REMARKS ON SOME POINTS
AFFECTING THE
MORTALITY OF ABDOMINAL SECTION.
WITH TABLES OF CASES.

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THE purpose of this paper—as stated in its title—is to draw attention to certain points affecting the present rate of mortality after abdominal section, as compared with that which prevailed so recently as ten years ago.

The progress made in all branches of abdominal surgery since 1877 would afford altogether too wide a field for discussion; and I therefore propose to limit my remarks to operations for ovarian growths, as being to some extent representative of the entire question under consideration.

As a basis for the inquiry, I have taken the results of my own work in connection with diseases of the ovary up to the end of 1887. The cases, here recorded in a tabulated form as affording the readiest means for identification and reference, consist of 104 completed ovariectomies, and of

twelve cases of removal of diseased uterine appendages. To these two I have added a third group containing four incomplete operations and six exploratory incisions, in order to complete my list of ovarian operations to the above-mentioned date.

The details appended in the Tables sufficiently indicate, in most instances, the nature and consequences of the individual operations, thus rendering further allusion to the majority of them unnecessary. Certain facts connected with the first two groups require, however, to be noted; and special reference will be made to the fatal cases contained in the ovariectomy series.

All my operations have been performed with strict antiseptic precautions, including the use of the carbolyzed spray: and I will first allude to this method of treatment, because I believe that the increased success of peritoneal surgery at the present day is in great measure—directly or indirectly—attributable to the outcome of the teaching of Lister.

Having early acquired a strong faith in the value of carbolic acid during my residence in Edinburgh, I was still further influenced in favour of antiseptics when I began working at abdominal surgery in 1881, by the success then attending their use in the hands of my colleague Mr. Thornton at the Samaritan Hospital; and the fact that I lost only two patients out of my first thirty ovariectomies, proved a very decided encouragement to pursue the system rigidly. I have accordingly continued to use it, and so far, see no reason to regret having done so. For some time past I have been less inclined than formerly to look upon the spray as an absolute essential to the safeguards of antiseptic abdominal surgery; but I still consider it valuable as the most convenient and effectual means of antiseptic irrigation at our disposal when dealing with the peritoneal cavity; and for this reason I still employ it.

The fact that certain operators who formerly used antiseptics now obtain improved results with the help of plain water and the systematic employment of the drainage-tube, by no means convinces me that their present success is

entirely due to the alteration in their system of treatment. Such an argument would quite ignore the influence of increased skill and experience—two factors which must of necessity largely affect the attainment of success in abdominal work, as in any other department of surgery.

The consecutive series of 104 completed ovariectomies recorded in Table I, includes ninety-six cases of ovarian tumour, and eight cases of parovarian or broad-ligament cysts.

Of these patients, seventy-three were operated on in hospital; while the remainder, thirty-one in number, were treated in nursing homes or in private houses. Reference to the Table will show that the relative mortality of the two groups was as nearly as possible equal.

Both ovaries were taken away in seventeen cases, two of which terminated fatally (Nos. 60 and 90); but in neither instance was the result in any way attributable to the removal of the second ovary.

Adhesions, resulting from more or less extensive inflammatory action, were met with in fifty-six cases, in forty-five of which they were of a nature to increase the risks of the operation. Among this latter number are included seven fatal cases.

Partial enucleation of the tumour was required in seventeen cases, and four of these patients died. In five other cases *complete* enucleation was performed, the resulting rent in the broad ligament being in each instance subsequently closed by means of a continuous suture of fine silk after all hæmorrhage had been arrested. These latter patients all did well, and I believe that the plan here adopted of accurately repairing any extensive injury inflicted on the pelvic peritoneum during the removal of a broad-ligament growth, is one which may be followed with advantage.

Eight of the patients had been *tapped* previously to operation, and of these two died. I do not here propose to discuss the question of this treatment, but will merely state my most cordial agreement with the opinion expressed

before this Society by Mr. Thornton in 1886,¹ when—speaking of the dangers incurred through tapping ovarian and parovarian or broad-ligament cysts, he alluded to the practice as both “*unscientific* and *pernicious*.” The truth of this criticism will, I believe, be pretty generally admitted at the present day ; but I may nevertheless briefly refer to one of the above-mentioned cases (No. 58) as serving to illustrate the appropriateness of the term “*unscientific*” applied to the procedure in question.

The patient, a lady sixty-eight years of age, first consulted me in October, 1884, on account of the presence of a large flaccid abdominal cyst. She stated that she had been *once* tapped, twenty-five years before, *i. e.* in 1859, by the late Sir William Fergusson, who considered the fluid then drawn off as characteristic of an ovarian tumour. The cyst, however, did not refill as expected ; and from that date she remained in good health until within two years of my seeing her, when the abdomen again began to enlarge. At the operation I removed a unilocular non-adherent ovarian cyst, containing twenty-two pints of fluid laden with cholesterine. The left ovary was atrophic. Subsequent examination of the cyst tended fully to confirm the opinion as to its probable identity with the original cyst which had been tapped twenty-five years before, and had presumably since then lain quiescent until within two years of its successful removal.

This case, which, in my experience, is unique as regards its history, forcibly illustrates the fallacy of the theory that simple withdrawal of the fluid from a closed secreting cyst can be followed by final obliteration of its cavity, at all events in the case of *ovarian* growths. That the same holds true in regard to *parovarian* or *broad-ligament* cysts, is more than probable from what we know of their structure and secreting properties ; and this view is further supported by the well-ascertained fact that tapping in such cases is as a rule followed by more or less speedy reaccumulation of the cyst fluid.

¹ ‘Med. Chir. Trans.,’ vol. lxx, p. 49.

Drainage of the peritoneal cavity was carried out in eighteen instances; and of these no less than fifteen are included among the latter half of my cases—a fact to be chiefly accounted for, I believe, on the grounds of increased experience in the management of the tube, and consequent increased belief in its usefulness in certain conditions.¹

A point to which I would draw attention in connection with this subject is the age of these eighteen patients who were drained. If one excludes three cases where the tube was used on account of special operative complications, viz. incomplete removal of an adherent Fallopian tube (No. 86), injury to bladder (No. 89), and escape of fluid from a dermoid cyst, necessitating washing out of the peritoneal cavity (No. 94), it may be seen on reference to the Table that the average age of the fifteen remaining patients exceeded fifty years, ranging from forty-one to sixty-three.

Allusion to this fact is made in support of the opinion that the cases requiring drainage are, as a rule, those of women who are passing through, or have recently passed, the menopause.

In patients *under* forty the tube is very rarely needed after antiseptic ovariectomy, unless in exceptional circumstances. But in *older* women its employment is more often advisable. Such patients are not unfrequently the subjects of some amount of latent renal mischief, which may declare itself only too plainly when the extra work entailed upon the kidneys by the attempt to carry off peritoneal fluids, comes to be encountered. Under such conditions, I believe that the tube may prove of the greatest value.

With my present views on this question, I consider drainage advisable:

1. In cases of ruptured or inflamed cysts, especially when tapping has preceded the major operation.
2. In any case where fluid of an irritating or possibly

¹ Of 3 drainage cases among my first 52 patients 1 recovered and 2 died; while out of 15 such cases included in my second series of 52, 12 recovered and but 3 died.

septic nature has escaped into the peritoneal cavity during the removal of a cyst or of a dilated tube.

3. In all operations complicated by serious injury to bowel or urinary bladder.

4. In every instance where washing-out of the peritoneal cavity has been resorted to, whether on account of pre-existing sepsis, or for the purpose of removing extravasated fluid or blood-clot.

5. Finally, in all cases of severe operation in middle-aged or elderly women, my rule would be, *when in doubt, to drain*. The tube, if properly managed, can do no harm, and I am convinced that not only is it often most useful in promoting a speedy and uneventful convalescence, but that it not unfrequently saves life.

A kindred subject to that of drainage is the *washing-out of the peritoneal cavity*. My own experience of this treatment has so far been limited to but three cases—one of ovariectomy and two of hæmatosalpinx (see Tables I and II) ; but I have watched its results in a large number of instances, and am much impressed by its efficacy in cases where no antiseptic precautions have been used during operation.

From the standpoint, however, of one who still believes in the value of such precautions, as compared with simple cleanliness, I cannot but feel that the system, in its general application to abdominal surgery, is not as yet perfected, since we lack an antiseptic which can with safety be used for thus freely cleansing the peritoneal cavity, in sufficiently strong solution to ensure destruction of pre-existing sepsis. Meantime, I believe that plain, recently-boiled water, to be cooled as required by the addition of a saturated solution of boracic acid, is the best thing to employ for this purpose in putrid cases.

The use of a blunt-pointed siphon tube, whereby the inflowing stream is conveyed direct to the pelvis, will tend to avoid the spreading upwards among the intestines of septic particles, which might thence escape removal by the outgoing stream of water.

Of the 104 patients included in this series (Table I), ninety-four recovered and ten died. Such a mortality—9·6 *per cent.*—compares not unfavorably with that of 13·2 *per cent.* shown in the combined records of 512 ovariectomies published in the 'Transactions'¹ of this Society so recently as in 1881; but it is still in excess by at least a third of what one may reasonably hope, with increasing experience, to attain to in the future.

At the same time I am not much inclined to believe that, even in the hands of the most skilful, any really large series of operations for the removal of *ovarian tumours* will show an average death-rate of less than 5 or 6 *per cent.*, although the long lists of fortunate recoveries occasionally met with in medical literature might appear to warrant a different assumption. My view of the subject is, however, supported by the fact that so experienced an operator as Mr. Thornton, in his latest published series of 300 operations, has not reduced his average mortality below 7 *per cent.*²

In attempting to analyse the causes of failure in my ten fatal operations, I have grouped them as follows, the numbers appended corresponding in each instance with those in the Table.

Septicæmia (two deaths).—No. 14 was a case of putrid cyst with a twisted pedicle and universal adhesions. The patient, who had been recently confined, was extremely ill, and suffering from the effects of septic absorption at the time of operation. She died of blood-poisoning on the fourth day.

No. 31, a most unfortunate case, terminated fatally after a perfectly simple ovariectomy, from well-marked septicæmia due to infection conveyed through the sponges used at the operation.

Intestinal obstruction (one death).—No. 53, a feeble old woman, died on the fifteenth day after operation, worn out by persistent vomiting during the last week of her life. This was found post mortem to have resulted from a twist

¹ 'Med. Chir. Trans.,' vol. lxiv, pp. 103—183.

² *Ibid.*, vol. lxx, p. 44.

of the ileum above the seat of an adhesion between the gut and the back of the uterus. A timely reopening of the abdomen would in all probability have saved the patient's life, and my only consolation is that the lesson here taught me proved useful in a later case (No. 67),¹ where prompt operative interference under similar conditions was followed by complete recovery.

Hæmorrhage (one death).—No. 90, a simple ovariectomy, complicated only by the removal of the second ovary. Symptoms of internal hæmorrhage followed within a couple of hours of the patient's return to bed, but I was unfortunately not sent for until too late. On reopening the abdomen the outer loop ligature on the tumour pedicle was found to have slipped, permitting retraction of the ovarian artery. This was secured by a fresh transfixion and ligature of the broad ligament; the clots were then cleared out, and the abdomen was closed after insertion of a drainage-tube. The patient, who had lost an enormous quantity of blood, never rallied, and died in the course of the night.

Dysenteric diarrhœa (one death).—No. 60, a delicate woman with a tuberculous history, died on the ninth day after operation from exhaustion due to uncontrollable diarrhœa. Post-mortem examination revealed extensive dysenteric ulceration of the colon. Both kidneys were much diseased.

Chest complications (two deaths).—Both these followed on the removal of large tumours from aged and very feeble women, the subjects of chronic bronchitis.

No. 15 died on the fifth day with symptoms of general pulmonary œdema, the abdominal condition remaining satisfactory to the last.

No. 77, after doing well for forty-eight hours, was being raised in bed on the morning of the third day, when she suddenly collapsed and died, presumably from embolism.

Exhaustion (three deaths).—No. 44, a case of malignant tumour with ascites, complicated by the presence of a

¹ 'Trans. Clinical Soc.' for 1886, vol. xix, p. 209.

greatly enlarged liver and extensive general anasarca, died on the third day from what appeared to be simple exhaustion.

The two remaining cases both died from the immediate effects of very severe and prolonged operations.

No. 93 was one of rapidly growing malignant dermoid tumour with universal adhesions. The patient never rallied fully from the shock, remaining extremely prostrate, with a barely perceptible pulse. She grew steadily weaker, and died thirty-six hours after operation.

No. 96. The removal of a semi-solid tumour was greatly complicated by universal adhesions, including very extensive intestinal connections. After regaining consciousness the patient seemed fairly well but for the fact of an extremely feeble circulation, which was quite unaffected by stimulants. She became gradually comatose, and died on the second day.

In three out of these ten fatal cases death was directly due to preventable causes,—Nos. 31, 53, and 90. For these fatalities I entirely blame myself. The remaining seven resulted from causes more or less beyond my control, but I trust that the lesson learnt from each one of them may prove of help to me in dealing more successfully with similar conditions in the future.

Table II contains twelve cases of removal of one or both uterine appendages for disease connected with persistent suffering.

All of these patients recovered, and, with the exception of one (No. 7) who died eleven months after operation from acute tuberculosis, all were in good health when last heard from. The report appended under the heading of Ultimate Result has in every instance been obtained direct from the patient herself.

Nine out of the twelve were chronic cases with a history of more or less constant suffering of from two to ten years' duration, and in none of these was operative interference undertaken until a prolonged trial of other treatment had failed completely either in my own hands, or in those of

someone on whose statements with regard to this point I could fully rely.

The three remaining cases, Nos. 7, 11, and 12, were operated on for the relief of acute symptoms of comparatively recent date (see Table).

In seven of the patients (four married and three single women) both appendages were removed, the operation in each instance being followed by entire relief from pain and by complete arrest of menstruation. A like result was obtained by the removal of the remaining ovary in the married woman (No. 7) who had previously undergone ovariectomy.

Among the four other patients, from whom only one appendage was taken away, the second ovary was found healthy in two (one married and one single woman), who have since menstruated without pain. In the remaining cases (both married women, Nos. 9 and 12), the second ovary, although diseased, was not removed for the reasons stated in the Table.

Some experience in the management of these cases of chronic ovarian mischief has led me to the opinion that the pain accompanying them, which may amount to severe and almost constant suffering in hospital patients who are compelled to work for their living, can in most instances be considerably alleviated by the use of purgatives. Roughly estimating, I should say that from 80 to 90 per cent. of such cases are the subjects of more or less obstinate constipation, due in great measure, I believe, to dread of the pain experienced during defæcation from the pressure then exerted upon the prolapsed and often exquisitely tender ovaries.

Under such conditions a judicious course of tonic purgative treatment, by lessening pelvic congestion and preventing the formation and passage of scybala, is usually followed by marked relief of symptoms with a corresponding improvement in general health.

In a certain small proportion of cases, however, including especially those complicated by suppurative or hæmorrhagic

disease of the tubes, any mode of treatment short of operation fails ultimately in affording relief. The pain, originally confined to the menstrual periods, recurs with varying intensity during the intervals, becoming gradually more and more persistent in character, while constantly aggravated by exertion of any kind.

In cases of this nature, where tangible evidence of disease involving the uterine appendages exists, I believe that operative interference, as a last resort, is occasionally justifiable, and, moreover, likely to prove successful as regards ultimate restoration to health.

The operation is, however, one which, for obvious reasons, should be most carefully limited in its application; and, even when advocated in properly selected instances, it should never, in my opinion, be undertaken until the patient and her husband (or nearest relative if she be unmarried) have been made to fully appreciate not only the immediate risk to life entailed by the contemplated procedure, but also the possible consequences involved with regard to her future in all its bearings.

Table III requires but brief mention, as the details therein given sufficiently explain the nature and consequences of the operations recorded in it. Among the incomplete cases are included the only two instances in which I have as yet failed in the attempted removal of an ovarian tumour. Both of these patients had been tapped, and the death of the second one, who was the subject of a very large multilocular growth, was directly due to the difficulties encountered in the attempt to separate universal adhesions which had resulted from this treatment.

In tracing the main factors which have led to the increasing success of abdominal section during the past ten years, one cannot fail to be impressed by the marked decrease in the number of deaths from *septicæmia*—a cause which formerly figured so largely in the mortality of ovariectomy.

For purposes of comparison I will take three groups of operations as illustrative of this fact.

The *first* of these, consisting of 100 cases, numbered con-

secutively from 701 to 800, is contained in the record of 1000 completed ovariectomies in Sir Spencer Wells's work on 'Ovarian and Uterine Tumours' (edition of 1882, pp. 378 to 382). My object in selecting this special series is to show the mortality from septicaemia which prevailed *during* the use of the clamp, and *previously* to the employment of antiseptics in abdominal surgery.

The *second* group consists of 150 ovariectomies recorded by Mr. Thornton in the sixty-fourth volume of our 'Transactions' (pp. 139 to 161). All of these cases were treated by intraperitoneal ligature of the pedicle, and the operations were, moreover, performed with antiseptic precautions.

The *third* group contains my own present series of 104 ovariectomies.

The following figures will show the average death-rate from *septicaemia alone* in these three groups, representing three successive periods during the last twelve years :

I. 1875—76. 100 cases, 10 deaths, or 1 to every 10 patients.

II. 1877—80. 150 cases, 5 deaths, or 1 to every 30 patients.

III. 1881—87. 104 cases, 2 deaths, or one to every 52 patients.

These results certainly tend to prove that one great cause of the former mortality following ovariectomy has now to a great extent been brought under control, and this fact has undoubtedly influenced the general death-rate in all departments of abdominal surgery.

It only remains for me in conclusion to enumerate the chief factors which, in my opinion, have contributed to this increased success. These are :

1. The general adoption of the intraperitoneal treatment of the ovarian pedicle.

2. The application of the antiseptic system to abdominal surgery.

3. The gradual abandonment of the practice of tapping abdominal cysts.

4. The increase in our knowledge respecting the proper use and management of the drainage-tube.

5. And, lastly, the recent introduction of the plan of washing out the peritoneal cavity in cases complicated by the extravasation of blood or other fluids.

NOTE.

Since reading the above I have discontinued the use of the spray, while still employing carbolic acid for instruments, silk, and sponges; and the result of my past twelve months' experience fully confirms me in the wisdom of this step.

TABLE I.—*One Hundred and Four Completed Ovariectomies.*

No.	Place of operation.	Date of operation.	Age.	Condition.	Adhesions.	Ovary removed.	Treatment of pedicle.	Weight of tumour.	Special treatment, or special features of case.	Immediate result.	Subsequent history and remarks.
1	Samaritan Hosp.	1881 Jan.	29	M.	Parietal and pelvic	Right	Enucleatn. and ligs.	lbs. 14	Papillomatous cyst	Recovered	Child born 18 months later. Continues well.
2	Nursing Home	Feb.	27	M.	Parietal	Left	Ligatures	29	Papillomatous cyst	Recovered	Child in Sept., 1883, 2nd ovary removed in May, 1886. Vide Table II.
3	Samaritan Hosp.	April	37	M.	None	Right	Ligatures	16	Two perfectly distinct unilocular cysts, encapsuled in right broad ligament	Recovered	Continues well.
4	Ditto	June	33	M.	None	Left	Ligatures	21	Broad - ligament cyst	Recovered	—
5	Ditto	July	48	M.	Extensive parietal and intestinal	Right	Ligatures	36	Had been tapped 4 months previously	Recovered	Continues well.
6	Ditto	Aug. Oct.	27 33	S. M.	Extensive parietal	Right	Ligatures	26	—	Recovered	Continues well.
7	Ditto				None	Right	Enucleatn. and ligs.	11	—	Recovered	Continues well.
8	Ditto	Oct.	31	S.	Parietal and intestinal	Left	Ligatures	25	—	Recovered	Continues well.
9	Nursing Home	Oct.	50	M.	None	Right	Ligatures	11	—	Recovered	Died a year later of uterine cancer.
10	Samaritan Hosp.	Nov.	26	S.	Close pelvic (uterine)	Right	Enucleatn. and ligs.	8	—	Recovered	Married 6 months later. Child born in 1882. Continues well.
11	Ditto	Dec.	32	M.	None	Right	Ligatures	11	—	Recovered	Continues well.
12	Ditto	1882 Jan.	53	W.	None	Right	Ligatures	34	—	Recovered	Continues well.
13	Ditto	Feb.	48	S.	Extensive parietal and omental	Left	Ligatures	17	Papillomatous cyst	Recovered	Well in 1886.

14	Ditto	April	41	M.	Universal parietal, pelvic, omental, and intestinal	Right	Enucleatn. and lig.	14	Suppurating cyst, twisted pedicle. Drainage Had been tapped 9 weeks before	Died 4th day (septicæmia)	Temp. 103° before operation. Cyst contained 13 pints of putrid pus.
15	Ditto	April	54	S.	Parietal, intestinal and pelvic	Left	Enucleatn.	47	Had been tapped 9 weeks before	Died 5th day (exhaustion)	Chronic bronchitis. Death due to general pulmonary cedema.
16	Ditto	May	27	S.	None	Right	Ligatures	11	Papillomatous cyst	Recovered	—
17	New Hosp. for Women	May	47	S.	None	Right	Ligatures	9	—	Recovered	—
18	Samartian Hosp.	May	40	M.	None	Left	Ligatures	8½	—	Recovered	Child born 10 months after operation. Continues well.
19	Private House	June	36	M.	Omental	Right	Ligatures	8	Papillomatous cyst	Recovered	Continues well.
20	Samartian Hosp.	June	30	M.	Extensive parietal, omental, and intestinal	Left	Ligatures	38	—	Recovered	—
21	Ditto	July	40	S.	None	Both	Ligatures	25	2 large cystomata	Recovered	Continues well.
22	Ditto	Aug.	62	M.	Extensive parietal and omental	Right	Ligatures	47	Had been thrice tapped	Recovered	Well in 1887.
23	Ditto	Oct.	38	S.	None	Both	Ligatures	10	—	Recovered	—
24	Ditto	Oct.	24	M.	Parietal	Right	Ligatures	5	Twisted pedicle ...	Recovered	Continues well. Child in 1883.
25	Ditto	Oct.	29	S.	None	Left	Ligatures	16	—	Recovered	—
26	Nursing Home	Nov.	54	S.	Very firm and extensive parietal, vesical, and omental	Right	Ligatures	67	Tumour had existed for 9 years before removal	Recovered	Attack of temporary insanity on return home, lasted 6 weeks. Excellent health, bodily and mental, in March, 1884. Continues well.
27	Samartian Hosp.	Dec.	54	M.	General parietal and pelvic	Right	Enucleatn. and lig.	33	—	Recovered	Continues well.
28	Ditto	Dec. 1883	53	M.	None	Right	Ligatures	37	—	Recovered	Continues well.
29	Ditto	April	50	S.	Pelvic and uterine	Both	Ligatures	18	Two tumours, both papillomatous. Ascites	Recovered	A large umbilical protrusion, and 2 hernial sacs situated one above the other in the middle line, were excised. Continues well.

No.	Place of operation.	Date of operation.	Age.	Condition.	Adhesions.	Ovary removed.	Treatment of pedicle.	Weight of tumour.	Special treatment, or special features of case.	Immediate result.	Subsequent history and remarks.
30	Nursing Home	1883 May	30	S.	Pelvic	Right	Ligatures	lbs. 15	—	Recovered	—
31	Samaritan Hosp.	May	33	M.	None	Right	Ligatures	13	—	Died 7th day (septicæmia)	Septic infection through sponges used at operation.
32	Ditto	May	39	M.	None	Right	Ligatures	11	—	Recovered	—
33	Nursing Home	June 53	53	S.	None	Right	Ligatures	5	—	Recovered	Continues well.
34	Samaritan Hosp.	June 51	51	M.	None	Right	Ligatures	5	—	Recovered	Continues well.
35	Nursing Home	June 23	23	S.	None	Right	Ligatures	9	Broad - ligament cyst	Recovered	Continues well.
36	Samaritan Hosp.	June 54	54	M.	Parietal, omental, and intestinal	Right	Ligatures	17	Perchloride of iron to torn parietal adhesions	Recovered	Convalescence retarded by abscess in abdominal wall. Well in 1886.
37	Nursing Home	June 40	40	M.	None	Right	Ligatures	7	—	Recovered	Patient syphilitic. Continues well.
38	Nursing Home	July 64	64	M.	None	Left	Ligatures	30	Very thin-walled rotten cyst. Five inches of fat in abdominal wall	Recovered	An enormously stout woman with general anasarca. Bedridden for 2 years before operation. Well in 1885.
39	Ditto	Aug. 27	27	S.	None	Left	Ligatures	11	—	Recovered	Continues well.
40	Samaritan Hosp.	Oct. 37	37	S.	Extensive omental and intestinal	Left	Ligatures	24	Suppurating cyst; twisted pedicle	Recovered	Continues well.
41	Ditto	Oct. 41	41	M.	Pelvic and uterine	Left	Enucleatn. and ligs.	26	—	Recovered	Continues well.
42	Ditto	Nov. 48	48	M.	Firm parietal, omental, and intestinal	Right	Ligatures	21	Drainage (48 hrs.)	Recovered	Well in 1887.

43	Ditto	Dec.	37	M.	Parietal and pelvic; omental and intestinal	Left	Ligatures	13	Several ligatures to bleeding points on intestine	Recovered	Right parotid swelling on 8th day. Continues well.
44	Nursing Home	Dec.	53	S.	None	Left	Ligatures	12	A soft semi-solid, tumour (? malignant). Ascites and a greatly enlarged liver. Drainage	Died 3rd day (exhaustion)	Had been twice tapped. No P.M. examination obtainable.
45	Private House	Dec.	45	M.	Omental	Right	Ligatures	14	—	Recovered	Died in June, 1885, of uterine cancer.
46	Nursing Home	Dec.	55	S.	Parietal and omental	Right	Ligatures	17	—	Recovered	Continues well.
47	Samaritan Hosp.	1884 Jan.	36	M.	Parietal, omental, and intestinal	Left	Ligatures	39	Twisted pedicle ...	Recovered	Died of pneumonia in April, 1884.
48	Nursing Home	Feb.	35	S.	None	Both	Ligatures	9	Right broad-ligament cyst. Left ovary cystic	Recovered	Continues well.
49	Samaritan Hosp.	Mar.	48	M.	Very firm parietal	Right	Ligatures	15	Twisted pedicle ...	Recovered	Continues well.
50	Nursing Home	Mar.	39	M.	None	Both	Ligatures	4½	Left broad-ligament cyst. Right ovary cystic	Recovered	Continues well.
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51	Samaritan Hosp.	April	40	M.	None	Right	Ligatures	6½	—	Recovered	Well in 1886.
52	Ditto	May	36	M.	None	Right	Enucleatn. and lig.	8½	Broad - ligament cyst	Recovered	Well in 1887.
53	Ditto	June	61	M.	Firm pelvic and intestinal	Left	Enucleatn. and lig.	12	Semi - gangrenous cyst. Drainage (22 hours)	Died 16th day (intestinal obstruction).	P.M.—Ileum adherent to pedicle, and obstructed by a twist.

* The cases down to this line were published in the 'British Medical Journal,' August 9th, 1884, but are here given in order to complete the series of operations up to end of 1887. The same applies to the cases marked with an asterisk in Tables II and III.

No.	Place of operation	Date of operation.	Age.	Condition.	Adhesions.	Ovary removed.	Treatment of pedicle.	Weight of tumour.	Special treatment, or special features of case.	Immediate result.	Subsequent history and remarks.
54	Samaritan Hosp.	1884 June	34	M.	None	Left	Enucleatn. and lig.	lbs. 5	Cyst completely encapsuled in broad ligament	Recovered	—
55	Ditto	July	25	S.	None	Both	Enucleatn. and lig.	4	—	Recovered	Continues well.
56	Nursing Home	Aug.	59	S.	None	Left	Ligatures	15	—	Recovered	Well in 1885.
57	Ditto	Oct.	42	S.	None	Right	Ligatures	6½	—	Recovered	Continues well.
58	Ditto	Oct.	68	W.	None	Right	Ligatures	23	Flaccid cyst; fluid laden with cholesteroline	Recovered	Had been tapped in 1859; no reaccumulation until within 2 years of operation. Continues well.
59	Samaritan Hosp.	Oct.	44	M.	None	Right	Enucleatn. and lig.	15	Broad - ligament cyst	Recovered	Continues well.
60	Ditto	Nov.	48	S.	Omental	Both	Ligatures	13	Outgrowth removed from fibroid uterus	Died 9th day (exhaustion)	Persistent dysenteric diarrhoea. P.M.—Extensive ulceration of colon. Both kidneys much diseased. Continues well.
61	Nursing Home	1885 Jan.	39	S.	Omental	Both	Ligatures	3½	—	Recovered	Continues well.
62	Samaritan Hosp.	Jan.	19	S.	Parietal	Both	Ligatures	34	Semi-solid tumour, malignant. Left ovary cystic	Recovered	Had been thrice tapped. Died within the year of malignant recurrence.
63	Ditto	Feb.	65	W.	None	Right	Ligatures	12	—	Recovered	Continues well.
64	Ditto	March	37	M.	Universal: parietal, omental, intestinal and mesenteric	Left	Ligatures	10	Gangrenous cyst with hamorrhagic contents. Twisted pedicle	Recovered	Had been confined 4½ weeks; cyst tapped 10 days before removal. Child born in 1886. Continues well.
65	Ditto	March	42	M.	None	Right	Ligatures	16	—	Recovered	Continues well.
66	New Hosp. for Women	April	30	S.	Pelvic	Both	Ligatures	10	Left ovary adherent in Douglas's pouch	Recovered	Well in 1887.

67	Samaritan Hosp.	April	58	S.	Parietal, omental, intestinal and pelvic	Both	Ligatures	24	Double cysto-sarcoma. Drainage (24 hours)	Recovered	Abdomen reopened for obstructive symptoms on 8th day. Convalescence slow but complete. (<i>Vide</i> vol. xix, Clin. Soc. Trans.) Continues well.
68	Nursing Home	April	43	M.	Parietal, intestinal, pelvic (mesenteric and uterine).	Left	Ligatures	11	Rapidly growing cysto-sarcoma. Right ovary atrophic	Recovered	(Nov., 1887.) Patient now dying of malignant recurrence which first showed itself in July, 1886, 16 months after operation. Continues well.
69	Samaritan Hosp.	May	64	S.	None	Left	Ligatures	17	—	Recovered	Continues well.
70	Hosp. Nursing Home	May	31	S.	Parietal and pelvic	Both	Ligatures	16	Right ovary firmly adherent in pouch	Recovered	—
71	Samaritan Hosp.	June	29	S.	None	Left	Ligatures	3½	Papillomatous cyst	Recovered	Since married, is pregnant.
72	Ditto	July	19	S.	None	Right	Ligatures	6	—	Recovered	Continues well.
73	Ditto	Oct.	48	M.	Omental	Right	Ligatures	9	—	Recovered	Continues well.
74	New Hosp. for Women	Oct.	53	M.	None	Left	Enucleatn. and lig.	9	Colloid cyst. Drainage (72 hours)	Recovered	Continues well.
75	Nursing Home	Nov.	58	W.	Intestinal	Left	Enucleatn. and lig.	16	Cysto-sarcoma with solid base deeply implanted in the broad ligament. Drainage (122 hours)	Recovered	Died 2 months later from rapid recurrence of malignant growth in the pelvis.
76	Samaritan Hosp.	Dec.	42	S.	None	Right	Ligatures	15	—	Recovered	Continues well.
77	Nursing Home	Dec.	68	M.	Parietal	Left	Ligatures	3s	Multilocular cyst of rapid growth	Died 3rd day—pulmonary clot	Very feeble with chronic bronchitis. No P.M.
78	Samaritan Hosp.	1886 Jan.	49	M.	Parietal, omental and intestinal	Right	Ligatures	3½	Twisted pedicle. Drainage (30 hours)	Recovered	Well in 1887.
79	Private House	Feb.	29	S.	Pelvic	Both	Ligatures	1	Multilocular cystoma of both ovaries	Recovered	Continues well.

No.	Place of operation.	Date of operation.	Age	Condition.	Adhesions.	Ovary removed.	Treatment of pedicle.	Weight of tumour.	Special treatment, or special features of case.	Immediate result.	Subsequent history and remarks.
80	Nursing Home	1886 Feb.	70	M.	Parietal	Right	Ligatures	lbs. 26	—	Recovered	Continues well.
81	Samaritan Hosp.	March	66	M.	Parietal and intestinal	Right	Ligatures	24	—	Recovered	Continues well.
82	Nursing Home	April	44	M.	Parietal, omental, mesenteric, pelvic	Left	Enucleatn. and lig.	67	Patient anasarous up to nipple line. Lower limbs very cedematous. Drainage (96 hours)	Recovered	Convalescence very tedious. Death from renal dropsy 9 months after operation.
83	Samaritan Hosp.	April	29	S.	None	Left	Ligatures	19	—	Recovered	Continues well.
84	Ditto	June	40	M.	Omental	Right	Ligatures	1	Solid ovarian. Spindle-celled sarcoma	Recovered	Well in July, 1887. No trace of recurrence.
85	Nursing Home	June	44	M.	None	Right	Ligatures	23	—	Recovered	—
86	Samaritan Hosp.	June	42	M.	Rectal	Right	Enucleatn. and lig.	4½	Multilocular cyst completely encapsuled in broad ligament; right tube much elongated, firmly adherent to surface of rectum. Drainage	Recovered	Very tedious convalescence owing to formation of a rectal fistula, which did not finally close until May, 1887. Seen in good health, Oct., 1887.
87	New Hosp. for Women	July	45	M.	Omental	Left	Ligatures	12	Solid ovarian growth, with a central cavity due to disintegration	Recovered	'Trans. Obstet. Soc.,' 1887.
88	Samaritan Hosp.	Sept.	53	M.	Pelvic and intestinal	Left	Enucleatn. and lig.	13	—	Recovered	Well in 1887.

	Ditto	Oct.	33	M.	Parietal and vesical	Left	Ligatures		33	Tumour closely adherent to parietes and to post. wall of bladder, which was drawn up to within 1 in. of umbilicus. Drainage (72 hours)	Recovered	Bladder wounded in abdominal incision; opening closed by continuous silk suture. Rapid convalescence. Seen in excellent health Oct., 1887.
89												
90	Ditto	Oct.	36	S.	None	Both	Ligatures	11	—	Died (18 hours), hæmorrhage	Recovered	Ligature slipped.
91	Ditto	Nov.	50	M.	Vesical and pelvic	Right	Enucleatn. and lig.	10½	Drainage (32 hrs.)	Recovered	Continues well.	
92	Ditto	Nov.	25	S.	None	Right	Ligatures	14	Broad - ligament cyst	Recovered	Continues well.	
93	Ditto	1887 Jan.	42	M.	Universal	Left	Enucleatn. and lig.	24	Multilocular dermoid (malignant). Drainage	Died (36 hours), exhaustion	P.M. — Abdominal condition satisfactory.	
94	Ditto	March	27	S.	Universal, with much matting of intestines	Both	Ligatures	12	Double multilocular dermoid. Abdomen washed out with boiled water. Drainage (72 hrs.)	Recovered	Convalescence much retarded after 2nd week by attack of intestinal obstruction. In excellent health Oct., 1887.	
95	Nursing Home	March	29	M.	None	Right	Ligatures	1½	Dermoid cyst	Recovered	Remains well.	
96	Ditto	April	63	M.	Parietal, omental, intestinal, and pelvic	Left	Ligatures	15	Multilocular very glandular tumour of long standing. Drainage	Died (48 hours), exhaustion	Patient very feeble; gradually became comatose.	
97	Samaritan Hosp.	May	23	S.	None	Both	Ligatures	9	—	Recovered	Remains well.	
98	New Hosp. for Women	May	44	M.	None	Both	Enucleatn. and lig.	8	Dermoid cyst embedded in broad ligament. Left ovary contained a simple cyst size of bantam's egg	Recovered	—	

No.	Place of operation.	Date of operation.	Age.	Condition.	Adhesions.	Ovary removed.	Treatment of pedicle.	Weight of tumour.	Special treatment, or special features of case.	Immediate result.	Subsequent history and remarks.
99	Samaritan Hosp.	1887 May	42	M.	Parietal	Right	Ligatures	11 lbs.	Semi-solid tumour	Recovered	Remains well.
100	Nursing Home	May	47	S.	None	Left	Enucleatn. and ligs.	2	Solid growth completely encapsuled in broad ligament	Recovered	Remains well.
101	Samaritan Hosp.	Sept.	47	M.	Omental and intestinal	Right	Enucleatn. and ligs.	3½	Dermoid cyst. Drainage (36 hrs.)	Recovered	Remains well.
102	Ditto	Oct.	27	S.	None	Left	Ligatures	22	—	Recovered	Remains well.
103	Ditto	Nov.	41	S.	Omental and intestinal	Right	Ligatures	6½	Dermoid cyst with twisted pedicle. Drainage (36 hrs.)	Recovered	Remains well.
104	Nursing Home	Nov.	48	S.	Extensive parietal	Right	Ligatures	23	Had been twice tapped. Drainage (60 hours)	Recovered	Remains well.

TABLE II.—*Twelve Operations for the Removal of Diseased Uterine Appendages.*

No.	Date of operation.	Place of operation.	Age.	condition.	Previous history and reasons for operation.	Ovary removed.	Condition of ovaries and tubes.	Immediate result.	Ultimate result.
1	Oct., 1883	New Hosp. for Women	26	M.	Catamenia at 12. Married at 19. Miscarriage 3 months later. Child born 10 months after this. Severe dysmenorrhœa of 6 years' standing	Both	Large oedematous ovaries prolapsed and firmly adherent in pouch. Tubes undilated	Recovered	Menstruation arrested, and pain entirely relieved by operation. Health excellent (July, 1886).

2 Nov., * 1883	Ditto	20 S.	Cat. at 12. Normal until age of 16, thenceforth scanty and irregular, with constantly increasing suffering	Both	Cystic ovaries, the left adherent to rectum. Tubes healthy	Recovered	Seen in good health, free from pain and able to work (Oct., 1887). No return of menstruation.
3 Jan., 1885	Samaritan Hosp.	30 M.	Cat. at 14, always painful. Married at 18. Never pregnant. Pain increasing and becoming constant; unable to earn livelihood	Both	Small cirrhotic ovaries, the left one adherent in Douglas's pouch. Tubes normal	Recovered	Seen in excellent health (Oct., 1887). No return of pain. Has not menstruated.
4 March, 1886	Ditto	33 M.	Cat. at 13. Married at 19. 7 children, 3 miscarriages. Severe dysmenorrhoea since birth of last child, 3 years before	Left	Cystic ovary adherent in pouch. Left pyosalpinx. Right ovary healthy	Recovered	Seen in good health, and free from pain (Oct., 1887).
5 April, 1886	Nursing Home	34 S.	Cat. at 13, always painful. A confirmed invalid, the subject of angular curvaturæ; bedridden for 6 years, with almost constant suffering. Terribly emaciated by chronic vomiting	Both	Cystic ovaries, left one adherent. Tubes normal	Recovered	Pain and sickness entirely relieved by operation. No return of menstruation. In good general health, and slowly regaining power in back and legs (Nov., 1887).
6 May, 1886	Samaritan Hosp.	27 S.	Cat. at 14. Normal until 3 years ago, since which date she has suffered from constantly increasing dysmenorrhoea	Both	Cystic ovaries adherent in Douglas's pouch. Tubes healthy	Recovered	Has lost all pain, and is gaining flesh (Oct., 1887). No return of menstruation.
7 May, 1886	Nursing Home	33 M.	Ovariectomy (left) in 1881. (Vide Table I.) Continued well until 3 months before second operation, when she was seized with acute pelvic pain which confined her to bed	Right	Ovary cedematous, contained a blood-cyst of the size of a cherry. Tube normal	Recovered	Was in usual health and free from pain 6 months after operation. Died in 1887 of acute tuberculous.
8 May, 1886	Ditto	27 S.	Cat. at 15. Normal until age of 20, from which date there has been constantly increasing suffering from dysmenorrhoea	Left	Large cystic ovary, tube normal. Right ovary healthy	Recovered	Seen in good health (July, 1887). Menstruation normal, without pain.

No.	Date of operation.	Place of operation.	Age condition.	Previous history and reasons for operation.	Ovary removed.	Condition of ovaries and tubes.	Immediate result.	Ultimate result.
9	Oct., 1886	Samaritan Hosp.	32 M.	Cat. at 20. Married at 21. Never pregnant. Had been suffering severely for 2 years previous to operation	Right	Cystic ovary, enveloped in omental and parietal adhesions. Tube healthy. Left ovary firmly adherent on surface of rectum, not removed	Recovered	Entire relief for 12 months after operation. Has latterly had some return of pain, referred to the left ovary (Dec., 1887).
10	July, 1887	Ditto	36 M.	Cat. at 14. Married at 25. Never pregnant. Severe dysmenorrhœa of 5 years' duration	Both	Double hydrosalpinx with adhesions to small circular ovaries	Recovered	No return of pain since operation. Has not menstruated. In excellent health (Nov., 1887).
11	Oct., 1887	Ditto	34 M.	Cat. at 13. Married at 19. Six children, 1 miscarriage. Menstruation normal until 10 weeks ago, when she was seized with sudden pain during the flow. Pain has continued ever since, accompanied by frequent coloured discharge	Both	Right hæmatosalpinx, size of Tangerine orange, adherent in pelvis, with cystic ovary. Left ovary cystic; tube normal. Washed out. Drainage, 36 hours	Recovered	Quite well in Jan., 1888. Has not menstruated.
12	Nov., 1887	Ditto	34 M.	Cat. at 13. Married at 18. Six children. Severe dysmenorrhœa for 5 months past, with loss of flesh. Pelvic pain latterly continuous, confining her to bed	Left	Hæmatosalpinx bound down in pouch with small cystic ovary. Right ovary immovably fixed by malignant disease, involving cæcum and vermiform appendix. Washed out. Drainage, 36 hours	Recovered	Pain entirely relieved by operation. General health fairly good (Jan., 1888).

TABLE III.—*Four Incomplete Operations.*

No.	Date of operation.	Place of operation.	Age.	Condition.	Nature of disease and details of operation.	Result.	After-history.
1	Nov., 1882	Samaritan Hosp.	30	M.	Suppurating ovarian cyst, universally adherent, containing 15 pints of puriform fluid; evacuated and drained. Patient had been tapped 3 weeks before	Recovery	Well in March, 1884. Has not since been heard of.
2	March, 1883	Private House	35	M.	Multilocular semi-solid ovarian tumour of very rapid growth, universally adherent, and closely connected with intestine. Had been tapped 6 times. Patient died before the operation was completed	Death (shock)	—
3	Oct., 1886	Samaritan Hosp.	40	M.	Right pyosalpinx, containing 6 pints, evacuated and drained. Patient, moribund before operation, survived it by only 24 hours	Death (exhaustion)	—
4	Nov., 1886	Nursing Home	68	W.	Retroperitoneal cyst, evacuated and drained. Malignant disease of liver discovered at operation	Recovery	Died of cancer shortly after her return home.
<i>Six Exploratory Incisions.</i>							
1	July, 1882	Nursing Home	61	M.	16 pints of ascitic fluid. No disease of pelvic or abdominal organs. Peritoneum thickened but otherwise healthy. Bowels loaded with scybala	Recovery	Heard of in good health 2 years after operation.
2	July, 1883	Samaritan Hosp.	42	S.	24 pints of free fluid. General papillomatous disease of the peritoneum	Recovery	Died in March, 1884.
3	Feb., 1884	Ditto	52	M.	24 pints of mixed ascitic and ovarian fluids due to sprouting masses of papilloma around tapping puncture in small ovarian cyst. Peritoneum extensively infected	Recovery	Died 6 months later.
4	June, 1885	New Hosp. for Women	34	M.	Rapidly growing pelvic cancer of extraperitoneal origin. Uterus and appendages healthy. Secondary growths in omentum	Death (exhaustion)	—
5	Nov., 1885	Samaritan Hosp.	33	M.	Abdomen opened for removal of uterine appendages. Pelvic contents so matted together by old inflammatory adhesions that further interference seemed unjustifiable	Recovery	Operation followed by some relief from pain. Patient now has an ovarian cyst, size of a fetal head (Dec., 1887).
6	May, 1886	Ditto	25	S.	General tubercular disease of the peritoneum, with encysted fluid	Death (exhaustion)	—

(For report of the discussion on this paper, see 'Proceedings of the Royal Medical and Chirurgical Society,' Third Series, vol. i, p. 1.)