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BY

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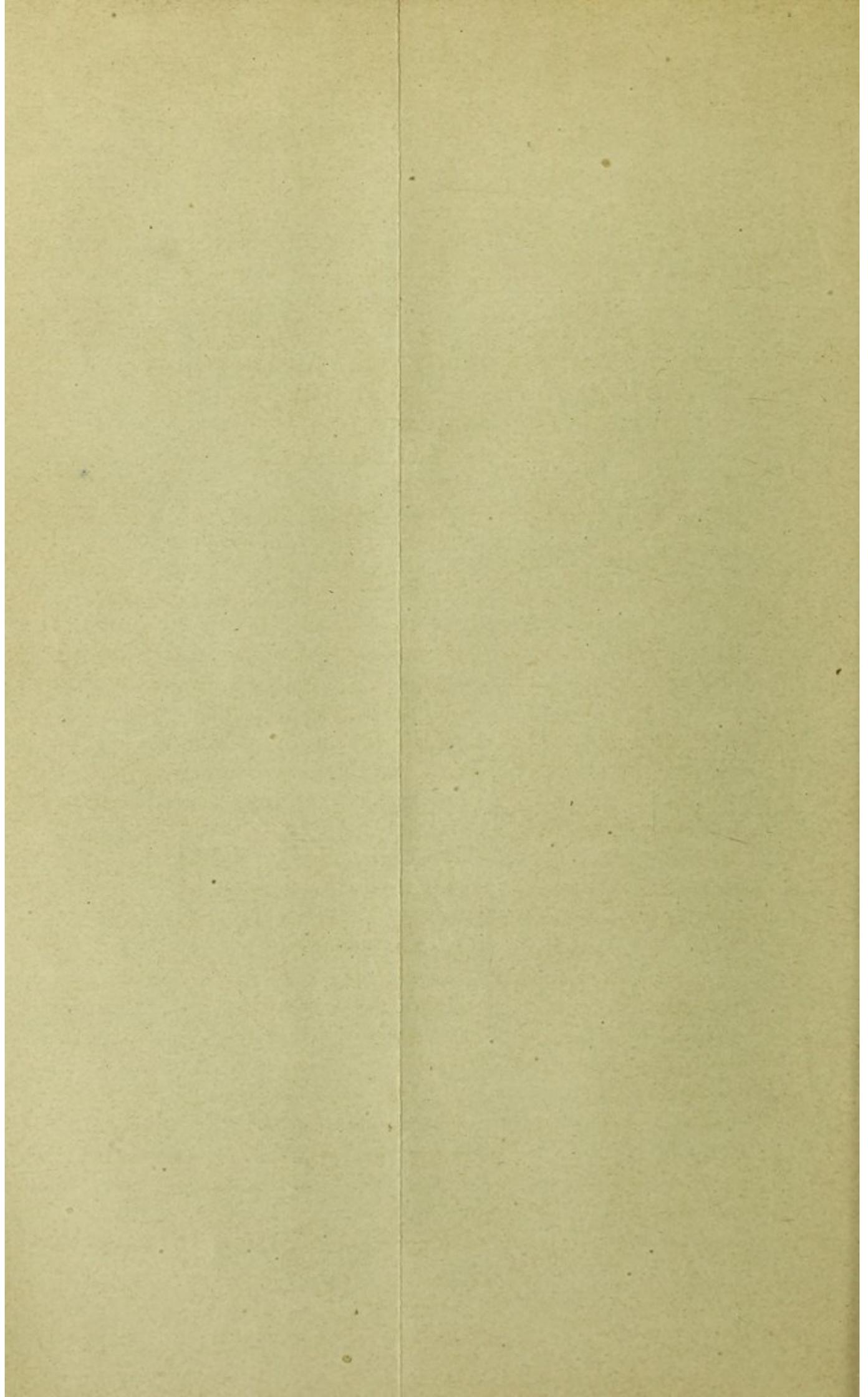
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With Dr Lee's

Conclusions





THE MANAGEMENT OF ACCIDENTAL PUNCTURE AND OTHER INJURIES OF THE GRAVID UTERUS AS COMPLICATIONS OF LAPAROTOMY.

BY CHARLES CARROLL LEE, M. D.,

New York.

IN a notable paper, read before this Society two years ago, by Professor Thomas, of New York, the author well said that, in spite of the constant and laborious investigation bestowed upon the various steps of ovariectomy during the last thirty years, even now special points will make their appearance which have thus far escaped notice, and which neither the most experienced operator, nor the most careful study of works dealing with this complex subject, can guard against. In illustration of this, the writer proceeded to describe a remarkable case of expansion of the bladder over the surface of a large multilocular cyst of the ovary, in which, by promptly recognizing the complication, and treating it with equal energy, he happily saved his patient's life.

That this was cause for congratulation is evident from the fact that every similar case in the literature of the subject had been fatal, as well as from the praise bestowed by the Society upon his method of treatment.

I feel sure that I need make no apology for calling your attention briefly to another and most distressing complication of this operation : that in which the womb is punctured, lacerated, or otherwise injured, during a laparotomy when complicated by pregnancy.

I do not for an instant propose, at this time and before

this audience, to discuss the *propriety* of ovariectomy—or laparotomy for other objects—during pregnancy. The day has passed when the surgeon competent to perform ovariectomy at all will be deterred from resorting to it in properly selected cases because his patient chances to be pregnant; in view of the enormous advances of abdominal surgery within the last few years, he would, indeed, be derelict in his obvious duty if he so hesitated. Dr. Barnes, of London, stands alone among leading gynecological writers, as far as I know, in advocating abortion or premature labor as a substitute for ovariectomy; but Dr. Barnes is, after all, an obstetrician, not an ovariectomist. The records of Olshausen, Karl Schroeder, Sir Spencer Wells, Mr. Tait, in Europe, and of many successful operators in this country, show that, if the cyst or other tumor to be removed be free from uterine adhesions, the pregnant womb offers no barrier to its removal; and, if the operation be properly and deftly performed, the shock is neither more nor less than in ordinary cases, and the patient recovers in the usual way.

Dr. Wilson, of Baltimore, in 1880, read before this Society a paper in which were tabulated twenty-nine cases of ovariectomy complicated by pregnancy, with twenty-four recoveries; twenty children were saved and nine were lost; or, in other words, forty-four lives were saved and fourteen were lost. Other cases were mentioned in the discussion that followed this paper; and many others might be added to the list, fourteen having occurred to Olshausen alone with only two deaths, while Mr. Lawson Tait has had ten cases (all successful), four of which occurred in his last published series of one hundred cases of ovariectomy.

But given a case such as I am about to narrate, and the whole picture is changed. The operator opens the abdomen, cautiously and skillfully as he thinks; but with his last incision he not only divides the peritoneum, but wounds the gravid uterus; or, mistaking that organ for the cyst, he plunges his trocar boldly into the uterine wall—perchance into its cavity; or, during the later steps of the operation, hav-

ing emptied the cyst, he wounds the uterus while separating some dense adhesion. What is to be done? These accidents have all occurred in cases that have been frankly placed on record, and there is grave reason to believe they have all happened in fatal cases that have never seen the light. Let me glance briefly at the literature of the subject, which is too scanty to try your patience long :

CASE I.—In Dr. Lyman's *Boylston Prize Essay on Ovariotomy*, Boston, 1856, the first three hundred cases of ovariotomy then published are tabulated. In this list, Case 269, reported by Dr. Sargent, of Worcester (name of operator unknown), was abandoned on account of extensive adhesions. The abdominal incision was made to the right of the umbilicus and below ; the supposed cyst was punctured by a large trocar, on withdrawing which, a pint of pure blood escaped. The patient died on the third day of peritonitis, and at the autopsy only was it discovered that the gravid uterus had been tapped. The character and location of the cyst are not mentioned.

In the second volume of the *Medical Times and Gazette* for 1862, page 277, is narrated the following case, for reference to which I am indebted to Dr. H. J. Garrigues :

CASE II.—A married woman was admitted to St. George's Hospital, London, under the care of Mr. Pollock. Nine months before, she noticed a tumor in the right side, which increased so rapidly that it was tapped. Soon afterward she aborted. The swelling soon returned, and she was tapped a second time, as the distension was very great. Five weeks after this, ovariotomy was performed by Mr. Pollock, as the cyst again re-filled. An incision six inches long exposed a multilocular ovarian tumor. A large cyst in front of this was tapped and emptied, and the whole of the tumor removed.

Behind this at once appeared another fluctuating tumor, which was thought to spring from the other ovary. It was tapped, and clear watery fluid flowed out. On trying to lay hold of it, this was found to be the gravid uterus, containing a dead fetus ; it was therefore not interfered with beyond closing the wound in its wall with silver sutures. There was little

hemorrhage, and the abdominal wound was closed. Toward evening the patient was seized with pain, and aborted, the child and placenta coming away together. This did not produce much shock or depression, although she was feeble. Next day she was free from pain and perfectly quiet. In the evening she felt quite comfortable, but during the night she sank rapidly and died. No autopsy was permitted.

CASE III.—In September, 1865, Sir Spencer Wells performed ovariectomy in a case where pregnancy was overlooked. A multilocular cyst weighing twenty-eight pounds was removed from the left ovary, and then another supposed cyst of the right ovary was discovered; this was tapped, and, after three pints of bloody fluid had escaped, was found to be the gravid uterus. On withdrawing the trocar, a bleeding mass protruded; and, upon introducing the finger to push this back and examine the cavity, the uterine wall, which was friable and soft as if from fatty degeneration, at once gave way and a quantity of *liquor amnii*, with a five months' fetus, escaped; the placenta was then easily peeled off from its uterine attachment. There was moderate hemorrhage, and, as the womb did not contract, a free opening was made by passing the finger down through the cervix and os; then a piece of ice was put into the cavity and held by firmly grasping the organ upon it. This effected contraction, and the uterine wound was closed with a continuous silk suture. Thirty-three days later the patient was discharged well, and was still in good health in 1881.

A full account of this remarkable case may be found in the *Medical Times and Gazette* for September 30, 1865. In a more recent review of this case, the distinguished author alludes to two other cases in which the same mistake was made by other surgeons, who did not empty the uterus, but closed the puncture in its wall by wire sutures, both patients having died after aborting. No names or references are given. He concludes from this record that, in all cases where the operator has penetrated the uterus, the safer practice will be to empty the womb by Cesarean section, and either to close the opening with sutures, or to perform supra-

vaginal amputation by Porro's method. (*Ovarian and Uterine Tumors*, London, 1882, p. 445.) My reasons for dissenting from this advice will be subsequently given.

CASE IV.—In the *Australian Medical Journal* for February, 1875, Mr. Thomas Hillas, of Victoria, records the case of a single woman, aged twenty-four, who, believing herself to be pregnant, was admitted to a city asylum in November, 1871. In the following June, no labor having occurred, a consultation was called; she was carefully examined, and discharged, the case being deemed ovarian dropsy, and not pregnancy. In a week she was admitted to the Ballarat Hospital, where, after a second examination, all agreeing that the case was ovarian dropsy and suitable for operation, Mr. Hillas attempted ovariectomy. After the usual incision, the peritoneum was reached and incised, "when out spouted a large jet of venous blood, which the pressure of the finger controlled." The operator at once suspected he had wounded a gravid uterus, and extended his incision up to the umbilicus, "when a large uterus rolled out upon the thighs and the ovarian sac protruded." This was tapped and cut away, after securing the pedicle with a whipcord ligature, and a temporary clamp above the ligature. All this time the uterus was lying on the thighs with a fetus in it, and a wound through its anterior wall, possibly into the placenta. Some advised that the wound should be sewed up and the womb replaced in the abdomen; but, as it seemed that labor must soon come on, and as rupture of the uterus might occur at the seat of the injury, the operator determined at once to perform Cesarean section. The womb was incised to about five inches, and the placenta and a well-developed living fetus of eight months extracted. The uterine wound was closed with silver sutures, the cut ends being tucked down into the incision. The womb at once contracted firmly, and was returned to the abdomen. The external wound was then closed with deep and superficial sutures, the patient having been under chloroform for an hour. Excessive vomiting followed for forty-eight hours, and was controlled by morphine and ice. In four days all unfavorable symptoms ceased, and in a fortnight the abdominal wound closed after discharging pus from its

lower angle, where the clamp was left attached to the pedicle. In six weeks the patient was discharged cured, and remained well ; the survival of the child was not mentioned.

CASE V.—In October, 1877, the late Dr. Erskine Mason, of New York, an excellent and careful surgeon, reported the following case to the New York Pathological Society : A woman, thirty years old, single, entered his service in the Roosevelt Hospital, July 30, 1877. Eighteen months before, the abdomen had begun to increase in size, chiefly on the left side. This enlargement was at first slow, but during the last two months the increase was so rapid as to cause marked dyspnea. A vaginal examination showed the uterus to be high up in the pelvis and movable. The abdomen had distinct fluctuation, with an area of flatness not changed by the position of the patient. The measurements were : From the anterior spinous process of the one side to that of the other, nineteen inches ; circumference of the abdomen at the umbilicus, thirty-nine inches ; circumference of the abdomen at the spinous processes, thirty-eight and a half inches. The patient was examined by one of the most expert ovariologists of New York, and the case was considered favorable for operation. Ovariectomy was accordingly performed ; and, on opening the abdomen, “the trocar was passed into one” (supposed) “cyst, and eight ounces of fluid evacuated. This, unfortunately, proved to be a pregnant uterus ; and, as soon as the mistake was discovered, the wound was closed with sutures and the abdominal walls brought together. The patient passed a restless night, and gave birth to a fetus at the sixth month. Death occurred in eighteen and a half hours after the operation. The autopsy revealed a large multilocular cyst of the left ovary. There was no blood in the cavity of the abdomen. The uterus was closely contracted. There were no evidences of peritonitis.”¹

In this case no effort was, curiously, made to remove the ovarian cyst, which was either overlooked or was thought beyond treatment in the then condition of the patient, although no statement is made of any special shock. It was, in fact, an incomplete or abandoned operation.

¹ *New York Medical Journal*, vol. xxvi, 1877, p. 535.

CASE VI.—In the *American Journal of Obstetrics* for January, 1879, Professor W. H. Byford, of Chicago, records a case of ovariectomy in an unmarried lady, aged twenty-three, in which the existence of pregnancy was not suspected. No vaginal examination was made, as the patient strongly objected to it from motives of delicacy; and, as there was no doubt of the presence of an ovarian cyst, both Dr. Byford and the patient's medical adviser, who brought her to him, deferred to her wishes. The tumor had been noticed for a year, and for the last six months had grown rapidly. Menstruation had ceased several months before. In a fortnight after Dr. Byford's examination the patient was subjected to ovariectomy. A short incision was made in the *linea alba*; and, after ascertaining that no anterior adhesions existed, the cyst was emptied with Spencer Wells's trocar, twelve quarts of thin, viscid fluid being drawn off. When the sac was nearly emptied, Dr. Byford "noticed a tumor behind it, adhering to the sac and preventing it from passing through the incision. The second tumor was elastic, and so perfectly resembled a secondary cyst that" (Dr. Byford) "had no hesitation in plunging the trocar through its walls, with a view still further to lessen the bulk of the entire mass by evacuating its contents. As the trocar met with unusual resistance, and nothing but blood passed through it," he "became convinced that there was something unusual about it. The incision was somewhat enlarged, and as much of the emptied sac was drawn out as would pass, when it was discovered that slight adhesions, and not continuity of tissue, connected the two. After the cyst was withdrawn" he "was astonished to find that the second tumor was the impregnated uterus; and, still worse, that it was wounded and bleeding. This revelation was accepted with many doubts by the physicians present, who were the friends and neighbors of the patient, and believed it impossible that she should be pregnant. The facts were so patent, however, as to overcome their incredulity." The uterine wound became "very much enlarged by the contraction of the transverse, oblique, and longitudinal fibers of that organ, until, in the few minutes that had elapsed since the puncture, it had become as large as a silver dollar."

Without recalling the similar case that had occurred to Mr.

Wells, Dr. Byford determined at once to evacuate the uterus. This was done by an incision four inches long from the fundus, including the accidental puncture. The incision exposed the placenta at about the middle of its attachment, rendering its separation easy and rapid. A fetus, of about seven and a half months, was now perfectly exposed, seized by the breech, and drawn toward the opening, when the uterine contractions expelled it. The membranes and liquor amnii were then removed, and the uterine incision closed by fine silk sutures, passed so as to include the visceral peritoneum, the entire thickness of the muscular wall, and the mucous membrane, and cut short. By the time these were finished the womb had firmly contracted. The cervix was finally dilated with the finger, and a long, flexible catheter was kept in it for several hours. The cyst was now cut away and its pedicle ligated and returned to the abdomen, the long ligatures being brought out through the abdominal wound. The patient recovered without a single drawback.

In his comments upon this case, Dr. Byford justly says that the careful coaptation of the uterine wound with sutures was its all-important element of success, the entire absence of inflammatory symptoms proving "that there was no escaped blood from the edges of the wound or from the uterine cavity into the peritoneal sac." He then quotes two of the cases already given, and refers to two others, which, being properly cases of Cesarean section complicated by obstructing ovarian cysts, are not to my purpose. Finally, he quotes and indorses Sir Spencer Wells's advice to empty the uterus of its contents, "if the operator has penetrated or wounded it."

I now come to the single case which embodies my own experience of this complication. For the notes of the case, and for much of the care that led to its successful issue, I am indebted to my friend, Dr. H. C. Coe, lately house surgeon to the New York State Woman's Hospital, and now in Vienna.

CASE VII.—A married woman, aged twenty-eight, was sent by Dr. H. T. Hanks into my service in the Woman's Hospital, November 2, 1882, with the following history: She had been

married seven years, had had four children, and two miscarriages. The last confinement occurred in December, 1880, when she was delivered of a dead child, after a long and severe labor, "lasting four days." After this her physician discovered in the right side of the pelvis a small movable tumor, which had probably retarded her labor. This was also noticed by the patient, and it has steadily increased in size. Within the two following years she became pregnant twice, and twice miscarried, once at the fourth and once at the second month of gestation. In August she menstruated as usual, but not since; the breasts have enlarged and softened, and she has well-marked morning sickness. The tumor has given her little trouble aside from the dragging sensation due to its weight. It is freely movable, falling over to the dependent side when she turns in bed; at times it compresses the bladder uncomfortably, and for the past month there has been increasing dyspnea on exertion, with much gastric irritation. Her former physician consulted Dr. Hanks, who diagnosticated an ovarian cyst complicated by pregnancy at the third month. This opinion was concurred in by myself, and subsequently by Dr. Emmet and Dr. Thomas; and an early removal of the cyst was advised, in view of its interference with former pregnancies, and the probability of a fresh miscarriage. The cyst was well defined, free from adhesions, apparently, and occupied the right side of the abdomen; the enlarged uterus could be distinctly felt above the pubes by bimanual palpation. Ovariectomy was performed November 11th, in the presence of Professors Taylor, Polk, and Lusk, Dr. Garrigues, and the hospital staff. The usual median incision was made to the extent of three inches. On dividing the peritoneum, a pear-shaped, dark-red tumor appeared in the wound, two inches above the symphysis, which was easily recognized as the pregnant womb, and was demonstrated as such. The cyst was also distinctly visible above the uterus, the cyst-wall appearing thick, highly venous, dark colored, with none of the white, glistening color peculiar to simple ovarian monocysts. No adhesions were found. A large, flat sponge, wrung out in hot carbolized water, was tucked into the abdomen below and to the right of the cyst, and the patient was rolled upon her

right side. A medium-sized trocar was now selected, and was thrust into the supposed cyst to evacuate its contents. Its withdrawal was followed by a gush of florid blood through the cannula, but no other fluid escaped. It was at once evident that the trocar had penetrated the fundus of the womb, which, indeed, was suspected the instant it entered the tumorous mass from the greater resistance of the uterine wall, though too late to arrest the progress of the instrument. As both uterus and cyst had been separately recognized a moment before, it may well be asked, How could such an error possibly be made? For a very simple reason, although one not creditable to my sagacity or caution. When the patient lay upon her back, the superincumbent viscera steadied and depressed the cyst to the upper edge of the incision, where it was plainly visible; with her change of posture, the tumor, which had an exceedingly long pedicle, and was very movable, gravitated up under the liver (whence it required considerable pressure finally to dislodge it), while the uterus rose along the line of the incision and took its place. The cannula was at once withdrawn from the womb, which continued to bleed moderately, although the large sponge, which remained *in situ*, fortunately kept the blood out of the pelvic cavity. The womb was grasped with a stout volsella forceps, closed upon the edges of the wound, and drawn gently forward by an assistant, while the cyst was brought down into view, tapped, and easily removed after ligating its pedicle. This was so long that, although it grew from the left ovary, the tumor occupied the right side of the abdomen. When ligated and cut, the pedicle was dropped back into the pelvis. What to do with the uterus was now the question. Two lives were at stake, and upon this decision both hung. Some of the gentlemen present urged immediate evacuation of its contents by Cesarean section; one suggested entire ablation by Porro's method. To my own mind it seemed so uncertain that the uterine cavity had been opened, as not a drop of amniotic fluid had been seen to escape, that I resolved to give both mother and child a chance of survival. The opening made by my trocar was about two inches below the fundus, and into this the index-finger passed readily to the depth of an inch and a half, but neither placenta nor fetus could be felt.

With as much precision as possible, a continuous suture of fine carbolized silk was carried through the edges of the wound by a long, round-pointed needle, tied firmly, and cut short. This completely controlled the hemorrhage. Then the jagged edges of the wound, which had been torn by the volsella forceps, were trimmed clean, and one or two bleeding points near by were secured in like manner by suture; the peritoneal cavity was carefully cleansed, and the abdominal incision was closed with carbolized "salmon gut." The wound was dressed in the usual antiseptic manner. The tumor proved to be a "mixed-dermoid" cyst, weighing, with its contents, about eight pounds.

The patient rallied well, but retched violently after reacting from the ether, and this distressing complication persisted until the third day. Although her stomach could retain nothing, and enemata were at first withheld for fear of exciting uterine contractions, the pulse continued strong and her spirits good. On the third day enemata of beef-juice and brandy were given every four hours, and on the fifth day the stomach retained small quantities of liquid food. During all this time there had been little or no abdominal pain, no tendency to uterine contractions, and no vaginal hemorrhage. The temperature had only once reached 101° , and was then controlled by the abdominal coil. On the ninth day the patient was removed from the operating cottage to the hospital. The wound had then healed perfectly; she slept well, and took a large amount of nourishment. The next night she had a sharp chill, followed by a temperature of $104\frac{1}{2}^{\circ}$, with a high pulse and abdominal pain. This seemed due to a localized peritonitis around the pedicle in the left iliac fossa, as a lumpy swelling formed at this point. Quinine and the cold-water coil promptly relieved these symptoms, and, under active counter-irritation, the swollen mass quickly disappeared. Within the fourth week the patient was sitting up, fairly strong and well, and impatient to go home. The uterus had evidently increased in size, and the mother fancied that she felt fetal movements distinctly. She was urged to remain longer in the hospital, as her situation at home was such as would be certain to overtax her strength. In spite of these representations, she de-

cided to leave the hospital, and was discharged December 12th, a month and a day after her operation.

Five days after this she fell down part of a flight of stairs. The house surgeon, Dr. Coe, was sent for, and found her threatened with miscarriage. The symptoms were temporarily arrested; but two days later a sharp uterine hemorrhage occurred, and the patient was so exhausted when Dr. Coe and Dr. Hanks reached her that they dilated the cervix and removed the fetus. This seemed of fully four and a half months' growth. A part of the placenta was retained. The pulse and temperature ran high, and for a day or two the patient seemed critically ill. Under simple and energetic treatment she soon rallied, and in a week was quite well. Four months after the operation she returned to the hospital for examination. Her health was excellent, there was no abdominal pain or discomfort, menstruation was regular, and examination of the pelvic organs showed that they were perfectly normal, excepting a slight laceration of the cervix and perineum, the result of a former labor.

From this last case it is evident that neither ablation of the uterus nor Cesarean section is a necessity when the gravid womb has been wounded in ovariectomy. For not only did this patient recover, but there is a fair probability that she would never have miscarried under constant medical care. In the third case narrated—that by Mr. Hillas, of Victoria—there is no evidence in the record to show that the uterine contents were injured by the incision of the uterine wall. If they were not, the patient would probably have recovered equally well without Cesarean section. On the contrary, in the two cases of Sir Spencer Wells and Professor Byford, miscarriage would certainly have followed, and probably death, if they had been treated differently; for no doubt existed that the ovisac had been punctured.

What, then, should be the rule of practice? Obviously, as it seems to me, this: Be in no haste or flurry to decide what to do. The pressure of a finger will almost always control the uterine hemorrhage temporarily; and, as Nélaton

used to say, the situation is so serious that there is no time for haste. Examine carefully the nature of the wound: if a puncture by the trocar, carry the finger to its bottom and see if the uterine contents be injured; if an incised wound, scan it minutely and estimate the chance of closing it completely by suture. If amniotic fluid has escaped, or if the placenta or fetus has been injured, abortion will certainly ensue; and, in such a formidable condition as that following laparotomy, this enormously enhances the chance of death. Should the uterine contents not have been reached, or the amniotic sac opened, it is by no means sure that the patient will abort or her chance of recovery be diminished. Indeed, many cases are on record which prove that the gravid womb may be wounded with amazing immunity from danger. I cite two only:

In the *Transactions of the New York Pathological Society*, vol. iii, p. 249, is recorded a case by Dr. T. C. Finnell, who exhibited to the Society a fetus with an incised wound of the leg. The mother had been stabbed in the abdomen, and labor came on a week after. When injured, only a little water flowed out of the wound, and there was no blood in the liquor amnii at delivery. The mother's wound was near the umbilicus, a half-inch long, and the uterine muscle had probably closed up the small incision immediately and prevented hemorrhage. In two cases of wounds of the heart known to the reporter there had been no hemorrhage, and death occurred from pericarditis.

As watery fluid escaped from the maternal wound, the injury of the fetus must have been inflicted at the same time, especially as the child's leg was pressed up against the anterior uterine wall. A head presentation would bring the child exactly in a position to be injured in this way. The child was still-born, and a wound in its leg had severed the head of the fibula.

The other case, for which I am indebted to the researches of Dr. Garrigues, occurred in the practice of Dr. P. Le B. Stickney, of Springfield, Mass. A lady complained of sup-

pressed menstruation, but could not imagine its cause. Cathartics, emmenagogues, etc., were administered for a long time, but had no effect. Dr. Stickney heard no more of the patient for two months, when he was suddenly called to see her, and found she had been under the care of a surgeon who diagnosed her disease a tumor, requiring tapping. He had already tapped her twice, drawing off once a quart, and then a pint, of water; a considerable time intervened between these tapplings, and he had arranged to tap her a third time on the day after Dr. Stickney was called. The patient was then in labor, but denied it indignantly; a living child was soon born, in spite of her protestations. She recovered completely. This shows that the gravid womb may be punctured and the liquor amnii drawn off with a trocar without necessarily producing abortion. (*Boston Medical and Surgical Journal*, 1876, p. 114.)

A careful study of these cases, which are all I have been able to find in medical literature, seems to justify the following conclusions:

1. The gravid womb may be punctured, or otherwise wounded, during laparotomy, without necessarily producing abortion.

2. Miscarriage seems, both *a priori* and from clinical evidence, to depend upon the fact of opening the ovisac—and not upon injury, however grave, of the womb itself.

3. If it be certain that the uterine contents are involved in the injury, whether by knife or trocar, the uterus should be at once incised and Cesarean section effected. In this case the utmost care must be taken to maintain free drainage by dilatation of the cervix, or drainage-tubes secured in the uterine cavity.

4. If, on the contrary, there be no evidence that the fetus, placenta, or membranes have been directly injured, the uterine wound should be treated on general principles. If a deep puncture or incision of the uterine wall, it should be carefully and minutely closed with carbolized sutures, the utmost care being taken to secure exact coaptation of the edges,

and the needle carried with certainty below the bottom of the wound. If the surface of the womb has been nicked or superficially punctured, ligation should not be attempted—for it is well known that ligatures cut quickly through uterine tissue—but all bleeding points should be lightly touched with the thermal cautery until the oozing is controlled.

Good surgery, and the dictates of humanity, alike demand that in such circumstances a chance of survival be given the child as well as the mother.

