REMARKS

ON

THE TREATMENT OF GUNSHOT-WOUNDS
OF THE ABDOMEN IN RELATION TO
MODERN PERITONEAL SURGERY.

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[Concluded from page 926 of last number.]

LAPAROTOMY and cystorraphy were advocated by Vincent of Lyons, at the International Medical Congress. The bladder has been wounded in ovariectomy and in extirpation of uterine fibroids. This accident happened once in the hands of the great ovariectomist, Washington Atlee. It happened in the practice of an eminent surgeon in the interior of New York; and occurred to me in the removal of an enormous uterine fibroma. The bladder was cut across for several inches, as it was extensively spread out over the anterior face of the tumour. The wound of the bladder was closed with fine silver wire. The patient died a few hours afterwards of shock and hæmorrhage. Dr. Thomas reports a case where he found the bladder closely attached to the anterior face of an ovarian tumour. There was some doubt about it, and he cut into the bladder, passed his finger in to clear up the diagnosis, then closed the incision by suture, and the patient quickly recovered. With the lights now before us, we should be able to suture the peritoneal portion of the bladder with the same impunity that we do the vaginal.

Fischer of Buda-Pesth (International Medical Congress, 1881) performed a series of experiments on dogs to establish the propriety of suturing wounds of the bladder. He says the success of the operation depends entirely on the accuracy with which the sutures are placed. He used catgut and antiseptic silk with equally good results. He infers that the operation will be more successful on man than on the lower animals, for the reason that a catheter can be kept in the bladder and irrigated antiseptically, while the patient rests quietly in bed.

Billroth has recently extirpated the pylorus for carcinoma. But, as the ulterior results are always unfortunate, we can only admire the heroism and genius of the surgeon, and the brilliancy of the operation, while we deplore its uselessness. But it proves conclusively what we dare do now-a-days in the region of abdominal surgery.

Gastrostomy has been often performed for the removal of foreign bodies and for artificial feeding. It has been done by Labbé of Paris for extracting a fork from the stomach of a man who swallowed it in a playful freak. And it has been recently frequently performed successfully where the œsophagus was mechanically obstructed by stricture or malignant disease.

The Cæsarean section is rather going out of fashion. But if surgeons would take care to clean out the peritoneal cavity thoroughly and then suture the incision in the uterus with silver wire, there is no reason why it should not be as successful as any other in the whole range of abdominal surgery.

Look through the literature of the Cæsarean section, and see the absence of all precautions to prevent sepsis, and can we wonder that the operation has not been more successful. How any surgeon could make an incision three or four inches long through the walls of an impregnated uterus, and then leave it open for the lochial discharge to run out into the peritoneal cavity is incomprehensible. By the light of modern science, and by the skill of the present generation of surgeons, there is no reason why the Cæsarean section should not again come into vogue.

Porro's operation, which is now accepted and lauded by all who have done it, is the professed substitute for Cæsarean section, and a direct offshoot of ovariectomy. It seems destined to be recognised as a legitimate and justifiable procedure. In Vienna, in 1878, I saw two cases a year after they were cured—one by Professor Späth, and the other by Professor Carl Braun. Professor Horatio R. Storer of Boston extirpated the uterus by abdominal section on account of uncontrollable hæmorrhage after delivery, long before Porro's operation (1867); and by some writers it is called the Storer-Porro operation. Porro's operation is usually performed in cases of deformed pelvis, when the child cannot be safely delivered in the natural way. So far, it has been more successful than the Cæsarean section, as heretofore

performed; and it protects the patient against the dangers of a subsequent pregnancy.

Laparotomy, in mechanical obstruction of the bowels, has been frequently performed successfully within the last three or four years. This is another triumph following in the wake of ovariectomy. In America and Great Britain, we are ahead of our French *compères* in this operation. It was but the other day (July 1881) that all Paris was wrapped in gloom by the sudden death of one of its most promising young physicians, Dr. Chantreuil. Chantreuil was a man in the very prime of life, only about forty. Young and vigorous, he was doing a great work, and able to do it well. He was the picture of health; but one day he was suddenly taken with severe gastric pain. His friends hurried to his assistance. There was no relief; he rapidly sank, and died in twenty-four hours. A *post mortem* examination revealed an intussusception. French surgery must look to its laurels, for it has many; but it cannot afford to stand still while we move on. In no medical centre in this country or Great Britain could such a life as Chantreuil's have passed away without prompt efforts to save it. With the lights now before us, no man has the right to die of mere mechanical obstruction of the bowels.

Lumbar colotomy is frequently performed when the lower bowel is mechanically obstructed by carcinomatous or other foreign growth. It often prolongs life for twelve or eighteen months, and during this period gives complete relief to suffering. It has been done by abdominal section; but this has not yet come into general use. In the present state of our knowledge, I believe it would be an easier and a safer operation than the lumbar, and it would make the artificial opening more convenient for comfort and cleanliness. It will eventually supplant the lumbar method.

Certainly the most important advance made in peritoneal surgery, growing out of ovariectomy, is Battey's operation for arresting ovulation and bringing about the menopause. This valuable contribution gives well-deserved fame to our countryman—fame that will endure, and, like that of McDowell, will become more brilliant as time rolls on. You know its literature, and the battles it has had to fight ever since it was brought before the profession in 1872. Its enemies are, day by day, deserting to the opposite ranks, and soon it will meet with no more opposition than does ovariectomy to-day. Its victory has been easier than that of ovariectomy, because the one is but a mere corollary of the other. It is more difficult than ovariectomy, because the abdominal walls have not been distended and relaxed by internal centrifugal pressure, and because the offending organ does not boldly present itself at the median section as ovarian or uterine tumours do. The ovary lies deep down in the pelvis, and it is often difficult to find it, and sometimes more difficult to bring it into view. I think I have facilitated this part of the operation very much by the use of my uterine redresser. Sometimes the uterus in these cases is retroverted, and then it is still more difficult to reach the ovaries and bring them to the surface. Whether the uterus be retroverted or not, it will materially aid our endeavour if the uterine repositor be used to elevate the fundus uteri to the lower angle of the abdominal incision. Here it must be held firmly in position by an assistant. By rotating the handle of the repositor on its axis to one side of the patient, the opposite ovary is made to approximate the abdominal incision, so that the finger following the Fallopian tube soon finds the ovary, which is drawn into view, and then the pedicle is tied and the ovary removed. In like manner, the opposite ovary is dealt with by turning the handle of the repositor in a contrary direction, and the operation is finished as in ovariectomy.

When we first began to perform this operation, we were less successful than at the present time; but the labours of Lawson Tait and of Thomas Savage, both of Birmingham, prove that the operation is quite as safe, and quite as successful, as that of ovariectomy. Thomas Savage has performed the operation thirty times without a death. Lawson Tait has done it more frequently than anyone else—seventy times—with marvellous success. His unlucky cases have been those for intractable bleeding fibroids.

The operation has been done often, and with great success, by Hegar of Freiburg. Spencer Wells, Professor Simpson, Heywood Smith, and others in Great Britain, have done it successfully. Indeed, the operation, as performed by our brethren in England, is no longer on its trial. It is now accepted there as a legitimate operation by every gynaecologist who pretends to be a surgeon. Battey thinks it very important to do the operation with the utmost thoroughness, not leaving the smallest particle of ovarian stroma. Lawson Tait goes further, and insists that the Fallopian tubes should be removed with the ovaries, if we would ensure the arrest of ovulation and hasten the advent of the menopause. It is for this that the operation was projected, and for this that it is now performed.

In April 1878, I operated on a case of dropsy of the gall-bladder.

Having published the case in detail, I shall here but briefly allude to its general features. I drew off the contents of the gall-bladder by aspiration. The sufferings of the patient were temporarily ameliorated. The sac soon filled again. I then conceived the idea of cutting down on the sac, of opening and emptying it, and then of securing the edges of the incised sac to the edges of the abdominal incision. This was done; but the patient was too much exhausted before operation, and died two days afterwards of black vomit. The blood had become so disintegrated by the admixture of bile, that it was unfit for sustaining the vital powers; and her death was just such as we see in yellow fever, by black vomit. The *post mortem* examination showed that the operation was a perfect success. The gall-cyst had adhered to the abdominal parietes, where it was secured by suture. There was no peritonitis, and no evidences of inflammatory action were anywhere to be seen. In this case, I removed sixty gall-stones, varying in size from a pea to a filbert.

The success of this operative procedure in this case established a principle which has been applied by Lawson Tait and others with marvellous results in peritoneal surgery. Lawson Tait has twice performed successfully the operation of cholecystotomy as above described, and he has applied the same principle in operations for hydatids of the liver. He cuts down on the tumour, and then empties it by aspiration. He then incises the cyst to a proper extent, cleans out its cavity thoroughly, sews the cyst-walls to the edges of the abdominal incision, and introduces a drainage-tube. He has done this hepatotomy in seven successive cases in the last two years, and effected a perfect cure in every one of them. In every instance, the substance of the liver was incised to reach the hydatid cyst. In one, the thickness of liver-tissue through which he cut "was nearly an inch" (*Birmingham Medical Review*, Oct. 1881.) In all, the liver was itself stitched to the walls of the abdomen. This is certainly a brilliant achievement in peritoneal surgery, and establishes a precedent that we may all safely follow hereafter. It simplifies and perfects a method of operating in a class of cases in which heretofore we dabbled, hesitated, and temporised. But Lawson Tait has formulated a rule of action, and demonstrated its successful application, which gives us confidence in the future. He has carried the same principle to the treatment of hydronephrosis. He has operated six times successfully in the last two or three years. He opens the abdomen in the middle line, punctures the cyst, guards the peritoneal cavity against the admission of cystic fluid, opens the cyst to the proper extent, and then stitches the cyst-walls to the edges of the abdominal incision, and introduces a drainage-tube. Professor Czerny of Heidelberg performs this operation in the same way in hydronephrosis, empyema of the pelvis of the kidney, and echinococcus, incising the cyst-walls, and attaching them to the external opening.

Lawson Tait has also carried out the principle of suturing cyst-wall to abdominal incision, followed by drainage-tube, in other cystic diseases within the peritoneal cavity. These operations may be classified as follows: Abscess of spleen, 1; extra-uterine pregnancy, 6 (1 death); hæmato-salpinx, 1; hydro-salpinx, 2; pyo-salpinx, 3; hydrometra, 1; hydatid tumour of liver, 8; cystic abscess of liver, 1; dropsy of gall-bladder, 1; pelvic abscess, 18. All of these were treated on the same principle—viz., stitching the cyst-walls to the abdominal incision; and all recovered except one case of extra-uterine pregnancy, in which the operation was too long delayed. Thus, of six Fallopian pregnancies, he lost but one; of twelve pelvic abscesses, all were speedily cured; of forty-two operations involving cystic disease in the peritoneal cavity, he lost but one. His marvellous success in all these proves the correctness of the principle of operating, and makes the way clear for other surgeons.

Thus we see that Lawson Tait has gone ahead of us all in opening up new fields in the great domain of abdominal surgery. He has done it all in the last three years, simply by adopting the principle set forth in the operation of cholecystotomy. His success establishes this procedure and these operations as legitimate, and compels us to accept them without question as he presents them to us. Well may I close this hurried *résumé* of recent advance in peritoneal surgery in recounting these brilliant achievements of Lawson Tait. By his daring and skill, he has made easy for us many things that were before attended with difficulty and danger. He is now the leader in this department of surgery, and has succeeded in opening up fields of great fertility, which we may all freely cultivate with profit.

I have now given you, as hurriedly as possible, a brief outline of the work lately done in peritoneal surgery. The whole of it is the outgrowth of ovariectomy. Most of it has been done since Battey first performed his operation in 1872, and a very large part of it in the last three years. This work became possible as ovariectomy grew more and more successful. The principles of peritoneal surgery are now so well established, so thoroughly understood, and so successfully put in prac-

tice, that we are bound to achieve still further triumphs in this direction. Believing firmly in the lessons of this retrospect, let us now look forward; and forecast where, and to what, they necessarily lead us. Past success, based on principles universally applicable, guarantees like results under analogous circumstances.

The great Dr. Physick of Philadelphia was, many years ago, called the Father of American Surgery. One of the most important and original of his operations was that for artificial anus, which, until his day, had not been cured. His operation was based on an accurate knowledge of physiological laws; but it was not always applicable, and not always successful. Well do I remember a case in Paris, in 1867, on which M. Nélaton had operated several times unsuccessfully, and how he deplored the uncertainty of his art. This was before we had learned with what safety we could freely lay open the peritoneal cavity. Doing this now with absolute impunity, we can cut loose the injured bowel from all unnatural relations; resect portions of it, if need be; apply sutures where necessary; and return it, in a normal state, to the peritoneal cavity. There is now evidently a great future for this operation; but it must not be forgotten that, from long disuse, the lower end of the wounded bowel becomes abnormally contracted. Before uniting the upper and lower ends of the injured bowel, whether large or small intestine, it will be necessary to dilate the latter mechanically. Dr. Kinloch of Charleston, professor of surgery in the Medical College of that city, has already performed this operation.* A shot-wound (October 1862) of the abdomen resulted in artificial anus in the right iliac region. The patient was eventually worn out by suffering and inanition. Dr. Kinloch opened the abdomen (June 1863), excised half an inch of the upper portion of the ileum, and two inches of the lower, which last was abnormally contracted for want of use. He then united the two cut ends of the intestine by silver wire, and closed the wound. On the third day, some of the intestinal sutures gave way, and there was a fecal discharge. Dr. Kinloch succeeded in substituting a small fecal fistula for an extravasating artificial anus; and would have succeeded perfectly in his well-planned timely operation, if he had had the means of securely co-apting the ends of the wounded intestine. Too much credit cannot be given to Dr. Kinloch in initiating an operation that must become the rule of practice in the future.

Fallopian pregnancies, terminating in death by hæmorrhage from bursting of the Fallopian tube, a few weeks after conception, are not uncommon. Almost every practitioner of thirty years has seen such cases. One of the deputy-coroners of New York made necropsies in ten cases in five or six years. Three of my young friends died in this way. I saw one of them, with Dr. H. D. Nicoll, in New York, in 1874. The patient, aged 30, mother of two children, was taken suddenly at seven o'clock in the morning while dressing. Dr. Nicoll saw her in an hour. I saw her about 2 P.M. She was then in collapse. I had no doubt that she was dying of internal hæmorrhage, or of perforation of the bowel. She died in twelve hours from the time of the attack. The *post mortem* examination showed the peritoneal cavity to be full of blood. If we had in time opened the abdominal cavity, it would have been easy to secure the bleeding Fallopian tube. But the golden moment for this had passed before we grasped the case in its entirety, and a valuable life was lost. With a sharp diagnosis, and prompt action, nothing would be easier, now, than to save life under these circumstances.

The late Dr. Stephen Rogers of New York wrote an admirable monograph on Extra uterine Fœtation, in 1867. He reviewed the subject in all its bearings; and said: "To me, therefore, a correct diagnosis indicates, as the first thing in order, the prevention of any further loss of blood; to accomplish which there is no choice of methods; the peritoneal cavity must be opened; the bleeding vessels must be ligatured." Rogers's advice must become law for our future government.

The illustrious George McClellan, the father and founder of Jefferson Medical College of Philadelphia, was a truly great surgeon—bold, original, brilliant, and successful. In the year 1847, McClellan left his home one bright May morning to make his usual daily rounds. He walked erect along Chestnut Street, seemingly full of health and vigour, going from house to house to see his patients; while his coachman drove leisurely along, waiting whenever his master entered. Soon he was seen slowly descending the steps of a marbled mansion, bent over with agonising pain. He entered his carriage, and was driven rapidly home. His medical advisers were summoned. In ten hours he was in collapse, and in six hours more he was dead. He died of perforation of the bowel, below the sigmoid flexure. The cause of death was shock and septicæmia.

* *Journal of Medical Sciences*, July 1867; and *Medical and Surgical History of the War*, etc., part second, surgical vol., p. 113.

We often see patients dying of perforation of the bowel, from wasting disease—such as chronic diarrhoea and typhoid fever. In these cases, the poor sufferers are too exhausted, too near death's door, before the perforation occurs; and we can only look on, try to ameliorate symptoms, and wait for the end. But George McClellan was in the prime of life; and would, in all probability, have lived to a ripe old age but for this sudden taking off.

Given a case of perforation of intestine in such a man as George McClellan; and, given a correct diagnosis, which is by no means difficult—what are we to do in the present state of our knowledge? Why, of course, we should open the abdomen promptly, clean out the peritoneal cavity, search for the perforation, pare its edges, and bring them together with sutures; and treat the case as we now treat other cases involving the peritoneum. Rest assured that the day will come, and it is not far off, when an accurate diagnosis in such cases, followed by prompt action, will save life that must otherwise quickly ebb away; and the same thing must be done in gun-shot wounds of the abdomen.

Death from wounds of the abdomen may occur from shock, from hæmorrhage, or from septicæmia; seldom from peritonitis, properly speaking. When from shock or hæmorrhage, there is no reaction, and death is comparatively sudden. Reaction once established, shock is over, and direct danger from hæmorrhage is passed. The great danger is septicæmia from effusion into the peritoneum. Some years ago, it was thought that peritonitis was the chief cause of death after ovariotomy. But this is not the accepted doctrine of the present day.

A CASE OF SCIATIC NERVE-STRETCHING IN LOCOMOTOR ATAXY: WITH REMARKS ON THE OPERATION.

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I HAVE collected eighteen cases* from various sources, in addition to my own, in which large nerve-trunks have been stretched in locomotor ataxy; and, although the number is not a large one, it will be instructive to review them shortly, and estimate as far as we are able the probabilities of future success or failure.

CASE I. Langenbuch (*Berlin. Klin. Wochenschrift*, December 1879). A man aged 40, with symptoms of ataxy for "several months". The pains affected all four limbs, and were very violent. On September 13th, 1879, the patient being under chloroform, the left sciatic was stretched "violently". The operation was followed by disappearance of the pains in the territory of the operated nerve, but also by sensory and motor paralysis, which, however, subsided in a few days, without any return of the pains. The wound healed very quickly. On September 25th, in one sitting, the two anterior crural and right sciatic nerves were stretched. The wounds quickly healed; the pains disappeared; and motion and sensation, which were at first paralysed, were soon restored. The patient's walking gradually improved, and the ataxia entirely disappeared. It seems not to have returned three months after the first operation; but the pains continued severely in the upper extremities, and it was decided to operate on the brachial nerves. The patient died of convulsions during the administration of chloroform for this purpose. The cord was preserved, and examined by Westphal (*loc. cit.*, No. 8, 1881), who found that there was no disease of the posterior columns. He therefore concludes that the case was not one of true ataxy.

CASE II. Esmarch (*Deutsch. Med. Wochenschrift*, No. 19, 1880) operated in a case diagnosed as ataxy by Quincke. As the pains were most severe in the forearms, he stretched "strongly" the nerves in the axilla. The pains disappeared, not only in the arms but in the legs also, and the ataxy subsided. No further details are given.

CASE III. Erlenmeyer (*Centralblatt für Nervenheilkunde*, No. 21, 1880). A man, aged 30, had suffered from ataxy six years. There were no pains at the time of the operation, which was done in June 1880 under chloroform. The right sciatic nerve was exposed at the sciatic notch, "strongly stretched", and then "twisted" and held some time in this position. The wound healed by first intention. Ten days later, a similar operation was done on the left sciatic, followed by erysipelas, the wound not healing for six weeks. There seems to have resulted a very slight increase in strength, but no improvement whatever in sensation and co-ordinated motion.

CASE IV. Debove and Gillette (*Union Médicale*, No. 165, 1880).

A man aged 56, with ataxy for at least six years. The pains were very severe and frequent, and ataxia extreme, so that he was bedridden for eighteen months, being quite unable to stand. In November 1880, Gillette operated on the left sciatic nerve in the middle of the thigh. The nerve being exposed, was twice raised nearly six inches above the level of the skin, and then "violently" stretched in its long axis. There was no motor or sensory paralysis, but, three weeks after the operation (which was done antiseptically), the wound remained unhealed. At that time, there were no pains; cutaneous sensation was restored to normal, and motor inco-ordination so much diminished, that the patient could stand upright leaning on an attendant, which was previously impossible.

CASE V. Socin (*Sury-Bienz. Deutsch. Med. Zeitung*, No. 1, 1881). A man aged 33, with ataxy and violent pains. The right sciatic was stretched antiseptically. The wound did not heal, but the pains disappeared on that side. The left sciatic was then stretched, as the pains continued on that side. Fifteen days later, the patient died from pulmonary embolisms, arising from a clot in the right femoral vein.

CASE VI. Debove and Gillette (*Bull. de la Soc. de Chirurgie*, 1880, p. 718). A man aged 50, with ataxy. The pains were especially severe in the upper extremities for fifteen years. Two nervous trunks of the right brachial plexus were stretched, probably the median and ulnar, with the internal cutaneous. Two directors were placed under the nerves, and then "violently" drawn towards the surface, raising them four inches above the skin. An assistant who held the arm felt a distinct crackling in the nerve-sheaths at the time. The wound healed by first intention, and was followed by cessation of pains in all extremities, and great improvement in the ataxy which affected the lower extremities.

CASE VII. Debove and Gillette (*loc. cit.*, p. 719). A man aged 30, with ataxy and very severe lightning-pains in the abdominal viscera. The left sciatic nerve was stretched, the force employed rupturing a medium-sized vein. The operation is said to have been followed by persistent improvement. No further details are given.

CASE VIII. Gillette (*Arch. Gén. de Méd.*, July 1881, p. 80). A woman with ataxy for five years. The radial and median nerves were strongly stretched on the right side. The pains subsided in the upper, but increased in the lower extremities. No further details are given.

CASE IX. Bastian (*BRITISH MEDICAL JOURNAL*, July 2nd, 1881, p. 1). A man aged 39, with ataxy for three years and a half. In February 1881, he was unable to stand without the support of two persons, and suffered from much pain in the hypogastrium. Mr. Marshall operated under ether. The right sciatic was exposed in the middle third of the thigh, taken between the thumb and forefinger, twice pulled upwards from below, and afterwards from above downwards, the nerve being raised one to two inches above the skin. The pain disappeared. The left sciatic was afterwards operated on in the same manner. More than six weeks after the first operation, he still required two people to support him to stand upright, and was very weak on his legs; but the gait is said to have been better than before. There was no return of pain.

CASE X. Bastian (*loc. cit.*). This case was less advanced. It is noted that, five weeks after the operation, there was "no appreciable improvement in the patient's condition". The nerve was probably more forcibly stretched than in the first case. The wounds in both healed slowly.

CASE XI. Johnston (*loc. cit.*, p. 11). A man aged 39. Pains for twelve years, and ataxy established for three years. Esmarch's bandage was applied to the upper part of the right thigh, and the sciatic nerve exposed in the middle third under local anaesthesia. It was then pulled upwards vertically "with some force", the whole weight of the limb being suspended by the nerve. This was repeated three times. Five weeks after the operation, the pains were found to be not nearly so acute as before, and came on at longer intervals; the anaesthesia was somewhat diminished, but there was no improvement whatever in the ataxy.

CASE XII. Langenbuch (*Berlin. Klin. Wochenschrift*, No. 24 to 27, 1881). A man aged 53, with ataxy for one year. The right sciatic and anterior crural nerves were stretched. There was great diminution of the ataxy, subsidence of the pains and constriction; and micturition, which was very slow and difficult, was much improved.

CASE XIII. Langenbuch (*loc. cit.*). A woman aged 32, ill five years with ataxy and commencing lateral sclerosis, as diagnosed by Westphal. The left sciatic nerve was stretched. A month later, she barely tottered with closed eyes, walked more strongly, and entirely without ataxy; in fact, she seemed completely cured, but there was no return of the knee-reflex.

CASE XIV. Langenbuch (*loc. cit.*). A man aged 52, ill for eleven years, with lightning-pains followed by ataxy, which was moderately

* I believe that a few published cases have not been included in this number.