 44$, had a perinephritic abscess opened under spray, and the gauze dressing was moistened with a 2 per cent. solution of carbolic acid. After the operation the temperature rapidly fell, and in a few hours became normal. Next day the abscess cavity was twice washed out with a 1 per cent. solution until the fluid returned clear. This process was repeated daily. On the fourth day the fever returned, the temperature rising to 101.3° , and for several days it went on gradually mounting higher and higher, until on the tenth it reached 102.5° . At this time the wound looked quite healthy, and in the hope of arresting the fever the irrigations were ordered to be more frequently and diligently employed. The same

night the patient was seized with a violent attack of dyspnoea, with abundant serous expectoration, amounting to half a litre in the night, the pulse was small, there was great prostration of strength, for a time there was tracheal rattle, and the patient was considered to be in imminent danger. Next day this grave condition prevented the renewal of the dressings more than once, and a smaller quantity of the solution was used. At noon the temperature was 103.2° . On the following morning he was much better; temperature normal between eight and nine, but in the evening it rose to 101.4° . Two days afterwards, after examination of the chest, some limpid fluid was drawn from the left pleural cavity by means of Pravaz's exploring needle, with great relief to the symptoms. For a week the fever observed a remittent type, although the wound gradually progressed, the pus diminished in quantity, and the chest symptoms disappeared. The dressing was still changed once a day, but the amount of solution used was diminished, partly because the cavity was contracting and partly because the patient asserted that he felt worse after each dressing. The temperature then varied between 99.5° in the morning and 103.1° in the evening. Large doses of quinine frequently repeated had no effect. At last, suspecting the carbolic acid, Dr. De Agostini ordered salicylic acid to be substituted. In a few hours the temperature fell, and so rapidly that in thirty-six hours it was only 97.5° . In twelve days more the wound had healed, and the patient returned to his occupation. A long time afterwards Dr. De Agostini was informed that when the symptoms were at their worst, the urine was of a dark olive colour.

Numerous observers have called attention to the fact that the young are peculiarly susceptible of the action of carbolic acid applied externally. So impressed was Langenbeck with this peculiarity that, after witnessing two deaths after operations of no importance, he ceased to employ the spray in such subjects. Dr. Hunter, of Linlithgow, informs me that he has frequently observed

serious carbolic intoxication from the application of a carbolised lotion to inflamed and suppurating vaccine pustules. And Mr. Thomas Smith, in an article in the 'St. Bartholomew's Hospital Reports,' also refers to this susceptibility. It is probably due, in some measure, to the youth of my patient that I again encountered an instance of marked intoxication in the following case :

On April 3rd last I removed a large ovarian tumour, weighing over thirty-three pounds, from a young girl, æt. 16, who had been tapped a few weeks previously. The adhesions were numerous and extensive to parietes, omentum, and floor of pelvis, and the oozing of bloody serum was so abundant that I had to have recourse to the drainage tube. The strength of the solution and spray was only one in sixty. Nine hours after the operation the temperature had risen to 102.8° and the pulse to 142, and the ice-cap was applied. Suffice it to say under this head that the temperature rose to 103.2° within the next hour, and then fell gradually until at the end of twelve hours it was only 99.2° (pulse 88), and the ice-cap was taken off, and that with fluctuations of varying intensity, once reaching 101.8° , it did not attain the normal standard till six days after. *Twenty ounces* of bloody serum, in gradually diminishing quantities, were obtained from the tube in the course of the twenty-eight and half hours it was in use, and as evidence of the complete absence of septic fermentation I may state that the fluid removed on the last occasion, at once transferred to a bottle, still remains free from change : nor did the microscope show any bacteria. I mention this for the purpose of excluding the idea of septic mischief as the cause of the hyperpyrexia. Four hours after the operation twenty-five ounces of urine were drawn off, pale and slightly muddy, and containing a little albumen. On adding to it a solution of chloride of barium the only change was the slightest possible milkiness. Fearing that I had omitted something from the test, which I applied from memory, I obtained some urine from another patient not exposed to the action of carbolic

acid. The chloride yielded an abundant and dense precipitate. Four hours later seven ounces of urine were drawn off, and this gave even less precipitate, producing only the faintest possible opalescence. After four hours more six ounces of urine were got. This gave a decided precipitate and more albumen, and four hours later still the urine (six ounces) yielded a copious precipitate, though not so much as the normal urine. After this it was not tested with the chloride. On the fifth day the urine contained as much as one third of albumen. On this day the temperature ranged between 99.6° and 101.2° , and she was ordered ten-grain doses of cream of tartar (Pot. Tart. Acid.) three times a day. Diet consisted of milk and barley water. On the seventh day the albumen was still very abundant, and I prescribed Tr. Fer. Mur. miiiss , Tr. Digitalis miiiss , Extr. Ergot. Liq. miv , every four hours. On the following day the albumen was reduced to about one twentieth, and three days later it had quite disappeared. The patient went home on the twenty-sixth day.

It is scarcely necessary for me to demonstrate the fact that carbolic acid exerts a special action on the kidneys. All are familiar with the dark discolouration of the urine, but the chemical evidence is still more conclusive. The chemical investigation of this subject has shown that in a case of carbolic poisoning the normal sulphates are reduced in proportion to the degree of intoxication, and their place taken by sulpho-carbolates. Baumann gives a process for the quantitative analysis, but it is too complicated for any but a practical chemist. The test I relied on is that of Sonnenberg, and it is sufficient for all practical purposes. It showed that the normal sulphates had almost disappeared in the case just related. It was a fortunate circumstance that in this instance the kidneys were able to continue their function. In fact, this was distinctly exaggerated, and thus the carbolic acid was very soon eliminated. To this fortunate circumstance may justly be attributed the rapid improvement in the symptoms. But this is a condition which cannot be expected to occur very

often, for the most usual effect is in the direction of diminishing the urinary secretion, even to total suppression, as in the two first cases. Here I must call attention to the absence of the dark discolouration of the urine in this case. This has been observed by Sonnenberg, Lightfoot, and others, and we must, therefore, not conclude that, because there is no dark discolouration, the case is not one of carbolic intoxication, but that the symptoms are due to the some other condition. In the third case referred to there was decided colouring.

I shall not detain you by entering into the particulars of a case communicated to me in which the use of a carbolic lotion to an ulcer produced sanguineous diarrhœa, muco-sanguineous expectoration, dark urine, and great prostration, which immediately disappeared on discontinuing the application, and which returned with the reapplication of the carbolic lotion, again to disappear with its discontinuance. Nor need I produce any further evidence on the subject of carbolic poisoning beyond citing the words of Mr. Cluff in one of the 'University College Hospital Reports,' viz. that "more cases of persistent vomiting of an uncontrollable nature occur after operations, which vomiting may or may not be aided by chloroform, and the only cure for which is the leaving off of the carbolic application."

Keith in speaking of the cases of high temperature which I have already quoted, says: "I cannot account for the rapid rise of temperature in these two cases." I believe I am now in a position to furnish him with an explanation. The hyperpyrexia was due to carbolic poisoning.

I cannot refrain from quoting a note of warning uttered by the same author in these words: "That drawbacks may yet occur is quite possible. What I should be afraid of is the effect of very long-continued spray in severe cases in feeble women. A greater depression immediately following some of the very long operations has been observed."

I think I have now demonstrated that, in addition to

the evils which he so sagaciously anticipated, some of which have been realised, there is still another, even more formidable, viz. that of carbolic-acid poisoning.

There are other matters of great importance in connection with this subject, but this paper has already attained to such a length that I dare not even as much as allude to them.

It only remains for me to add that I have now proved that the claim that has been set up for Listerism cannot be sustained (in preventing pyrexia after operations); that carbolic acid may be introduced into the circulation in poisonous quantity by means of this method, that when so introduced it manifests its presence by producing a state of hyperpyrexia, and that thus it actually produces too often what it was intended to prevent. And the practical result of all this, so far as I am personally concerned, is that, to meet the evil which to me is so formidable, I have gradually diluted my spray and solutions so as to reduce the whole question to one of *cleanliness*, which, after all, is the true secret and merit of Listerism, and I am happy to say with the effect of very greatly adding to the success of my ovariectomy work.

TABLE of "Non-Listerian," "Listerian," and

By GEORGE GRANVILLE

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
1	St. Thomas's Hos- pital	34	M	4	7	1867 Aug. 13	Parietal, omental, pelvic	R. Lig. (1)
2	Dr. Granville Ban- tock	41	M	5	...	1870 June 11	Pelvic	{ R. Clamp L. Lig. (1) R. Cautey
3	Ditto	47	S	...	...	1873 Jan. 30	None	
4	Dr. Dunlop, Alder- ton, Suffolk	28	M	1	...	1875 May 12	...	R. Clamp
5	...	55	M	...	1	Nov. 13	Parietal, extensive, recent, omental	R. Clamp
6	Dr. Blake, Reigate	28	M	2	...	" 25	Parietal, omental, uterine and vesic- ular	R. Clamp
7	Dr. Woodward, King's Lynn	18	S	...	1	1876 April 5	Omental	L. Lig. (1)
8	Dr. Osborne, Isling- ton	60	S	...	...	June 22	Parietal, pelvic (very firm and extensive)	{ R. Lig. (3) L. " (2)
9	Dr. Weber, German Hospital	25	M	...	...	July 21	Omental, pelvic and to opp. Fallop. tube	R. Lig.
10	Dr. Reed, Southsea	31	M	3	...	Aug. 2	Parietal, omental (very extensive)	{ L. Lig. (1) R. " (1)
11	St. Bartholomew's Hospital	48	M	4	3	Oct. 11	Parietal, omental, pelvic, uterine (very firm and extensive)	{ R. } Enuclea- tion in L. } one mass
12	Dr. Dunlop, Alder- ton	27	M	4	...	Nov. 8	Universal, parietal, omental, pelvic	R. Lig. (2)
13	Mr. Rundle, South- sea	28	M	4	...	Dec. 14	Parietal, omental, pelvic epiploic	R. Lig. (2)
14	Mr. Paulin Martin, Abingdon	28	S	...	...	1877 Jan. 10	None	R. Lig. (2)
15	Dr. Baxter Forman, Stoke Newington	27	S	...	...	" 24	Universal; colon attached diagon- ally to parietes, &c.	R. Lig. (1)

"Modified Listerian" completed Ovariectomies.

BANTOCK, M.D., F.R.C.S. Ed.

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
33 lb.	min.	...	...	Recovery	...	Cardiac valvular disease, of which she died six months afterwards	1
12 lb.	...	...	...	"	...	Died of cancer of stomach, &c., one year afterwards	2
2 lb.	...	...	...	"	...	Parovarian cyst, ovary closely attached	3
9½ lb.	...	...	...	"	...	...	4
20 lb.	...	...	... *	"	...	...	5
10½ lb.	...	...	... *	Death	Septicæmia	Inflammation following recent tapping of twenty-three pints	6
23½ lb.	...	...	... *	Recovery	...	Prolapse of pedicle; a baby April, 1879.	7
30 lb.	...	...	...	"	...	Malignant disease of peritoneum, and parovarian cyst (right) six months afterwards	8
16½ lb. 1½ oz.	...	...	...	"	...	Peritoneum severely injured in trying to find cyst-walls	9
16 lb.	35	Glass tube	...	"	...	Rupture of cyst with colloid contents a few hours before operation	10
4½ lb.	...	...	...	Death	Obstruction of intestine	Obstruction at commencement of sigmoid flexure; no peritonitis	11
150 gr.	...	Glass tube	...	Recovery	...	Several ligatures on uterus	12
10 lb.	75	"	...	"	...	"A fine boy" Nov. 1st, 1877. The parietal adhesions extended from pubes to diaphragm, and from flank to flank	13
47 lb.	50	"	...	"	...	Filamentous adhesions of uterus in Douglas's pouch; has had a child since	14
14½ lb.	...	...	...	"	...	...	15
5½ lb.	...	...	... *	"	...	Rupture of colloid tumour three weeks before operation; a forlorn hope; married 1878; baby 1880	
11 lb.	...	Glass tube	...	"	...		

122 HYPERPYREXIA AFTER " LISTERIAN " OVARIOTOMY.

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
16	Dr. Churchill, Aldershot Camp	15	S	...	...	1877. Jan. 31	Universal; intestines attached to one another and to tumour	R. Lig. (1)
17	Dr. Hullett Browne, Gordon Square	49	S	...	...	Feb. 28	Omental	R. Lig. (4)
18	Dr. Mead, Whitby	19	S	...	...	Mar. 17	None	L. Lig. (2)
19	Dr. Granville Bantock	25	S	...	...	" 28	None	L. Lig. (3)
20	Mr. Collins, Chew Magna	31	S	...	...	April 12	Extensive parietal	L. Lig. (5)
21	Mr. Kesteven, Holloway	37	M	4	...	May 2	Parietal, omental, intestinal and appendix cæci	R. Lig. (3)
22	Dr. Wynn Williams	37	M	1	...	June 27	Omental, pelvic	R. Lig. (4)
23	Dr. Mitchell, Somer's Town	43	M	12	1	July 18	Parietal, pubes to diaphragm, omental	R. Lig. (2)
24	Dr. Smith, Holloway Road	61	M	7	...	Oct. 10	Parietal, omental, epiploic	L. Lig. (3)
25	King's College Hospital	35	M	3	...	" 18	None	R. Lig. (3)
26	Mr. Lloyd, Shanklin, I. of W.	27	S	...	...	" 24	Parietal, omental, intestinal (many ligatures)	R. Lig. (1)
27	Dr. Fletcher, Camden Road.	41	S	...	1	Nov. 7	Parietal, omental	{ L. Lig. (2) R. " (2)
28	Dr. Granville Bantock	48	S	...	...	" 15	None	L. Lig. (2)
29	Dr. Robertson, Dulwich	56	M	9	1	Dec. 6	None. Ascites	R. Lig. (2)
30	London Hospital	36	M	7	1	" 28	Universal; parietal, omental intestinal, pelvic	R. Lig. (2)
31	Dr. Bradshaw, Nottingham	33	M	6	...	1878 Feb. 13	None	R. Lig. (2)
32	Mr. Parker Young, Delamere Crescent	49	M	3	...	" 20	Parietal, intestinal, very vascular (many ligatures)	R. Lig. (4)
33	Mr. Cockey, Frome	48	M	4	2	" 27	None. Ascites	L. Lig. (2)
34	Mr. Redmayne, Bolton	36	M	6	...	Mar. 2	Omental, uterine (many ligs.)	L. Lig. (2)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
5½ lb.	40 min.	Glass tube	...	"	...	Inflamed dermoid, twisted pedicle; died of obstruction following year	16
6½ lb.	35	...	...	Death 9th day	Septicæmia	Patient in very delicate health, a small quantity of affused blood had slowly decomposed	17
7½ lb.	25	...	...	* Recovery	...	...	18
10½ lb.	25	...	...	Death	Septicæmia	Hæmorrhage from slipping of outer edge of pedicle	19
25½ lb.	75	...	...	Recovery	...	Died of peritoneal cancer three months afterwards	20
9½ lb.	35	...	...	* "	...	...	21
17 lb.	35	...	...	Death	Peritonitis	Wound burst open through coughing after removal of sutures	22
11 lb.	60	Glass tube, 41 hours	...	"	Abscess behind liver	Suppurating cyst; liver adhered to raw parietes, shutting in a small quantity of bloody serum; drainage of pelvis perfect	23
8½ lb.	...	...	...	"	Obstruction of colon	Kinking of colon under spleen; no peritonitis	24
13½ lb.	35	...	...	Recovery	...	Thick fleshy pedicle, four inches broad and barely half an inch long	25
7 lb.	45	Glass tube, 6 days	...	"	...	Dermoid; adhesions unusually firm and vascular	26
19 lb. 2 oz.	60	Glass tube 5 days	...	"	...	Infection of peritoneum; died of malignant disease 1879	27
29 lb.	25	...	...	* "	...	Experiment with silk and silk-worm gut sutures, former suppurating sixth day	28
13 lb.	30	...	...	"	...	Highest temperature 99°6'	29
21 lb.	60	Glass tube	...	Death 25 hours	Exhaustion	Heart weighed only four ounces; liver fatty; spleen pulpy	30
19½ lb.	40	...	Thymol, lin 1000	Recovery	...	...	31
15 lb.	60	Glass tube 4½ days	"	"	...	Inflamed cyst, pyrexia at time of operation; second operation same side 1881	32
17½ lb.	45	...	"	"	...	Infection of peritoneum; died five months after, malignant disease	33
23½ lb.	75	...	"	"	...	...	34

124 HYPERPYREXIA AFTER "LISTERIAN" OVARIOTOMY.

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
35	Mr. Cheatle, Burford	45	M	...	...	1878. Mar. 2	None	R. Lig. (9)
36	Dr. Brunton, Euston Road	40	S	...	...	,, 13	Parietal	L. Lig. (5)
37	Dr. Wynn Williams	47	M	3	...	,, 20	Pelvic	L. Lig. (4)
38	Mr. Fowke, Charwelton	51	S	...	1	,, 27	Parietal, omental, epiploic (many ligatures)	L. Lig. (5)
39	Dr. Cole, Bath	23	S	...	...	,, 28	Omental (six ligatures)	R. Lig. (4)
40	Mr. Thomson, Ramsgate	41	M	2	...	April 10	None	L. Lig. (7)
41	Dr. Jeafferson, Wandsworth	37	S	...	2	,, 11	Parietal	R. Lig. (2)
42	Dr. Horne, Scarborough	27	S	...	...	,, 24	Parietal	{ L. Lig. (4) R. ,, (2)
43	Dr. Purnell, Wells	35	M	3	...	May 1	Parietal, omental (about twenty ligatures)	R. Lig. (3)
44	Mr. Plewitt, Fenchurch Street	58	M	...	1	,, 22	Parietal, omental	R. Lig. (7)
45	Dr. Jones, Clapham	24	M	T	3	,, 29	Parietal, pelvic, uterine, vesical (many ligatures)	R. Lig. (5)
46	Dr. Shephard, Bristol	45	M	...	1	July 10	Parietal (very extensive), omental, epiploic (four ligatures)	R. Lig. (5)
47	Mr. Hewby, Notting Hill	39	M	2	...	,, 17	None	{ L. Lig. (4) R. ,, (2)
48	Dr. Briggs, Jersey	23	S	...	...	,, 19	Universal	L. Lig. (1)
49	Dr. Haughton, Mount Street	38	S	...	...	,, 24	Parietal, omental (five ligatures)	R. Lig. (5)
50	Dr. Mackern, Long-eaton, Derbyshire	14	S	...	...	,, 26	None	R. Lig. (5)
51	Dr. Swift Walker, Hanley, Staffs.	19	S	...	...	Oct. 17	Parietal, omental	R. Lig. (5)
52	Mr. Evans, Tir Phil, Cardiff	32	M	...	...	,, 23	Omental (two ligatures)	L. Lig. (2)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
3 lb.	60 min.	...	Thymol, 1 in 1000 *	Recovery	...	Tumour sessile; one of the ligatures discharged some months afterwards; quite well in 1881	35
9½ lb.	65	...	" *	Death	Septicæmia	Colloid tumour; fatty heart and liver; Cheynes-Stokes' respiration	36
15½ lb.	35	...	1 in 40 carbolic acid	Recovery	...	...	37
33½ lb.	75	...	"	Death	Acute congestion of lungs	Peritoneum and ligatured tissues quite healthy; chill from spray ?	38
13 lb.	60	...	"	Recovery	...	...	39
7½ lb.	90	...	" *	Death	Septicæmia 5 days	Dermoid, sessile; hæmatocele in broad ligament; hæmorrhage from needle hole	40
17 lb.	20	...	" *	Recovery	...	One third albumen in urine before operation; disappeared in three days	41
37 lb. 1 oz.	60	...	"	"	...	...	42
17½ lb.	90	...	" *	"	...	...	43
17½ lb.	50	...	"	"	...	...	44
16 lb.	105	Glass tube, 5 days	"	Death	Obstruction of ilium 7th day	Suppurating cyst; bladder ruptured	45
23½ lb.	75	...	" *	Recovery	...	Uterus torn; knuckle of intestine confined by blood clot or lymph	46
18½ lb. 6 oz.	30	...	"	Death	Acute bronchitis	Chill from spray ?; chronic pneumonia; consolidation; peritoneum healthy	47
10 lb.	60	...	"	"	Shock	Died on table; moribund at time of operation	48
34½ lb.	35	...	"	Recovery	...	Suppurating cyst	49
4½ lb.	20	...	" *	"	...	Dermoid	50
16 lb.	40	...	"	"	...	...	51
28½ lb.	40	...	"	"	...	Consolidation of base of right lung; rupture of cyst; spontaneous evacuation through umbilical protrusion; died of malignant disease, 1879	52

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
53	Mr. James Ceely, Aylesbury	36	S	...	...	1878 Oct. 30	None	R. Enucleation
54	Mr. Alban Doran	32	M	2	...	Nov. 2	Pelvic (three ligatures)	{ L. Lig. (5) R. " (3)
55	Dr. Pocock, Kensal New Town	32	M	T	...	" 20	Parietal, omental, intestinal, and iliac fossa (many ligatures)	R. Lig. (2)
56	Dr. Spooner, Blandford	19	S	...	...	" 29	Universal (almost enveloped in omentum), and appendix cæci (many ligatures)	R. Lig. (2)
57	Mr. Manser, Tunbridge Wells	26	S	...	...	Dec. 4	Intestinal; about a foot of ilium opposite Fallopian tube (six ligatures)	{ R. Lig. (2) L. " (5)
58	Mr. Sam. Berry, Birmingham	31	S	...	...	" 11	Parietal (extensive)	{ L. Lig. (5) R. " (5)
59	Dr. Wynn Williams	45	W	8	...	" 18	Parietal, omental (ligatures)	{ L. Lig. (5) R. " (3)
60	Mr. Nason, Stratford-on-Avon	27	S	...	...	1879 Jan. 2	None	L. Lig. (5)
61	Mr. Ruttlely, High Wycombe	28	M	5	...	" 8	Omental, pelvic, opp. Fallopian tube, uterine (many ligatures uterine applied by needle)	{ L. Lig. (1) R. " (3)
62	St. Thomas's Hospital	41	M	4	3	" 30	Pelvic (three ligatures)	L. Lig. (3)
63	Dr. Robinson, Huddersfield	45	M	7	...	Feb. 12	None	L. Lig. (4)
64	Mr. Bradshaw Smith, Hinckley	45	M	7	1	" 19	Parietal, omental, epiploic (many ligatures)	L. Lig. (2)
65	Dr. Galabin	31	S	...	...	" 26	Parietal (very extensive)	L. Lig. (4)
66	Dr. Cremen, Cork	19	S	...	...	" 27	None	L. Lig. (4)
67	Dr. Rowland, Malvern Wells	57	M	5	1	Mar. 12	Parietal (very firm and extensive)	L. Lig. (3)
68	Dr. Granville Bantock	26	S	...	...	" 19	Omental (extensive)	R. Lig. (3)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
14 lb.	min. 75	Glass tube, 2 days.	1 in 40	Recovery	...	...	53
15½ lb.	45	India rubber, 9 days.	"	"	...	...	54
1 oz.							
21½ lb.	105	Glass tube, 3½ days	"	"	...	...	55
17½ lb.	75	...	"	"	...	...	56
2 oz.	55	...	"	Death	Rupture of intestine, 9th day	Suppurating cyst, gastro enteric catarrh; ulceration and rupture of intestine	57
7½ lb.							
30 lb.	80	Glass tube, 5½ days	"	Recovery	...	...	58
13 oz.							
33 lb.	45	...	" *	"	...	...	59
1 oz.							
17 lb.	50	...	"	"	...	...	60
10½ lb.	40	Glass tube, 7 days	"	"	...	...	61
normal							
14 lb.	75	...	"	"	...	Fourteen pints of ascitic fluid	62
19½ lb.	40	...	"	"	...	...	63
14 lb.	45	...	"	"	...	...	64
19 lb.	60	...	"	"	...	...	65
16 lb.	45	...	"	"	...	...	66
28½ lb.	50	...	"	"	...	Disease of thirty years' duration; eighteen years since tapping	67
12 lb.	40	Glass tube, 18 hrs.	"	Death 18 hours	Exhaustion	Soft sarcoma of ovary; infection of lumbar glands. High temperature before operation	68

128 HYPERPYREXIA AFTER " LISTERIAN " OVARIOTOMY.

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
69	Mr. Alban Doran	39	M	6	...	1879 Mar. 26	Omental, pelvic, uterine (many ligatures)	{ L. Lig. (5) R. " (3)
70	Dr. Colbeck, Dover	39	M	8	...	April 2	Parietal (recent)	{ L. Lig. (4) R. " (3)
71	Mr. Gilbertson, Aberystwith	55	W	4	...	" 7	None	R. Lig. (2)
72	Mr. Fowler, Cirencester	55	M	4	10	" 10	Parietal (extensive), omental	L. Lig. (4)
73	Mr. Ingoldby, Finsbury Square	49	M	3	...	" 16	None	R. Lig. (4)
74	Dr. Blake, Reigate	44	S	...	...	" 30	Omental	R. Lig. (4)
75	Dr. Bulmore, Falmouth	32	M	...	2	May 3	Omental, pelvic	R. Lig. (3)
76	Dr. W. H. Platt, Kilburn	59	W	7	...	" 14	None	R. Lig. (3)
77	Mr. P. Swales, Sheerness	39	M	9	...	" 21	Extensive omental	{ R. Lig. (3) L. " (4)
78	Dr. Wynn Williams	71	W	...	...	" 24	None	R. Lig. (3)
79	Mr. Moxon, Northampton	30	M	3	...	" 29	Omental (five ligatures)	R. Lig. (3)
80	Dr. Wynn Williams	53	M	14	...	" 29	Extensive parietal	R. Lig. (4)
81	Mr. Brooke, Langport	23	S	...	...	June 5	None	R. Lig. (4)
82	Mr. G. A. Brown, Tredegar	50	M	...	...	" 11	Broad attachment (many ligatures)	L. Lig. many
83	Dr. Stewart, Nottingham	49	S	...	...	" 18	None	R. Lig. (4)
84	Dr. Browning, Rotherhithe	34	M	...	1	July 6	Extensive parietal, pelvic	{ L. Lig. (7) R. " (3)
85	Dr. Campbell, Calne	35	M	2	...	" 9	Parietal, omental (recent and very vascular)	R. Lig. (3)
86	Dr. Lake, Teignmouth	55	W	...	1	" 12	Parietal	{ R. Lig. (4) L. " (3)
87	Mr. Kershaw, Middleton	49	S	...	...	" 17	Omental, and opp. Fallop. tube	L. Lig. (6)
88	Dr. Clifford Allbutt, Leeds	22	S	...	...	" 23	Parietal, omental, pelvic	L. Lig. (3)
89	Mr. Jonathan Hutchinson	40	S	...	...	Sept. 24	Filamentous parietal	{ L. Lig. (4) R. " (3)
90	Dr. Tyacke, Chichester	22	S	...	...	Oct. 1	None	{ L. Lig. (4) R. " (3)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
8 lb. 1 oz.	80 min.	Glass tube, 26 hrs.	1 in 40	Death 26 hours	Carbolic nephritis	Intense congestion of kidneys; suppression of urine; fatty heart	69
28 lb. ½ oz.	45	...	"	Recovery	...	...	70
9 lb.	25	...	"	"	...	...	71
51 lb.	35	...	" *	"	...	Carbolic nephritis; temperature 107.2°; cold pack	72
15 lbs.	20	...	1 in 50	"	...	...	73
17 lb.	40	...	"	"	...	...	74
40 lb.	60	Glass tube, 3½ days	"	"	...	Enucleated from meso-colon and broad ligament	75
8 lb.	25	...	"	"	...	...	76
18 lb.	45	...	"	"	...	...	77
7½ lb.	25	...	"	"	...	...	78
18 lb.	40	...	"	"	...	...	79
30 lb.	45	...	"	"	...	...	80
40 lb.	30	...	"	"	...	...	81
20 lb.	80	Glass tube, 10 days	"	"	...	Enucleated from broad ligament and meso-colon	82
11½ lb.	45	...	"	"	...	Recovered from operation; died of otitis on twenty-first day	83
23 lb. 3 lb.	90	Glass tube, 3 days	"	Death	Exhaustion	Patient <i>in extremis</i> ; showed no sign of rallying from this condition; a "forlorn hope"	84
17 lb.	45	Glass tube, 44 hrs.	" *	Recovery	...	Inflamed cyst; internal rupture, with collapse, a fortnight before operation	85
26 lb. ½ oz.	45	Glass tube, 50 hrs.	"	"	...	Double colloid, both ruptured	86
17 lb.	50	...	"	"	...	Several fibroids in uterus; menorrhagia	87
34 lb.	85	Glass tube, 30 hrs.	"	"	...	...	88
15 lb. 2 oz.	45	...	"	"	...	Severe dyspepsia for three years; immediate relief	89
24 lb. 1 oz.	50	...	"	"	...	...	90

130 HYPERPYREXIA AFTER "LISTERIAN" OVARIOTOMY.

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
91	Dr. Wynn Williams	35	M	...	1	1879 Oct. 2	Parietal, omental, pelvic (very vascular)	L. Lig. (5)
92	Mr. Ashenden, Hastings	30	M	3	1	" 8	Parietal, omental (many ligatures)	L. Lig. (3)
93	Dr. Tuckwell, Oxford	22	S	...	...	" 9	Omental, pelvic	R. Lig. (2)
94	Dr. Maclachlan, Old Kent Road	57	W	8	...	" 15	None	{ L. Lig. (3) R. " (3)
95	Dr. Hope, Chobham	58	M	...	...	" 16	Parietal	L. Lig. (3)
96	Dr. Burnie, Nottingham	34	M	...	...	" 29	None	R. Lig. (3)
97	Dr. Granville Bantock	33	M	2	...	" 30	None	{ R. Lig. (7) L. " (3)
98	Mr. Hynes, Nottingham	30	M	...	...	Nov. 5	Parietal, omental (several ligs.)	R. Lig. (3)
99	Mr. Alban Doran	53	M	...	...	" 11	Universal parietal, intestinal omental (nine ligs.)	R. Lig. (3)
100	Mr. Phillips, Southend	23	S	...	...	" 12	None	R. Lig. (4)
101	Mr. Proctor, Birkenhead	37	M	2	...	" 18	Parietal, omental) (three ligs.)	L. Lig. (1)
102	Dr. Stewart, Nottingham	20	S	...	...	" 26	Parietal, pelvis (recent)	R. Lig. (4)
103	Mr. Tandy, Haverrill	24	S	1	...	" 28	Pelvic (one lig.)	R. Lig. (1)
104	Dr. Sheldon, Notting Hill	65	M	12	1	Dec. 3	None	R. Lig. (3)
105	Mr. Case, Fareham	23	S	...	...	" 17	None	{ R. Lig. (4) L. " (4)
106	Dr. Wallace, Clapham	66	M	6	...	1880 Jan. 13	None	R. Lig. (4)
107	Dr. Ridley, Hamilton, Canada	39	M	6	...	Feb. 5	Broad base, enucleation	L. Lig. (4)
108	Dr. G. A. Davies, Newport, Mon.	19	S	...	...	" 11	None	R. Lig. (4)
109	Dr. Lawrence, Upavon	23	S	...	1	" 17	None	R. Lig. (4)
110	Dr. W. R. Rogers	38	M	1	...	" 25	Omental, pelvic	L. Lig. (3)
111	Dr. Barrington, Bexley Heath	35	M	8	...	" 25	Omental	L. Lig. (3)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
14 lb.	90 min.	Glass tube, 36 hrs.	1 in 50*	Recovery	...	Suppurating cyst; offensive	91
30 lb.	45	...	"	"	...	A girl, on August 29th, 1880	92
2 lb.	40	...	"	"	...	Dermoid; pregnant 6-7 months, July, 1880	93
12 lb. $\frac{1}{2}$ oz.	50	Glass tube, 50 hrs.	"	"	...	Both ruptured; colloid	94
19 lb.	45	...	"	"	...	Dermoid; hair and teeth; uterine fibroid as large as goose's egg	95
8 lb.	35	...	" *	"	...	Small fibroid in back of uterus	96
21 lb. 11 $\frac{1}{2}$ lb.	100	...	"	"	...	...	97
16 lb.	45	...	"	"	...	...	98
63 lb.	90	Glass tube, 83 hrs.	"	Death 4th day	Acute nephritis	Obstruction of gall duct; fatty heart	99
17 lb.	25	...	"	Recovery	...	...	100
18 $\frac{1}{2}$ lb.	60	...	"	"	...	...	101
25 lb.	55	Glass tube, 112 hrs.	"	"	...	...	102
3 lb.	30	...	"	Death 11th day	Tetanus	Twisted pedicle; base of tumour adherent after twisting of pedicle. Nothing to explain tetanus except chill	103
40 lb.	30	...	"	Recovery	...	...	104
$\frac{1}{2}$ oz. $\frac{1}{4}$ oz.	60	Glass tube	"	"	...	Ascites, amenorrhœa	105
$\frac{1}{4}$ lb.	25	...	"	"	...	...	106
9 lb.	70	...	"	"	...	Parovarian; rupture from fall two months previously; cyst flaccid, re-filling	107
26 lb.	20	...	"	"	...	...	108
4 $\frac{1}{2}$ lb.	25	...	"	"	...	...	109
1 $\frac{1}{2}$ lb.	60	...	"	"	...	Twisted pedicle; internal hæmorrhage, peritonitis, and inflammation of cyst	110
4 lb.	35	...	"	"	...	Suppurating; high temperature for days before operation	111

132 HYPERPYREXIA AFTER "LISTERIAN" OVARIOTOMY.

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
112	Dr. Smith, Grimsby	30	M	5	2	1880 Mar. 3	Parietal extensive, very tough, omental ligatures) (five	R. Lig. (2)
113	Dr. Guppy, Falmouth	60	M	10	...	" 10	None	L. Lig. (3)
114	Dr. Mason, Portsmouth Barracks	29	M	1	...	" 16	Extensive, firm, parietal	L. Lig. (3)
115	Mr. Alban Doran	25	S	...	...	" 18	None	L. Lig. (3)
116	Dr. Herbert Jones, Maryland Road, W.	38	M	...	...	" 24	Universal	Enucleation
117	Mr. Manser, Tunbridge Wells	18	S	...	...	" 27	None	R. Lig. (3)
118	Mr. Sparke, Mansfield	16	S	...	1	April 3	Parietal, omental, pelvic ligatures) (many	R. Lig. (2)
119	Dr. Prance, Hampstead	31	S	...	...	" 7	None	{ R. Lig. (3) L. " (3)
120	Mr. Alcock, Burslem	40	M	...	...	" 15	Omental, pelvic (many ligatures)	R. Lig. (3)
121	London Hospital	46	M	5	1	" 21	Omental (ten ligatures)	L. Lig. (2)
122	Dr. Wynn Williams	62	M	1	...	" 30	Broad base, close attachment to intestine	L. No pedicle enucleation. Four ligs.
123	London Hospital	50	M	8	...	May 3	Universal; parietal, omental, intestinal, &c. (twenty ligatures, about)	R. Lig. (2)
124	Mr. Hele, Aldeburgh	41	M	...	...	" 19	Complete enucleation	R. No pedicle
125	Dr. Griffith, Camberwell	24	S	...	...	" 24	None	L. Lig. (4)
126	Dr. P'Anson, Newcastle-on-Tyne	25	S	...	1	June 1	None	{ L. Lig. (4) R. " (3)
127	Dr. Phibbs, Sutherland Gardens, W.	59	W	2	...	" 2	Mesenteric, pelvic (ten ligatures)	L. Lig. (5)
128	Mr. Clover	51	S	...	...	" 15	None	R. Lig. (3)
129	Dr. W. R. Rogers	48	S	...	...	" 16	Enucleation	L. Lig. (3)
130	Dr. Pope, West Malling, Kent	31	M	1	...	" 24	None	{ R. Lig. (3) L. " (3)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
20 lb.	60 min.	Glass tube, 30 hours	1 in 50	Recovery	...	...	112
13½ lb.	35	...	"	"	...	Abdominal wound gave way in fit of coughing at end of week; intestines protruding; patient very fat	113
22 lb.	45	...	1 in 60	"	...	Inflammation of tumour	114
10½ lb.	35	...	"	"	...	...	115
15 lb.	75	...	"	Death	Shock, 20 minutes	Long continued suppuration; hectic or irritative fever	116
15 lb.	80	...	"	Recovery	...	...	117
34½ lb.	75	Glass tube, 24 hours	" *	"	...	Carbolic nephritis, acute; ice cap for twenty-five hours	118
6½ lb. 1 oz.	35	...	"	"	...	Has since menstruated (after twelve months) regularly	119
14 lb.	60	Glass tube, 72 hours	"	"	...	Twenty ounces bloody serum from tube	120
4 lb.	45	...	" *	"	...	Acute carbolic nephritis; ice cap sixty-six hours	121
13½ lb.	50	Glass tube, 60 hours	"	"	...	Has since died of cerebral softening	122
10 lb.	35	Glass tube, 75 hours	"	"	...	Twisted pedicle, one turn, left to right	123
13 lb.	130	Glass tube, 65 hours	1 in 80	"	...	Slight carbolic poisoning, nephritis	124
14 lb.	35	...	"	"	...	...	125
5 lb. 120 gr.	40	...	"	"	...	...	126
25 lb.	110	Glass tube, 68 hours	"	Death 4th day	Acute uræmia	Cirrhosis of kidneys, acute suppression of urine	127
9½ lb.	40	...	"	Recovery	...	...	128
6 lb.	55	...	"	Death	Acute bronchitis and pleurisy	Query, caused by chill from spray; dermoid tumour, hair, &c.	129
20 lb. 190 gr.	30	...	"	Recovery	...	...	130

134 HYPERPYREXIA AFTER "LISTERIAN" OVARIOTOMY.

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
131	Dr. George Taylor, Derby	27	M	3	1	1880 June 30	None	{ L. Lig. (4) R. " (3)
132	Dr. Galabin	23	S	...	...	July 1	None	{ L. Lig. (3) R. " (3)
133	Mr. Hosford, Kentish Town	28	M	...	...	" 15	None	{ R. Lig. (3) L. " (3)
134	Dr. Wynn Williams	25	M	2	...	" 21	Universal; parietal, omental, pelvic (about twenty ligs.)	R. Lig. (3)
135	Dr. Yarrow, City Road	26	M	1	1	" 22	Universal parietal	{ R. Lig. (3) L. " (3)
136	Dr. Thomas, Sheffield	51	W	2	...	" 28	Enucleation (many ligatures)	L. No pedicle
137	Mr. Marshall, Wood- bridge, Suffolk	33	M	4	...	Oct. 6	None	L. Lig. (3)
138	Dr. Henry Savage	43	M	...	...	" 12	Pelvic	R. Lig. (3)
139	Dr. Webster Adams, Ipswich	34	M	3	...	" 12	Universal of right, none of left	{ L. Lig. (3) R. " (3)
140	Mr. Muir, Cornwall Road	55	S	...	...	" 13	None	L. Lig. (3)
141	Mr. Alban Doran	65	S	1	...	" 19	Enucleation (four ligatures)	R. No pedicle
142	Dr. Matheson, Granville Place	26	S	...	...	" 20	None	L. Lig. (3)
143	Dr. O'Hanlon, Spennywood	36	S	...	...	" 27	Omental (one ligature)	{ L. Lig. (3) R. " (3)
144	Dr. Gell, Kensal Green	25	M	4	...	" 29	Extensive omental (many ligatures)	L. Lig. (4)
145	Dr. Oswald, Ken- nington Road	32	M	5	1	Nov. 3	Universal; parietal, intestinal, pelvic	No pedicle
146	Dr. Wynn Williams	51	W	11	...	" 3	None	R. Lig. (3)
147	London Hospital	33	M	7	...	" 11	None	R. Lig. (3)
148	Dr. Bourne, Shoe- buryness	34	M	5	...	" 17	Parietal, omental (several ligs.)	{ R. Lig. (3) L. " (3)
149	Dr. Williams, Wrexham	43	M	13	...	" 17	Complete enucleation	L. Lig. (5)
150	Mr. Roots, King- ston-on-Thames	34	M	4	...	Dec. 7	Universal; parietal, omental, intestinal, pelvic	R. Lig. (2)
151	Mr. Webster, Merthyr Tydfil	29	M	5	1	1881 Jan. 4	Parietal, omental (many ligatures)	L. Lig. (3)
152	Dr. Mugliston, Enfield	55	M	4	...	" 11	None	R. Lig. (3)

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
6 lb.	min.						
200 gr.	55	...	1 in 80	Recovery	...	...	131
17 lb.	35	...	1 in 100	"	...	...	132
300 gr.	45	...	"	"	...	...	133
9½ lb.	45	...	"	"	...	...	133
360 gr.	110	Glass tube, 80 hours	" *	Death 4th day	Acute uræmia	Marked cirrhosis of kidneys; acute suppression of urine	134
15½ lb.	110						
42½ lb.	55	...	"	Recovery	...	Carbolic poisoning, slight	135
2 oz.	45	Glass tube, 16 days	"	"	...	Carbolic poisoning; decrease of normal sulphates	136
14½ lb.	45						
21½ lb.	25	...	"	"	...	...	137
13 lb.	60	...	"	"	...	...	138
8 lb.	65	...	"	"	...	...	139
1 lb.	25	...	"	"	...	...	140
5½ lb.	25	...	"	"	...	...	140
15½ lb.	45	Glass tube, 8 days	"	"	...	Complete enucleation; many ligatures	141
35 lb.	25	...	"	"	...	Diabetes insipidus; nine and three-quarter pints in first twenty-four hours	142
11 lb.	30	...	"	"	...	Left, a dermoid; pedicle twisted one and a half, left to right	143
2 oz.	40	...	"	"	...	...	144
25 lb.	75	...	"	Death	Shock, 10 minutes	Suppurating cyst; hectic fever, great emaciation	145
4½ lb.	25	...	"	Recovery	...	Pedicle secured with silkworm gut	146
15 lb.	25	...	"	"	...	Silkworm gut on pedicle	147
12 lb.	55	Glass tube, 42 hours	"	"	...	Silkworm gut on pedicle and all bleeding vessels	148
73 gr.	40	Glass tube, 78 hours	"	"	...	Silkworm gut on pedicle, &c.	149
14 lb.	60	Glass tube, 48 hours	"	"	...	Twisted pedicle; hæmorrhage into cyst, inflammation, &c.	150
7 lb.	65	...	"	"	...	Induration for some weeks at site of ligatured parietal adhesions	151
36 lb.	65	...	"	"	...	...	152
28 lb.	50	...	1 in 150	"	...	...	152

No.	Previous medical attendant.	Age.	Condition.	Children.	Previous tappings.	Date of operation.	Adhesions, &c.	Side, and treatment of pedicle.
153	Mr. Alban Doran	59	M	7	...	1881 Jan. 12	None	R. Lig. (3)
154	London Hospital	58	M	7	...	Feb. 9	None	R. Lig. (3)
155	Mr. Cheatle, Burford	48	M	6	...	" 10	Parietal (very vascular)	R. Lig. (3)
156	Dr. Wynn Williams	58	M	...	...	" 16	Omental	R. Lig. (3)
157	Dr. Cocks, Buntingford	52	M	3	...	" 22	Parietal, omental, pelvic	R. Lig. (3)
158	Dr. Granville Bantock	40	S	...	1	Mar. 5	Parietal	R. Lig. (3)
159	Mr. Moxon, Brigg, Lincolnshire	34	M	6	...	" 9	Pelvic, very firm	L. Lig. (3)
160	Mr. Bubb, Wrangle	30	M	5	...	" 21	Parietal, pelvic, to ascending colon, gall bladder, and under surface of liver	R. Lig. (3)
161	London Hospital	41	M	10	1	" 30	Universal; parietal, omental, intestinal, pelvic (many ligatures)	R. Lig. (3)
162	Dr. Purnell, Wells	30	M	1	...	Apr. 23	Universal; parietal, omental, and to liver (many ligatures)	L. Lig. (3)

The cases up to 100 have already been published in a series of papers, but it has been deemed desirable to bring them together, as in this form they illustrate at a glance the various phases through which the operation has passed in my hands.

In the cases marked with an asterisk the ice-cap was employed for the reduction of pyrexia (over 102°), and it will be seen that while of the 36 pure "Listerian" cases it was used in 7 as against 9 of the "Non-Listerian;" on the other hand, it was used in only 7 of the 90 "Modified Listerian." In the case marked † it actually raised the temperature nearly 2°.

Weight of tumour.	Duration of operation.	Drainage.	Strength of antiseptic solution.	Result.	Cause of death.	Remarks.	No.
26 lb.	min. 55	...	1 in 150	Recovery	...	Spray only contained one in one hundred and fifty; phenol. instruments and sponges in plain water	153
30 lb.	55	Glass tube, 72 hours	Plain water	"	...	Twenty-eight pints of colloid, free in peritoneum	154
35 lb.	60	Glass tube, 77 hours	Plain water	"	...	Several pints of mucine colloid in peritoneum, from rupture	155
12 lb.	80	...	Plain water	"	... * †	Died a month after, of acute bronchitis	156
14 lb.	60	Glass tube, 114 hrs., 30 ozs.	Plain water	"	...	Second operation; burst cyst, probably malignant	157
3½ lb.	80	...	Plain water	"	...	Bladder wounded in incision	158
23 lb.	65	Glass tube, 28 hours	Plain water	"	...	...	159
60 lb.	70	Glass tube, 104 hrs.	Plain water	"	...	...	160
25 lb.	70	Glass tube, 17 hours	Plain water	"	...	Extreme emaciation; inflammation of cyst with pyrexia	161
29 lb.	80	Glass tube, 80 hours	Plain water	"	...	...	162

Soon after the reduction of the solution to 1 in 50 the spray was not used in the drainage cases after the operation. In those of the latter class done with plain water the product of the tubes, examined microscopically, was found to contain a few micrococci but *no Bacteria*. All these had very slight pyrexial temperatures.

Cases No. 151—162 inclusive have been recorded since the date of reading the paper to the Society.