the introduction of a sterilized negative electrode, and the passage of a current of electricity from the positive electrode inwards through the endometrium, the positive electrode on the abdomen. A few treatments of this kind would cure the catarrh, and this, in itself, would often effectually and safely relieve the sterility.

PROF. NILSEN, in closing the discussion, said that one of the causes of sterility was careless operations. He thought he had done his share to educate his female patients on the points touched upon by one of the speakers.

NEW YORK POST-GRADUATE CLINICAL SOCIETY.

Stated Meeting, May 19, 1899.

C. A. VON RAMDOHR, M. D., IN THE CHAIR.

HYDRAMNIOS.

BY

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Hydramnios as a complication of pregnancy and labor is a subject to which but little attention has been given in most text-books of obstetrics. Yet as a factor in the causation of malpositions, eclampsia, prolonged labor, and post-partum hemorrhage, it deserves our consideration. It furthermore, complicates accurate diagnosis by making it more difficult if not impossible to detect the fetal parts in differentiating pregnancy from abdominal tumors.

The terms hydramnios and polyhydramnios are relatively applied to an excess of amniotic fluid, the former when the quantity does not exceed two quarts, while when the amniotic secretion is above that quantity it is called polyhydramnios. This latter condition is fortunately of but rare occurrence. Two forms are recognized, the acute and chronic. The first form develops rapidly, probably from an amniotitis. While the latter accumulates over a period of several months and is the result of a most varied etiology. The exact cause of dropsy of the amnion is unsettled, but it is probable that hydramnios most frequently results from a pathologic state of the fetus. Syphilis may

manifest itself in many obstructions to the fetal circulation in the heart or liver with consequent dropsy of the membranes. Dorland concisely enumerates the other causes as, 1st. An excessive secretion of urine on the part of the fetus. 2nd. Pressure upon the umbilical and other veins by a large fetal tumor. 3rd. Exudation from the fetal skin, when the latter is the seat of some pathologic affection, such as nevus or elephantiasis congenica cystica. 4th. Amniotitis, most often the cause of acute hydramnios. 5th. Deciduitis. 6th. Multiple pregnancy, resulting in an interference with the circulation of the weaker fetus and consequent hydramnios from placental edema. (The writer has seen it associated with and perhaps caused by placental hypertrophy.) 7th. General maternal anasarca, the gravid uterus participating in the condition. 8th. Exaggerated maternal hydremia. 9th. Multiparity. It has generally been observed that a condition of hydramnios is coincident with unioval twins. Illustrating this point it may be well to include the record of a case, which I believe to be unique, occurring in the service of my colleague, Dr. Wm. E. Butler:

Mrs. M. was referred to the Williamsburg Hospital by her family physician for a supposed ovarian cystoma. She gave the following history: 45 years of age, married, mother of several children, her previous labors had been easy and uncomplicated. Menstruation which had always been regular had ceased five months before her admission to the hospital. After the second month the abdominal enlargement was so rapid and assumed such size that she became alarmed and consulted a physician, who told her that she had an ovarian cyst and that operation was imperative. When examined, on being admitted to the hospital, the abdomen was found to be distended to its utmost capacity, forcing the diaphragm up and the ribs out, embarrassing respiration, circulation and nutrition to such a degree, that dyspnoea, cyanosis, irregular heart, edema of the lower extremities, vomiting and emaciation, made the patient's condition most deplorable.

On physical examination the characteristic signs of pregnancy were absent with the exception of a softened cervix. A flat percussion note extended over the entire abdomen and fluctuation could be made out over a similar area. No intestines could be located by either percussion or auscultation, no fetal heart heard or fetal parts detected.

Diagnosis.—Ovarian cyst complicating pregnancy.

Operation.—With the patient under ether an abdominal incision five inches long was made to the left of the median line. (The abdominal parietes were less than a quarter of an inch thick.) The tumor was exposed by this incision and the hand passed into the peritoneal cavity and swept about as far as it would reach, encountering no adhesions. The peculiar pinkish-grey color of the cyst wall and absence of large veins on its surface was noted and caused comment. The cyst was then crowded up into the incision, the edges of the wound being protected with flat sponges, and a trocar plunged into the tumor. Three gallons of straw colored fluid was withdrawn. The patient being kept in the Trendelenberg position prevented syncope from the sudden relief of tension. When nearly all of the fluid had been drawn off, it was noticed that the surface of the tumor was irregular, and upon palpation, fetal parts were detected, and a twin pregnancy diagnosticated. The wound in the uterus was changed into an incised wound and sutured with chromicised gut, the peritoneum was folded over this line of sutures with fine catgut and the abdominal incision closed with a "lap" suture. The patient's condition immediately improved, the cyanosis disappeared, the breathing became deeper and more regular and the heart's action even. She miscarried nine hours after operation, giving birth to twins, males, weighing three and four pounds respectively. The latter was born alive with the membranes intact. The smaller child of the two, had been the occupant of the tapped sac and was dead. The umbilical cord of this child was very thick, tortuous, and presented numerous varicosities. There was but one placenta, which was edematous at the point from which the smaller child took its attachment. The recovery was uneventful. Unfortunately the fetuses were not subjected to autopsy, hence the kidneys were not examined. It would have been of interest to know the condition of the kidneys present in the fetus in which the arrest of development had taken place. As according to Jaggard the kidneys were found to be absent in the opposite condition—oligohydramnios, which in a measure accounted for the absence of the amniotic fluid. Reasoning from his observations one would expect to find pathological development of these organs in hydramnios.

An excess of amniotic fluid increases the liability to eclampsia. While all are agreed that the eclamptic paroxysm is the result of a general toxemia in which all of the emunctories participate, it cannot

be denied that the kidney of pregnancy occupies first place as a producer of this toxemia, while the intestinal tract follows as a close second. The functions of both of these organs are embarrassed from pressure in the presence of hydramnios. The increased intra-uterine tension caused by an excessive amniotic secretion is an excitant of the paroxysm. Clinically this fact is proven by the temporary subsidence of the convulsions which follows the rupture of the membranes. McLean and Tucker offer this procedure as a temporary expedient in the management of ante-partum eclampsia. As previously stated hydramnios produces pressure effects upon the ureters and intestines which materially interfere with the elimination of the various toxins which normally escape via the kidney and bowel. The record of a case seen by the writer in consultation will perhaps convey the clinical significance of these facts. The patient was a primipara, seven months pregnant, with feet and labia enormously swollen. The abdomen was distended to an unusual size causing irregular heart and dyspnoea.

The urine was scanty, albuminous, and contained granular and epithelial casts. She had had two convulsions prior to my arrival. Rupture of the membranes changed the whole aspect of the case, the convulsions ceased, the heart became regular and the respiration even. She miscarried during the night, twins, both males, of equal weight, and from one placenta—both children had tortuous cords. The recovery was uncomplicated and uneventful. The renal secretion was promptly reëstablished after the uterus had emptied itself.

Excessive liquor amnii prevents the proper engagement of the head, producing malpositions. Brow, face and shoulder presentations are the most common ones met with. This is occasioned by the inability of the uterus in presence of hydramnios to exert normal pressure on the fetal poles and so maintain primary flexion. The writer has found excessive amniotic fluid and twin pregnancy to be the most common causes of that form of the hyperemesis of pregnancy, beginning very early in gestation and extending into mid-pregnancy and the later months, usually necessitating abortion to prevent a fatal termination. The fetal occupant in excessive secretion of the amnion is generally of poor development or malformed; the size of the fetus bears a direct relation to the degree of hydramnios; disturbed nutrition is the explanation of this phenomenon, this occasioned by defects in the fetal circulation occurring in cord,

placenta, heart or liver. Prolapse of the cord is another danger to which the fetus is exposed in the presence of hydramnios, as the head is seldom if ever engaged and filling the brim, thus favoring washing down of the funis with the gush of waters when the membranes rupture spontaneously. Patients having hydramnios should be cautioned to maintain the recumbent position from the onset of labor until the arrival of the physician. Should this suggestion be carried out the number of still-births would be reduced. The tendency to post-partum hemorrhage is increased, owing to the excessive distention of the uterus, with the consequent thinning of its walls, impairing the muscular tonicity and preventing proper and prompt retraction of the womb after the child is delivered. Inversion may occur from the same pathologic condition. Labors complicated with hydramnios must generally be terminated by forceps or version because of ineffectual powers; this also adds a tendency to the accidents already referred to. Hydramnios may be placed well to the front in the etiology of repeated abortion. It would be interesting to note the part that syphilis plays in these miscarriages, as it is admitted and clinically proven that syphilis is coincident with hydramnios in the majority of instances.

Increased susceptibility to infection is another danger to which the hydramniotic uterus is exposed, because of the decreased resistance in the uterine tissue and faulty retraction of the uterine muscle.

In a brief review of the foregoing statements, which can be verified by clinical experience, one must recognize the importance and significance of hydramnios.

The diagnosis should be made in most instances and the pathologic condition differentiated from ascites and ovarian cystoma, by careful consideration of the signs of pregnancy taken as a whole, at least, the history together with careful abdominal and vaginal examination should give decided evidence of the existence of pregnancy. Multiple pregnancy offers the greatest difficulty in differentiation; yet it may be borne in mind that twins frequently co-exist with the condition which we have been describing, and as the treatment does not differ in the presence of proper indications, a mistake is pardonable and makes but little difference in the prognosis.

Hydramnios jeopardizes the life of the fetus, and nearly

one-fourth of the children are born dead or non-viable. The dangers to which the fetus is subjected, and which contribute to fetal death, are premature expulsion, fetal malpositions, prolapsed cord, difficult labor and malformations, or immature development. The latter being considered consequent upon defective circulation due to obstruction in the placenta, cord, liver or heart of the child.

In acute amniotitis the maternal as well as the fetal life is seriously compromised ; these cases are fortunately rare.

The risks to the mother are increased by malpositions of the child, over distention of the uterus, leading to uterine inertia which predisposes to hemorrhages during and following labor, inversion of the uterus, mechanical pressure due to the enormous amount of amniotic fluid embarrassing the cardiac, renal and respiratory functions, and to the increased liability to infection following labor or abortion.

The treatment depends largely upon the degree of hydramnios present and the peculiar indications of the particular case. Due consideration should be given to the fact that the fetal mortality under the most favorable circumstances amounts to 25 per cent., and further that many of the children born alive are malformed or arrested in development with correspondingly decreased viability.

While interference should be deferred on general principles until the period of fetal viability, the maternal condition may demand rupture of the membranes and sacrifice of the child before this time. This is often the case in the presence of acute amniotitis or in the chronic form developing in the early months with persistent hyperemesis, or when the uterine distention is excessive, embarrassing the heart, respiration, renal and gastric functions causing cyanosis, dyspnoea, vomiting and emaciation.

In emptying the uterus special care should be taken to avoid too rapid evacuation of the fluid; several methods have been suggested, to wit, puncture through the abdominal wall with a trocar and canula, a procedure which is deservedly condemned owing to the danger of leakage and peritonitis. Puncture of the membranes high up in the uterus with a long stiff catheter allowing the fluid to escape slowly.

The writer has found that by rupturing the sac through the cervix with the patient in an exaggerated Trendelenburg posture,

the liquor amnii, after the first gush, is retained in the uterus by gravity except during a uterine contraction, and syncope is prevented. The tendency to hemorrhage is also averted by obtaining a slower and better retraction of the womb. Strychnia in large doses of $\frac{1}{30}$ of a grain every hour until a half a grain has been given improves the tonicity and the character of the contractions.

Instrumental and manual delivery should be avoided when possible, because of the increased tendency to sepsis in the presence of hydramnios. The gauze tamponade of the cervic and vagina is to be preferred when dilatation is slow or insufficient. If the head can be engaged its expulsion should be left to nature when possible; of course version or extraction or forceps may be necessary in interests of mother and child.

After delivery of the fetus the third stage must be most carefully conducted, and in no way hurried except in the presence of hemorrhage. When Crede is used great caution must be taken to avoid making pressure except at the acme of the pain, and then only after the uterus has been laid down in the abdomen. An intrauterine tamponade of iodoform or zinc oxide gauze is a safe procedure in most cases, securing prompt retraction and averting the possibility of inversion.

DISCUSSION.

PROFESSOR R. WALDO said that from what he had seen hydramnios was, strictly speaking, a rare disease. On the other hand, an excessive quantity of liquor amnii was a comparatively frequent condition. The precautions in delivery suggested by the reader of the paper seemed to him eminently wise. It was very necessary in these cases to make sure that the presentation of the fetus was normal, and especially that there was no prolapse of the funis, because the sudden gush of liquor amnii was very prone to result in such prolapse. He had had one case of what he termed genuine hydramnios. It came under his observation a little over a year ago at Lebanon Hospital. The woman's girth at the level of the umbilicus was forty-three inches, and fluctuation was very marked over the whole abdomen. The patient was markedly cyanotic, and unable to walk. The diagnosis of hydramnios was made in this case more particularly on the general symptoms of pregnancy and the absence of the symptoms usually found in connection with an ovarian cyst or with ascites. At one part of the

abdomen a bruit was faintly audible, and the patient insisted that she had felt fetal movements. The woman was kept in bed and under strict observation. Suddenly one day there was a gush of fluid, and two small fetuses were very shortly delivered. Both children were at term, and perfectly formed, but weighed less than two pounds each. These fetuses presented no evidence of arrest of development, but simply of atrophy. There was a single placenta of average size and a single cord. In cases of this kind, except in the face of decidedly urgent symptoms, he believed in doing as little as possible. If it becomes absolutely necessary he would tap the uterus through the cervical canal. In such cases the uterus was exceedingly thin, and all unnecessary manipulations should be avoided. When it becomes necessary under such conditions to induce labor he believed the simple tamponade of sterile gauze was by far the best method. Usually within twenty-four hours the cervix would be dilated and labor well established. He would not resort to manual dilatation unless absolutely necessary, because it was possible by this method to rupture the uterus—at least it had been done—statements to the contrary notwithstanding.

Professor John J. McGrath spoke of the difficulties of diagnosis in cases in which it was impossible to elicit a clear previous history. In differentiating between a normal pregnancy and an ovarian cyst, the diagnosis should be fairly simple, but, on the other hand between an hydramnios and an ovarian cyst the difficulty in diagnosis might be considerable. In many cases it was difficult to decide whether one had to deal with an ascites (resulting from nephritis, or a cirrhotic liver) or a hydramnios. It had occurred to him that hydramnios might well be compared with hydrocele, where without the presence of syphilis or any apparent cause, a collection of fluid forms in the tunica vaginalis, and may assume considerable proportions, not unlike the development of hydramnios. He thought that hydramnios was the result of a disturbed circulation in the placenta; or that it was the result of a disordered condition of the blood, primarily in the mother, and leading to an excessive excretion into the amniotic sac. It has been found that if a canula be placed in the lymphatic duct of a dog and a quantity of hydro-amniotic fluid injected into the blood, that there will be a marked and gradual increase in the quantity of fluid discharged from the canula, eight or ten times what it was before

the injection. This experiment would tend to show that as a result of poisonous material circulating in the fetus, an increased flow of lymph into the amniotic sac was produced. In cases of hydramnios the quantity of fluid varied from two quarts to thirty or forty pints. Hydramnios is nearly always associated with twin pregnancies, and occurs usually in multipara, with a very large preponderance of female children born.

Dr. Brodhead said he agreed with the reader of the paper that the cause of hydramnios in many cases was quite obscure. It was true that a fatty degeneration of the placenta was often associated with the hydramnios; but as the child was in many cases dead, it was difficult to say whether the placenta had degenerated as a result of syphilis or had degenerated after the child had been destroyed as a consequence of the increased pressure. The case reported in the paper of coeliotomy in which a large quantity of fluid had been drawn off and twins subsequently born was an exceedingly interesting and instructive case. He was in favor of preserving the membranes intact in hydramnios until it became evident that it was necessary to hasten labor by rupturing them. Ordinarily it would do more harm than good. Where hydramnios was associated with eclampsia or where there was severe dyspnoea, cardiac palpitation and cyanosis, rupture of the membranes might be called for. It was a great mistake to rupture the membranes before proceeding to dilate the cervix, and if after dilatation it was necessary to perform version it was certainly much easier to do the operation if the membranes were still unruptured. In cases of hydramnios the patient should be in the Trendelenburg posture or in the knee-chest position at the time that the membranes were ruptured. The outflow of fluid should be made as gradual as possible so as to avoid prolapse of the cord. The treatment of hydramnios was very unsatisfactory.

Dr. Brodhead spoke of a very interesting case (reported by Tucker in the Medical Record of September 7, 1895) of a multipara, thirty-six years of age, who had had seven children, the last four having been born dead. The case had been kept under strict observation with a view to anticipating (by the induction of labor) the degeneration of the placenta which, it was thought, might have been the cause of fetal death. At the seventh month the uterus had been at the proper height for that time, and the liquor amnii had been rather more abundant than usual. Three weeks later, the

liquor amnii had increased so as to enormously distend the uterus, and produce moderate dyspnoea and gastric irritation. About nine days later the woman had been admitted to the hospital in the second stage of labor. She had been in labor about fifteen hours; the pulse was rapid, and she had suffered greatly from dyspnoea. When the membranes had rupture nine quarts of fluid had escaped. The child had been in the L. O. P. position, and the head was engaged in the pelvic brim. As delivery could not be accomplished in this position, an effort had been made to rotate the head, but unsuccessfully. As the patient was already in bad condition, craniotomy might perhaps have been the better operation, but podalic version had been tried in the hope of saving the child. This proving impracticable, craniotomy had been done, but even then the shoulders could not be delivered. The arms were brought down separately into the pelvis, and finally with a blunt hook the body had been delivered. The uterus had been large and flabby. The placenta had been adherent all over, and had been removed piecemeal. Immediately afterward the hemorrhage had been checked by a hot acetic acid douche, but the maternal pulse had already become imperceptible at the wrist, and death seemed imminent. Under free stimulation the woman had, however, done well, and had been allowed up on the seventeenth day. There had been no after-pains, no headache and no sepsis. The total quantity of liquor amnii had been about twenty-seven pints. The child had weighed nine pounds and six ounces without brain, meconium and blood. The blood which the mother had lost, and which had been caught and weighed, amounted to ninety-three ounces. The estimated total loss of blood had been one hundred and five ounces, and this enormous quantity had been lost in about five minutes. The placenta weighed three pounds and eleven ounces. From the time of rupture of the membranes and until delivery of the placenta she had lost forty-eight and a half pounds, counting the weight of the child, the placenta and the liquor amnii.

The speaker also referred to the case of a negress who had come to the hospital after having been in labor a number of hours. After waiting some hours a careful search had been made for the fetal heart, but he had been unable to hear it. A few minutes later there had been a tremendous gush of fluid, and a macerated seven-months' fetus had been forcibly expelled together with a large quantity of water. In another case of precipitate labor with an excessive

quantity of liquor amnii, the patient had lost a great deal of blood before the physician could reach her, but she had made a good recovery.

Dr. J. Stapleton, of New South Wales, Australia, asked if it were possible for the fetus to so degenerate in the uterus as to leave no trace. He recalled a case that had been diagnosed as an abdominal tumor in a person nearing the menopause. An operation had been decided upon, but a short time afterward serum had begun to escape, and eventually the entire tumor had disappeared in this way. He had subsequently seen the uterus curetted, and there had been no trace of a fetus.

Prof. C. A. von Ramdohr said that the cause of hydramnios might be either fetal or maternal. The amniotic fluid contained not only the true secretion of the amnion but also the urine discharged by the fetus; hence, the fetus might be responsible. Syphilis per contra on the mother's part might be the cause. The children in these cases were usually malformed. Hydramnios was much more rare than many authors claimed. He had seen six thousand confinements, and yet he had never met with an acute case of hydramnios. *Apropos* of the first case reported by Dr. Brodhead he would say, in passing, that the method of endeavoring to rotate a posterior position anteriorly by means of the forceps had long ago been deservedly discarded. According to the cases on record, the largest measured quantity of fluid in a case of hydramnios was sixty pints, and the largest estimated quantity was sixty-four pints. Where the pressure was so great as to cause distressing dyspnoea and palpitation the physician would be forced to rupture the membranes. Whenever at the beginning of labor in a primipara the head had not engaged, one should think of hydramnios as a possible cause of the difficulty. As to the query about the possibility of the fetus being absorbed absolutely, he would say, that such cases were on record, although he had never seen one.

Dr. Brodhead said that he could not agree with Dr. Von Ramdohr, in regard to the rotation by forceps of a head in the occipito posterior position. He had personally performed the operation, successfully, in a number of cases, and in fact had delivered a primipara of a nine pound child within the last ten days, by this method, the rotation being accomplished without difficulty, and the child born in excellent condition.

Prof. Polak closed the discussion. He stated that in one of the cases that he had seen, twins had been born absolutely without

pain, the woman having had previously four children. He certainly did not advocate rupture of the membranes except when the symptoms were so urgent as to demand such interference. Fortunately hydramnios occurred in multipara, and the cervix was more easily dilated on that account. He had seen about seven cases of true hydramnios, and in every instance the child had been a male. He mentioned this because of the statement made by Dr. McGrath that it had been claimed that in most of these cases the children were females. The diagnosis was certainly difficult, but in differentiating from ascites it was well to remember that in the latter the intestine was usually in front. He favored the use of the forceps after the engagement of the head, but he had never been satisfied with the method of rotating the head forward by the aid of this instrument. He would never do it again. It was certain that the body of the child did not rotate even when the head did.

SECOND REPORT OF THE COMMITTEE OF INSPECTION APPOINTED BY THE EXECUTIVE COMMITTEE OF THE POST-GRADUATE MEDICAL SCHOOL TO REVIEW THE EXPERIMENTS OF DR. JOHN F. RUSSELL IN THE TREATMENT OF PULMONARY TUBERCULOSIS AT THE POST-GRADUATE HOSPITAL, NEW YORK, JULY, 1899.

To the Executive Committee of the Post-Graduate Medical School and Hospital:

Your committee has pursued its work during the past twelve months upon the same general lines as before. In addition to careful observation of the cases under treatment the patients reported one year ago as cured have been inspected from time to time. The condition of these patients is as follows:

Case I.—Miss M. A. Began treatment March 28th, 1898; discharged, cured, June 26th, 1898. This patient was examined by your committee in October, 1898, and her chest was then absolutely clear. During the winter she occupied the same room and bed with her sister, who had advanced pulmonary tuberculosis, and in the early spring she began to cough, and suspicious signs appeared. She was again placed under treatment, which still continues.

July 17th, 1899, examined by your committee: "There are a