phous jelly; it is thus practically a disease within a disease; the carcinomatous form attacks the mamma and ovary; the cylindromatous, the stomach or intestines.

(b) Myxoma results from a mucoid change, precisely similar to the preceding, in cell elements derived from connective tissue. (c) Chloroma is a very rare degenerative modification also of sarcoma tissue; it is seen only in young children and in sarcomata on the skull or facial bones; the masses are of a peculiar greenish-yellow colour. (d) Melanotic cancer is the product of cells which secrete melanine. It has been differentiated by myself¹⁵ into true melanotic sarcoma, which is almost wholly restricted to the connective tissue of the eyeball, and into melanotic epithelioid cancer, which springs from the pigmented cells of the Malpighian rete and thus attacks the integument. (e) Osteoid sarcoma, in which the spindle-celled tissue of a periosteal sarcoma undergoes partial organisation into bone.

Obscure forms of cancer: quasi-cancerous lesions.—There yet remains a section of neoplasms which cannot be grouped with the preceding and must be placed in a special residuary class. The most remarkable is the rare thyroid cancer which attacks the thyroid body, infects the bone marrow and gives rise to numerous metastases, chiefly on the bones, of tissue exactly simulating the structure of the thyroid body. The plexiform sarcoma of Billroth and the alveolar sarcoma of other writers may be referred to the group of endotheliomata. Kaposi and Dühring's diseases (xeroderma pigmentosum and granuloma fungoides) are conditions of congenital lesion on the skin, which is highly irritable and prone to injury by external agencies. As the consequence of this hyper-sensibility, multiple epitheliomatous ulcers in the one case, sarcomatous tumours in the other, make their appearance. Cysts with fluid contents, developed in organs which are becoming obsolete, become associated with cancer symptoms in one form or another. Most commonly intra-cystic vegetations sprout from their walls; such may be composed of embryonic connective tissue (sarcomatous), or more frequently of glandular epithelium, columnar in shape and lining the wide meshes of a fibrous stroma. In this latter carcinomatous form there is also diffuse infiltration of the surrounding parts. Clinically the cases hardly differ from carcinoma of the ordinary type. They have been reported as "duct cancers"; but as the cysts in question are often dilated acini rather than ducts the term is objectionable. The mammary tumours, known as "cystic" or "adeno-fibromata," appear in later life and are primarily benign. They eventually, like simple cysts, and like every new growth in the female breast undergoing devolution, become associated with malignancy. Cheloid is an overgrowth of scar tissue, also primarily benign, but prone as age advances to a sarcomatous reversion. The "keloid" of Alibert was such a tumour developed from some minute scar previously overlooked.

Causes of cancer.—With the exception of the blastomata, cancerous diseases are almost wholly restricted to old or elderly individuals on the one hand, on the other to organs or tissues similarly past their prime, decrepit and enfeebled. Organs which have fulfilled their purpose in the animal economy and are passing into an obsolete devolution stage are the most common prey of cancer; such are the female breasts after the age of thirty-eight and the uterus from the same period or from one slightly earlier. All malignant lesions, with the same reservation, are consecutive to a special exciting cause, which may be direct or indirect, and which also varies with the tissue attacked by the cancer process. In those of direct causation the peccant cells are found to have been injured or irritated by external agencies, applied immediately to them; the traumatism may be transient and sudden, or it may be of continuous character. Epithelioma of mucous membranes is consequent on long-continued friction: 11·5 per cent. of carcinomata in the mamma follow a blow or fall. Sarcomata are generated by a blow, strain, or sprain, involving probably some rupture of fibres; lympho-carcinomata own a like source.

The indirect mode of cancer origin is most conspicuously illustrated by the history of the common cervical uterine carcinoma, and also by the remaining 88·5 per cent. of breast cases, in which the sole immediate antecedents are neurotic—e.g., mental trouble, laborious and harassing occupations, any form of exhaustive illness &c. It would thus appear that the proliferation of malignancy may be the consequence of a

stimulus applied immediately to the cells, or else of some interference with the nerve forces which normally control their nutrition and functions.

Why cancer can hardly be due to a micro-organism.—Considerations which render this theory, now much in fashion, so improbable as to be well nigh impossible are as follows: 1. A parallel is supposed to exist between certain phenomena occurring microscopically in the cells and the coccidial disease which attacks the liver of rabbits. Clinical evidence negatives, however, any such theoretical analogy. The coccidial lesion of the rabbit's bile ducts infests young rabbits, which may spontaneously recover; cancer attacks the elderly or old, very rarely the young, and no spontaneous cure ever happens. 2. Very conspicuous differences are found between every form of disease hitherto associated with a micro-organism, and cancer. Leprosy and tubercle always lay under strong suspicion of contagion for centuries before the discovery of the bacilli. Malarious fevers attack numerous persons exposed to similar conditions of soil and climate. Cancer bears no relation to soil or to any climatic condition whatever, although it is an appanage of civilisation. It is non-contagious, for no large number of individuals suffer at the same time and in the same locality. 3. The consideration which goes furthest to negative the hypothesis of cancer causation by an extraneous micro-organism is the fact that the secondary metastases always involve a reproduction not merely of the particular cells concerned, but of their original arrangement and functional characters. The parent tissue in which the cancer process began is thus exactly mimicked by all the secondary deposits far and near. The familiar breast scirrhus, producing multiple nodules in the subcutaneous connective tissue, in each copies exactly the acinar structure of the mammary parenchyma. The metastases of a rectal cylindroma, frequent in the liver, reproduce the follicular composition of the primary lesion, developed from Lieberkühn's follicles. Pigment-secreting cells in melanotic cancer continue to secrete melanine throughout all the very numerous visceral offshoots of that widely disseminated species. No known micro-organism can effect anything in the least resembling this. The bacilli of tubercle or leprosy stimulate to proliferation the cell elements of the tissues amidst which they arrive, but do not transport cells, which retain their functional endowments and original mode of distribution, bodily from one region to another.

In Address

ON

THE RESULTS OF THE OPERATIONS OF VAGINAL HYSTERECTOMY AND SUPRA-VAGINAL AMPUTATION OF THE CERVIX FOR CANCER OF THE UTERUS.¹

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GENTLEMEN,—A distinguished American physician, Dr. Jackson, in his Presidential Address delivered at the meeting of the American Gynaecological Society held at Brooklyn in 1891, took occasion to allude to certain abuses which had crept into the practice of gynaecology. One of these was the alarming extent and frequency to which, through the beneficial but seductive agency of antiseptics, surgeons have been tempted to resort to dangerous and mutilating operations on the sexual organs of women. That such abuses have existed in the past there can be no doubt, but I believe that the time has now arrived when gynaecologists have discovered that much may be done without having recourse to such radical measures as some, especially some of the continental gynaecologists, have thought to be necessary. I allude in this paper to the wholesale performance of vaginal hysterectomy; this operation has been performed on the Continent not only for cancer of the uterus but also for uterine dis-

¹⁵ Vide THE LANCET, Oct. 15th, 1892.

¹ Presidential Address delivered before the Members of the British Gynaecological Society on Feb. 9th, 1893.

placement and prolapse of the organ. The immediate mortality after total extirpation of the uterus by these surgeons is reported to have decreased to about 10·5 per cent. as a general average, whilst certain operators claim to have succeeded in reaching a death-rate as low as 3 or 4 per cent. But how can these statistics be relied on if it be true that this operation has been performed for affections of the uterus other than cancer? It must be borne in mind in comparing the results of any two operations that such operations must be performed for similar diseases, under as nearly as possible similar circumstances, and on patients whose general condition is practically the same. Now it must be obvious that if operators who claim the excessively low mortality of 3 and 4 per cent. include in their list of cases extirpation of the uterus for displacements, prolapse and other minor affections of the organ, and mix these up with the results of cases of vaginal hysterectomy for cancer—I say it is obvious that these statistics are not reliable, in fact they are utterly valueless and misleading. In comparing the comparative merits of such operations as supra-vaginal amputation of the cervix uteri for cancer and total extirpation of the uterus for the same disease, not only must the immediate mortality after the operation be taken into consideration, but also the state the patient is left in after the operation. Now, in dealing with this comparison, we must compare only those cases in which the operation has been performed for cancer, we must have no watering down of statistics by the addition of operations which have been done for minor ailments. We must also of necessity confine our remarks to those cases in which the disease is limited to the vaginal portion of the uterus, as it is obvious that if the body of the uterus is involved the high operation is not practicable, and the only operation that can be practised with any hope of relief must be that for total extirpation of the organ.

Let us for a few minutes examine into the different dangers which may follow total extirpation of the uterus; they are by no means either few or trivial. Intestinal obstruction has been met with on several occasions after vaginal hysterectomy, the result of adhesion of a loop of intestine to the edges of the wound, caused by the removal of the uterus. In the *American Journal of Obstetrics*, vol. xxiii., Dr. Coe has reported two cases which occurred in his own practice and eight which he collected from other sources. In all of these laparotomy was performed for the relief of the obstruction, with fatal results. The pathological conditions and clinical symptoms were almost identical in these cases; in each there was an adhesion of one or more coils of intestine to the edges of the vaginal wound, with distension and bending of the gut above the point of adhesion, thus obstructing the lumen. Although there was intense congestion of the serous coverings of the intestine, in neither instance was general peritonitis found at the operation. In all but one case death seemed to be due primarily to exhaustion, or in those cases in which laparotomy was performed to the shock of the operation. The symptoms continued indefinite until the fourth day, and the classical symptoms of intestinal obstruction, especially fæcal vomiting, appeared when it was too late to profit by them. Dr. Cullingworth, in giving the subsequent history of four cases of vaginal hysterectomy, says that two of the patients enjoyed perfect health until within a few days of their death. In each of these cases death resulted from intestinal obstruction, the cause of which in one case remains unknown, and in the other it was due to pelvic adhesions.

Professor Reichel,² in an article on "Ileus after Vaginal Hysterectomy," reports three cases of intestinal obstruction. In the first case the patient on the fourth day after operation showed symptoms of obstruction, which increased until the seventh day, when laparotomy was performed, the patient dying on the table. The lower portion of the ileum was attached to the vaginal wound. In the second case the patient began to vomit soon after the operation. There were no flatus or fæces and on the eighth day fæcal vomiting occurred. Laparotomy was performed on the ninth day and a coil of ileum was found to be attached to the vaginal wound. Death occurred twenty-four hours after the operation. In the third case the patient on the third day had bad colicky pains, death from collapse taking place on the eighth day. At the necropsy coils of intestine were found adherent to the edges of the vaginal wound. Other cases have been reported by Dr. Bokelmann,³ Dr. Leopold,⁴ and Dr. Landaw,⁵ death

resulting in each case. Later cases have been reported by Dr. Coe.⁶ This accident of intestinal adhesion to the raw surfaces seems to be more frequent when forceps are used to control hæmorrhage than when the ligature is used.

A second source of danger in this operation is met with chiefly in those cases in which the disease has extended somewhat laterally, from the risk of either dividing the ureters or including them in the ligature or forceps applied to the broad ligament to arrest hæmorrhage. Any surgeon who has performed vaginal hysterectomy frequently is well aware of this danger, and there are few who could not recall cases in which this accident has happened to them; there are several such cases recorded.

Vesico-vaginal or recto-vaginal fistulæ are by no means so rare as might be supposed after total extirpation of the uterus; there are several cases on record, and these could be, I think, considerably increased if all such accidents were reported. Vesico-vaginal fistulæ are especially liable to occur in those cases in which the disease is somewhat extensive and the pelvis contracted, necessitating a good deal of force to enucleate the uterus. This catastrophe does not sometimes declare itself for some days after the operation; but when the slough becomes detached the surgeon to his horror on visiting his patient finds urine trickling out of the vagina. Often the opening is so high up that it is difficult to locate the exact seat of the urinary fistula, and I need hardly point out that in these cases the hopes of closing the fistula must be very small. Another source of danger is peritonitis, especially in those cases where the parts are of necessity much dragged and torn. Sepsis again is answerable for many of the deaths, and lastly severe and alarming hæmorrhage often takes place.

In referring to the statistics of the result of total extirpation of the uterus Dr. Paul F. Munde and Burke, in a most instructive paper,⁷ have reported 492 cases in which the operation was performed by several operators, the immediate mortality averaging 10·5 per cent. in all cases. The comparison of the operation when performed by different methods is very instructive; thus the mortality, when ligature alone was adopted, is as low as 6·6 per cent., when the ligature and clamp were used it rose to 11·5 per cent., and when the clamp alone was the method employed for controlling the bloodvessels the deaths still further increased to 16·6 per cent. This large difference in the death-rate seems to be accounted for by the cases in which the ligature alone was used being those in which the disease was limited and the uterus readily drawn down out of the vulva. In such cases the high operation would, in my opinion, have been equally efficacious. It would thus appear that the higher rates of mortality might have been accounted for, more by the extent of the disease than by the method adopted of securing the vessels.

In a recent discussion⁸ upon the relative merits of vaginal hysterectomy and supra-vaginal amputation for cancer of the uterus which took place at the Obstetrical Society opinions seemed to differ materially, but the weight of the arguments appeared rather to tend in favour of the lesser operation. Dr. William Duncan, alluding to the mortality after total extirpation, referred to the series of cases of total extirpation reported by Professor Japp Sinclair and observed that his mortality was certainly as small as that of supra-vaginal amputation. One cannot but think that Professor Sinclair must be excessively careful in his choice of cases, as the results of such experienced operators as Drs. Martin (Berlin), Fritsch, Schroeder, Gusserow and others do not show nearly such favourable results. It is true that Drs. Kaltenbach and Leopold admit to a mortality of only 2·5 per cent. and 5 per cent. respectively. It is difficult in the extreme to reconcile the different rates of success obtained by these surgeons; but my own experience certainly tends to the belief that the mortality—if all cases were reported—may be placed really at from 15 to 20 per cent.

Dr. Coe, in an article on the Limits of Vaginal Hysterectomy for Cancer of the Uterus, refers to 19 cases operated upon by himself and Dr. Hunter, in which the following results are given: Died, 6; recurrence within a month, 1; recurrence within seven months, 2; within six months, 3; lost sight of, 1; well at end of ten months, 1; too soon to determine results, 5. Drs. Terrier and Hartmann⁹ give details of a series of 34 vaginal hysterectomies with eight deaths—viz., 1 from hæm-

² Zeitschrift für Geburtshilfe und Gynäkologie, Band xv, Heft 1.

³ Archiv für Gynäkologie, Band xxv., Heft 1.

⁴ Ibid., Band xxx, Heft 2.

⁵ Berliner Klinische Wochenschrift, 1888, No. 10.

⁶ Annual Journal of Obstetrics, vol. xxxiii., p. 469.

⁷ Annual of Universal Medical Science, vol. ii., 1891.

⁸ THE LANCET, vol. i. 1893, p. 87.

⁹ Revue de Chirurgie, April, 1892.

phage on the seventh day; 2 from shock and hæmorrhage in forty-eight hours; 2 from shock on the third day; 2 from peritonitis (in one of these a pair of forceps had pinched a loop of intestine, causing perforation, and in the other the uterus was everywhere adherent); and in the last case death resulted from phlebitis fourteen days after operation. In considering the ultimate results these physicians report 2 cases as well without any recurrence after six years and four months and 1 after four years and a half; in the others relapse occurred—in 8 cases at periods between one month and two years, in 1 case in two and a half years, and 3 are free from disease at the time of report at periods varying from eight months to three years after operation; 3 cases were incomplete, in one necessitating the opening of the cul-de-sac and bladder and 2 have suspicious nodules at the side of the vagina. The conclusion arrived at is that relapse is frequent in about 70 per cent. and often rapid, but may not manifest itself by signs noticeable to the patient until after a considerable time; 30 per cent. of those who survive seem to be completely cured. Dr. Bouilly,¹⁰ at the Société de Chirurgie, reports 30 cases on whom he had operated in 1888, with 7 deaths; since then he had done 20 others, making 50 cases in all, with 16 deaths; amongst the 34 recoveries 6 have remained well for periods varying from fifteen months to four years. Two patients had recurrence after three years; 4 died after two years and 4 have been lost sight of. Amongst the 18 remaining recurrence had been noticed in from eight months to two years. Dr. Reed,¹¹ in supporting the operation of total extirpation, records a series of 25 cases in which he had operated, with 2 deaths immediately resulting from operation, 2 deaths from recurrence within two years and 1 death from recurrence within eleven months. The previous duration of the disease is recorded in the 13 last cases of the series as being from two to five months only; in none of these was there recurrence. In a previous series of 10 cases, in which the disease is reported to have lasted from seven to sixteen months, 2 died; 1 had recurrence in twenty months, 1 in two years; and in 2 the broad ligaments were involved. Dr. Boldt¹² in the same journal says that, if it can be positively shown that the cancer is limited to the portio vaginalis or lower part of the cervix proper, then total extirpation per vaginam would be contra-indicated. He records 44 operations with 3 deaths the immediate result of operation: 1 from probable ligature of the ureters; in 8 cases recurrence took place; in 10 it was too early after the operation to report remote results; 1 patient died from myo-carditis and in 1 the disease recurred at once and in another within three months. Post¹³ in 700 cases of vaginal hysterectomy he had collected asserts that the mortality after the operation is 24 per cent. Br. Florian Krug¹⁴ of New York gives us his personal experience as regards vaginal hysterectomy. He is strongly in favour of total extirpation in suitable cases and reports 15 cases in which he had performed the operation during three years. Two of these were done for non-malignant disease of the uterus and one for a doubtful case of malignancy, thus reducing the number to 12 cases. One of the patients died from the operation, and one had a recurrence five months after the operation. All the others are reported as having had no recurrence and as being in perfect health. Nine of the patients had, however, only been operated on from three to sixteen months before the reading of the paper—too short a time for giving any reliable information as to recurrence. From the few cases in which Dr. Krug has operated it is evident, as he points out, that he only operates in those cases in which he, after careful examination of the patient under narcosis, is quite sure that he can remove the whole of the diseased tissue; he says that whenever the removal of all diseased tissue is impossible vaginal hysterectomy is not indicated; and if recurrence takes place soon after it has been performed it only goes to show that cancerous foci have been left behind. He then goes on to describe his method of operating, which is based upon the importance of absolute asepsis and cleanliness. To obtain this he invariably subjects his patients to examination under narcosis and at the same time thoroughly cures the uterine cavity in corporeal cancer or removes the soft sloughy tissue with the sharp spoon or scissors in cases of cervical epithelioma. The cautery is then freely applied and for about a week

or so vaginal douches are given and sometimes tannin and iodoform powder are applied, until a clean surface is obtained. Directly before the secondary operation he thoroughly scrubs the vagina with mullin containing 10 per cent. of creolin by means of a brush. He then proceeds to remove the uterus. He further lays great stress on the treatment of the stump and prefers the ligature to the clamp. The stump is to be inverted towards the vagina and the peritoneal wound carefully packed with iodoform gauze, which may safely be left *in situ* for eight days. Dr. Martin,¹⁵ at the International Congress at Berlin, pertinently remarked that of 214 patients operated on successfully by Drs. Leopold, Schroeder, Fritsch and himself only five were living at the end of four years. So far as the radical cure of cancer of the cervix by extirpation of the entire organ was concerned, he stated that a hundred women with cancer will live a greater aggregate of years if left alone than if subjected to hysterectomy, and to this doctrine Dr. Coe agreed.

We will first consider the class of cases of cancer which are suitable for this operation. This can be summed up in a few words. Vaginal hysterectomy may be performed on those cases in which, when seen early, the disease is found to be limited to the external os, or the cervical portion of the uterus; if the vaginal walls are only slightly implicated, this would not contra-indicate the operation. The uterus in such cases is freely movable and readily drawn down to the vulva. Such cases in my opinion are suitable also for the high operation. If I can show that as good if not better results can be obtained by the minor operation as are claimed for the major operation I think I shall have proved my case. First, then, as to the immediate risks of the high operation to the patient, they may be summed up as being limited to (1) hæmorrhage and (2) sepsis. With respect to hæmorrhage I have seen cases in which very smart bleeding has occurred during the performance of the operation; this can usually be readily controlled by passing a ligature round the uterine arteries or by the free application of the cautery. In some cases secondary hæmorrhage has caused trouble, but in such the bleeding can invariably be arrested by plugging the vagina. From the second danger—that of sepsis—I have lost one patient, which no doubt was the result of sepsis, or rather from pelvic cellulitis. To avoid this care should be taken to plug the cavity created by the removal of the diseased cervix with iodoform or mercuric gauze and not to remove this for the space of three or four days unless the temperature warns you to remove it earlier. After the removal of the plugs the vagina should be constantly kept syringed out through a full-sized Fergusson's speculum twice or three times a day with some antiseptic solution.

With regard to the method of performing supra-vaginal amputation, there are two or three different plans advocated by different surgeons who practise this operation, some advocating the use of the galvano-cautery, whilst others prefer the knife or scissors. Dr. Baker¹⁶ in reporting two series of cases, says that in the first, covering a period of five years ending 1882, he had operated on 12 cases of cancer of the uterus by the high operation, and in the seven subsequent years he had operated on 16 cases by the same operation. Of the first series 50 per cent. remained well at the end of twelve years; in one case he had to reopen the cervix for the escape of retained menstrual blood. In the second series, operated on from 1882 to 1889, in all 16 cases he had no death from the operation and in 10 cases no recurrence of the disease. One case was well at the end of seven years, 3 were well at the end of six years, 3 at the end of three years, and 1 was well at the end of two years. 53 per cent. were well at the time of his reading the paper; the remainder had died of recurrent disease. These operations were done by the removal of the diseased tissue with scissors or the scalpel, the cautery being applied to the raw surface. Dr. Neamy¹⁷ of Cincinnati, in reporting a number of cases, also strongly advocated the use of scissors or the scalpel; he was in the habit of closing the wound in the vagina with sutures and so obtaining primary union. In our own country Dr. John Williams¹⁸ also strongly advocated the removal of a conical piece of the uterus with scissors beyond the cancerous tissue. Dr. John Byrne¹⁹ advocates the high operation being performed

¹⁰ Ibid., January, 1892.

¹¹ American Journal of Obstetrics, vol. xxvi., p. 890.

¹² Ibid., vol. xxvi.

¹³ Ibid., November, 1887.

¹⁴ Ibid., vol. xxiv., p. 796.

¹⁵ Report of International Medical Congress. Obstetrics Branch, 1890.

¹⁶ American Journal of Obstetrics, vol. xxiv., p. 1224.

¹⁷ Gynaecological Transactions of America, vol. xiii.

¹⁸ Harveian Lecture, THE LANCET, Jan. 1st, 1887.

¹⁹ Brooklyn Medical Journal, vol. vi., p. 744.

by the galvano-cautery. He says there are only two surgical measures worthy of mention to choose between at the present day—these are, firstly, the high amputation or excision, as the case may be, by galvano-cautery, not only of all diseased parts but as much more and beyond the supposed danger-line as can be safely taken away, the removal to be followed by a thorough dry-roasting of all exposed surfaces; or, secondly, vaginal hysterectomy. Dr. Byrne's statistics certainly are most brilliant; in nearly 400 cases he has not had a single death due to operation; amongst them 40 out of 63 cases of cancer of the portio vaginalis, 23 having strayed away. Periods of exemption from the disease are reported ranging from two to twenty-two years, being an average for each case of over nine years. Of 81 cases involving the entire cervix 31 were lost sight of, 10 relapsed within two years, 5 had no recurrence for two years, 11 for three years, 6 for four years, 8 for five years, 6 for seven years, 2 for eleven years, 1 for thirteen years and 1 for seventeen years; so of the fifty cases of this class whose histories could be followed up there was an average period of exemption for each of nearly six years. In this country Dr. Lewers²⁰ only a few weeks since reported at the Royal Medical and Chirurgical Society the result of 19 cases in which he had operated by the cautery, with no deaths; 6 of these had been operated on over two years and were reported as being free from recurrence. At this Society last session²¹ I reported 24 cases in which I had performed the high operation for cancer, with only one death; of these 15 were free from the disease at periods varying from one to three years and have enjoyed perfect health. Dr. Gusserow gives the mortality after supra-vaginal amputation at 9.09 per cent. when the knife is used and 7.75 per cent. after galvano-cautery. This would appear from the above remarks to be far above what may be expected, and if suitable cases are selected I am sure the mortality will not exceed 4 or 5 per cent.

I have now placed as clearly as the time at my disposal will permit the result of these two operations. By comparing these results I hope to come to some conclusion as to which is the operation to be recommended in the future. In doing this I propose to compare (1) the dangers coincident to the two operations, (2) the immediate mortality after the operation, (3) the periods of freedom from recurrence, and (4) general results.

1. Amongst the dangers, as I have pointed out, in vaginal hysterectomy, quite a number of patients have succumbed to intestinal obstruction due to some portion of the intestine becoming adherent to the edges of the vaginal wound. Dr. Krug claims that by better attention being paid to the stump this danger may be averted; be it so, yet at present it is a danger which all surgeons must be alive to. Even Dr. Krug nearly lost one patient by this cause, and it was only by his timely intervention in examining the vaginal wound that he found a knuckle of intestine protruding through the wound. He broke down the adhesions with his finger, pushed the intestine back and introduced a plug of iodoform gauze and saved his patient. Should symptoms of intestinal obstruction appear, then, after this operation, no time should be lost in endeavouring to remove the cause. This danger can never be feared after supra-vaginal amputation as the only portion of the peritoneum which is at all likely to be opened is Douglas's pouch, the peritoneal edges of which become glued together and the opening is securely closed within a few hours. The danger of ligaturing or dividing the ureters is a very serious one in the operation of total extirpation as, should the disease extend laterally or the tissues be thickened by inflammatory mischief, it is impossible to recognise the different structures which present themselves, and it is obvious that in passing a needle through these tissues or in applying pressure forceps the ureter may very easily be included. This can readily be understood when the intimate relations of the ureter and uterine artery are remembered. This is a strong argument against performing vaginal hysterectomy when the disease is found to extend laterally, or presumably encroaches on the broad ligaments. In cases of supra-vaginal amputation this danger can never present itself. Vesico-vaginal fistulæ are by no means uncommon after vaginal hysterectomy, especially when the disease implicates the anterior portion of the neck of the uterus; in such cases inflammatory thickening takes place in the cellular tissue between the bladder and uterus, and it can be readily understood how in such cases the bladder may be torn. In cases suitable for the high operation this danger

can rarely if ever exist. Peritonitis should rarely be anticipated after either operation if the vagina has been rendered thoroughly aseptic either after the one operation or the other. This misfortune seems to be much more likely to follow vaginal hysterectomy when the broad ligaments are clamped than when the ligature is used. Hæmorrhage both primary and secondary is liable to cause trouble after both operations, perhaps even more so after the high operation, as by the traction which is exercised during the removal of the diseased tissues the vessels become temporarily closed and at the time no bleeding point present themselves. When, however, the remaining portion of the uterus is returned and the pressure relieved, bleeding may take place. This accident no doubt would be less likely to follow if the cervix were removed by the galvano-cautery.

2. The immediate mortality after operation can only be obtained from the statistics which have been published. Dr. Byrne, who has been at much trouble to do this, has collected 1273 cases of vaginal hysterectomy which have been reported and has divided them into different classes according to locality, thus:

Locality.	Operators.	Operations.	Deaths.	Per cent.
Continental	14	244	137	14.5
British	8	74	15	20.0
United States	16	255	34	13.0
Total	33	1273	186	14.6

We may then safely place the immediate mortality after total extirpation as hitherto practised at about 15 per cent. Now if we compare these figures with the results after supra-vaginal amputation we shall find that the result is very much in favour of the latter operation. Dr. Byrne tells us that in 400 cases in which he had performed the high operation by galvano-cautery he had no deaths, and Dr. Lewers, in 19 cases by the same method, likewise records no death. Dr. Baker, in a series of 28 high operations, had also no death. In 24 cases which I have reported I had only one death. The immediate risk, then, from this operation appears to be practically nil.

3. The length of time that the patient remains free from recurrence would appear to depend entirely upon degree. This is well exemplified, as by Drs. Terrier, Hartmann and Reed. According to the observations of these physicians, cases in which the disease has been recognised quite early are practically cured by either operation; but, seeing the dangers which beset the major operation and which are absent in the minor, surely it would be wiser to practise the latter.

4. It only remains for me to make a few remarks as to the choice of cases, and in doing this I shall perhaps not be far wrong in recommending surgeons to operate only upon those cases which are seen early and in which the disease is limited to the vaginal portion of the uterus or to the cervix and cervical canal, the uterus being freely movable and the disease not extending laterally along the broad ligaments or the cellular tissue between the peritoneum and the fornix. In such cases, no doubt, the results would be almost as good by adopting the one operation as the other so far as the immediate mortality and chances of recurrence of the disease are concerned; but, taking into consideration the dangers and complication which may follow the major operation of removing the whole organ and destroying the roof of the vagina, I cannot but think that supra-vaginal amputation of the disease will not only maintain its high position, but that many of those surgeons who are at present opposed to it will gradually become converted and will adopt the total extirpation of the entire organ only in those cases in which the disease is situated in the body of the uterus.

Gentlemen, I trust I have not wearied you, but in examining into this subject I have endeavoured to the best of my ability to place before you fairly and dispassionately the results obtained by surgeons of all shades of opinion, trusting that we may profit by their experience and in the future be able to bring the results of such experience to so bear upon our practice that the result of the operative treatment of

20 THE LANCET, June 10th, 1893.
21 THE LANCET, Dec. 17th, 1892.

cancer of the uterus may occupy a position in the annals of surgery and gynecology that may prove a triumph of our art and a lasting benefit to thousands of poor suffering women who may seek our aid.

SARCOMA SURROUNDING A CONCRETION IN THE VERMIFORM APPENDIX; EXCISION OF CÆCUM; RECOVERY.¹

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THE sarcoma in this case apparently resulted from a previous appendicitis. It was diagnosed to be a tumour of the kidney, but was found to be a sarcoma which had formed round a faecal concretion in the vermiform appendix and become attached to neighbouring parts. It was removed, together with the cæcum and adjacent parts of the colon and ileum, through a lumbar incision. The patient was a married woman aged twenty-seven, who had never had any serious illness, but had suffered since the age of fourteen from occasional attacks of coldness, pallor and numbness of the right lower extremity. These had come on at varying intervals, had lasted from a few hours or days to as many weeks, and had been sometimes accompanied with shooting pains in the limb, with a feeling of weakness. She had occasionally obtained relief by rubbing or bandaging, but there had never been any swelling or varicose veins. These symptoms had been confined to the right lower extremity, and there had been neither pain nor tenderness nor fulness in the abdomen or groin, nor could she remember ever having had either shivering or fever; but her appetite had been liable to fail, and her friends remarked that she frequently alternated from a condition of good health and fair development to one of thinness and ill-health. She had on two occasions been compelled to give up good situations as a domestic servant on account of the pain, and had frequently been obliged to walk with the aid of a stick because of the weakness of her thigh and leg. When not already present, the symptoms were invariably induced by the onset of menstruation and tended to abate somewhat as the period passed off. She had always been subject to constipation and had also suffered from occasional bilious attacks since childhood, but these were not as a rule associated with the above symptoms. I attended her in August, 1892, when she was eight months pregnant with her second child. She then complained of agonising pain in the right hypochondriacal and lumbar regions. It seemed to bear no relation to the contractions of the uterus, there was no "show" or dilatation of the cervix, and the temperature was 101°, whilst the patient vomited everything that was given to her. Half-grain morphia suppositories temporarily removed the symptoms, but they returned as the narcotism passed off. After lasting for three days the pains altered completely in site and character, labour set in, and the patient was speedily delivered of a feeble eight months' child, which died a few hours afterwards. The next day she began to vomit again, the skin became jaundiced, and the liver extended two fingers' breadths below the margins of the ribs. I therefore gave her five grains of calomel, which purged her three times, and she rapidly recovered. She said this was one of her usual bilious attacks. My opinion of the nature of this case at the time was at first that it was one of uterine cramp, but afterwards I thought that the seat of the pain, its sickening nature and the concomitant symptoms, pointed rather to pressure of the growing uterus against the right kidney, and when the uterus had emptied itself I examined the loin to discover whether this was the case and thought that my diagnosis was confirmed; I felt that kidney apparently much more plainly than the left, and it also appeared to slip from under my finger, the patient complaining of a sickening pain as it was pressed. I did not see her again until Jan. 30th of this year, when she came to me complaining of pain in the region of the umbilicus, extending round to the loin and down to the groin and thigh. It was increased by sudden shocks or jars of the body, as in tripping over a carpet, but was

present sometimes when she was sitting or lying still and was now and then very severe and persistent. Micturition was normal, but the urine was loaded with urates, though it never contained blood. There was no nausea or sickness and the bowels were, as a rule, regular. She had become thinner since her confinement. On examination the abdominal muscles were found to be too rigid to permit of satisfactory manipulation, but it was at once evident that a growth was present in the region of the right kidney; that organ appeared to be uniformly enlarged, but to be situated on a lower level than usual, and its surface was distinctly nodular. I diagnosed sarcoma of the kidney, and thought that the growth was seated either in a kidney which had been previously displaced or that it had so enlarged a normally situated kidney as to cause it to be readily displaced by the distended uterus during her recent pregnancy. This opinion appeared to be supported by the fact that deep pressure on any part of the tumour elicited the same sickening sensation as when the sound kidney was pressed. Subsequent examination of the urine caused me to doubt the correctness of this diagnosis. She had four attacks resembling mild renal colic, and on one of these occasions the urine became suddenly clear and normal, though both before and afterwards it was thick with urates. There was also usually a faint trace of albumen and on some occasions I found round cells resembling pus cells and likewise granular structureless masses quite different from the amorphous urates which were present with them. There were no blood discs. Her temperature varied from 99° to 101°. From these facts and also because she had been rapidly wasting and from a sister having died of phthisis, I judged that she might be affected with tuberculous disease of the kidney. On the other hand, she had no tuberculous mischief either in the lungs or Fallopian tubes or elsewhere. The abdominal muscles were too rigid to permit of satisfactory examination without an anæsthetic. It seemed to me to be a case in which chloroform should be given for the purpose of assisting diagnosis, whereupon preparations should be made to operate if the examination indicated its necessity. In this opinion Dr. Moody-Ward, who saw her with me, concurred. On Feb. 13th chloroform was given by Mr. Truman, and the growth was examined by Dr. Moody-Ward and myself and found to be a hard, fixed, nodular mass apparently originating in the kidney. I therefore proceeded to cut down upon that organ by the usual lumbar incision, but it was found to be perfectly sound for the upper three-fourths of its extent, the growth apparently springing from its lower fourth and partially ensheathing it. The incision was then extended down to the crest of the ilium so as to form a T-shaped opening; but as the mass was found to be attached still lower, this was again extended along the crest for three inches and the flap thus formed was pulled forward. It was now ascertained that the tumour was bound down to the iliac fascia below, to the psoas behind, to the capsule of the kidney above, and to the cæcum and termination of the ileum within. It was first separated from the kidney by peeling it off, together with the piece of capsule to which it was attached. The adhesions to the iliac fascia were next torn through with the fingers or cut through with scissors, and the tumour was then separated from the psoas, a piece of that muscle being removed with it. The external cutaneous and ileo-inguinal nerves passed through the growth and about four inches of each were removed; but the ureter though apparently pressed upon was not infiltrated by it. The tumour and bowel were now dragged together out of the wound and the former was cut into in order to examine its appearance. Pus immediately escaped from the opening and at first I thought that the mass must be a simple inflammatory induration, but further inspection showed that it presented the characteristic appearances of sarcoma. A ligature was now passed round the cæcum and then round the ileum, and the mesentery and other attachments of the included bowel were carefully dissected up until a pedicle containing the chief bloodvessels running to the parts alone remained. A silk ligature was put round this and the growth and a portion of gut between the ligatures were removed, the largest artery being found to be of the size of the radial at the wrist. The cut end of the colon was now dealt with by first removing another inch and the attached half of its diameter was then cut obliquely, whilst the other half was allowed to remain straight. The former part was then closed with a continuous medium-sized chronic gut suture running through all the coats. A further inch of small intestine was next cut off, and the end was united to the un-

¹ A paper read before the Reading Pathological Society.