

for saccharine diabetes, and the knowledge that peripheral arteriosclerosis is of occasional occurrence in diabetes, and an important element in the causation of diabetic gangrene, suggests that arteriosclerosis may play an important part in the pathology of diabetes mellitus.

It is evident that in no instance of visceral arteriosclerosis is the diagnosis to be made from the knowledge of disturbance of function alone. The functional disturbances may be due to various causes, one of which is arteriosclerosis; and it is the association of this lesion in the central and peripheral vessels with the symptoms of such disturbed function in an organ which permits the diagnosis of a visceral arteriosclerosis.

The value in therapeutics of recognizing the existence of arteriosclerosis is chiefly in the way of caution. There are no remedies which can cause arteriosclerosis to disappear, and it is doubtful to what extent, if any, its progress can be arrested. Perhaps the chief benefit of the early discovery of arteriosclerosis comes from the opportunity it gives of warning the diseased person of the necessity of a change of habits, of avoiding mental, moral and physical strain upon blood vessels which already show signs of weakness. The dilated temporal arteries of youth are no necessary evidence of advancing arteriosclerosis; they are a sign to go slowly, to avoid excesses and unnecessary exposure.

Original Articles.

CÆSARIAN SECTION FOR PLACENTA PREVIA, WITH REPORT OF A CASE.¹

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THE advent of Cæsarian section as a logical treatment for placenta previa has invited the severest criticism and the warmest approbation of different obstetricians throughout this and other countries.

Some have recommended it as the ideal treatment in all cases of placenta previa, while other authorities have tabooed it altogether.

It is much within the confines of these extreme views that we hope to gain for the Cæsarian operation a recognition which it already merits. We cannot expect to show by this treatment the low mortality attained by Reynolds, Schauta, Everke and Leopold, in their Cæsarians for contracted pelvis, because of the difference in manifestation of these two pathological conditions. A certain proportion of the patients with placenta previa will always continue to be presented for operation in emergency. When, however, every physician doing obstetrical work is made conscious of his duty to keep under closer observation his pregnant cases, the patients with critical hemorrhage, at or near full term, will be less common, and the results by the Cæsarian treatment more favorable for comparison.

During the past three years, and especially since the report of Donoghue's case¹ in 1900, treated successfully by Cæsarian section, there has been

produced a wealth of statistics from which can easily be taken statements in support of any method of treatment.

For a review of the mortality statistics, I refer you to an article by Hugo Ehrenfest² of St. Louis, published in *American Medicine*, Jan. 11, 1902. He quotes the individual results of thirty authors, and we find that there is an average maternal mortality of about 7%. The mortality of the fetus is not noted in any instance. He strongly opposes Cæsarian section for this complication of pregnancy.

To offset any prejudice that may be acquired from a study of his investigations, I refer you to another column of mortality statistics in a paper by E. Gustave Zinke,³ read before the American Association of Obstetricians and Gynecologists, Sept. 18, 1901. From thirty authors he finds an average maternal mortality of 25% and a fetal mortality of 65.21%. In his own cases there was a maternal mortality of 17.5% and fetal of 55%. He says: "I firmly believe that Cæsarian and the Porro operations are perfectly legitimate, and elective procedures in all cases of placenta previa, central and complete, and especially so when the patient is a primipara, when the os is closed and the cervix unabridged."

In justice to Ehrenfest, it should be said that the cases in his statistics were collected since 1898.

It is hoped that in the future reports of cases an analysis of the degree of previa will be given, also the mortality in each variety.

Of 234 cases of placenta previa reported by Schauta,⁴ 50 were complete. Of this number there was a maternal mortality of 18% and a fetal mortality of 70%.

Of 75 cases reported by Higgins⁵ from the records of the Boston Lying-in Hospital, 25 were of the complete variety. Of these six died, or 24%.

Jardine⁶ reports 12 complete previa, with a maternal mortality of 16 $\frac{2}{3}$ % and fetal mortality of 66 $\frac{2}{3}$ %.

Jewett's "Obstetrics," 1899, gives 739 collected cases, with 166 deaths, 109, or 14.7%, of which were complete.

Gillette,⁷ by direct correspondence with leading obstetricians at maternity institutions of this country, received reports of 216 cases of placenta previa. Of the 216, 88 were complete, and of this number 20 were lost, or 22.7%; 66 of the babies, or 70.5%.

F. A. Dorman⁸ reports 84 cases of previa treated at the Sloan Maternity Hospital; maternal mortality in all cases was 12%, fetal 45%. In a personal communication from Dr. Dorman he informs me that of the complete type there was a maternal mortality of 17.7%.

From the above statistics, we find in complete previa an average maternal mortality of 18.9% and a fetal mortality between 65 and 70%. These results were attained in maternity hospitals by expert obstetricians, and will probably never be much lowered by any vaginal method of treatment.

It is this high, though conservative estimate of the mortality in complete placenta previa that we aim to reduce by Cæsarian section.

In partial previa the maternal mortality by version probably does not exceed 5%. But in obtaining this low figure, half of the babies are sacrificed in delivery, by obstruction of the circulation through

¹ Read before the Obstetrical Society of Boston, Jan. 20, 1903.

the placenta and by slow extraction. If the life of the child is to receive a just consideration, then a method of treatment which will greatly reduce its mortality and involving little, if any more, risk to the mother should be accepted.

Hirst says: "The treatment ought to be such as will secure the least maternal and the least fetal mortality. While, of course, the life of the mother is the greater importance, yet it is a mistake to ignore all consideration of the life of the child."

Dr. Barnes has said: "It is no longer permitted to us, without ample proof of clear necessity, to sacrifice the child in order to save the mother. The cases in which the two lives are supposed to stand in antagonism are vanishing before the light of modern science and skill. And in no conjuncture is this more true than in the treatment of placenta previa."

Lateral insertion of itself does not justify a Cæsarian operation. As a rule, simply rupturing the membrane suffices to stop hemorrhage.

In the 84 cases reported by Dorman, the bleeding at the onset was moderate, and gradually increasing and independent of labor pains in 50%; in 10% it began moderately after the beginning of labor; in 40% there was a sudden profuse flooding; although in one third of these cases slight preceding attacks of bleeding had given warning signs. Then in about 27%, or that number in which there was no premonition at all, undoubtedly occurs the highest mortality. Dorman also states that over half of the women with complete previa went to full term. Of 128 deaths reported by Müller not one occurred before the seventh month, and one third reached the end of gestation. In the 34 deaths reported above by Gillette⁷ all occurred after the seventh month. Could not the diagnosis then be made by careful examination before the seventh month?

The period of greatest danger, then, is that during which the child is viable.

If as routine practice all pregnant women were examined each month after the fifth, this type appropriately called "vicious" would rarely escape recognition. Early diagnosis, removal of the patient to a well-appointed hospital and Cæsarian section performed during the last two weeks, or the last month of gestation, would, without doubt, result in an exceedingly low maternal and fetal mortality.

As gestation approaches term, the life of the child demands greater consideration.

R. P. Ranken Lyle,⁹ referring to vaginal treatment, says: "In most cases the best treatment for the mother is the worst for the child."

If the fetus is viable, should it be sacrificed by slow delivery to save the mother? On the other hand, should the mother be subjected to the dangers of a ruptured uterus and hemorrhage by a version sufficiently rapid to save the baby?

By version the circulation to the fetus is cut off about as soon as the operation is begun. On the contrary, in Cæsarian section the child is removed from the uterus before the placenta is disturbed. Is this not more consistent with a natural delivery than tearing through an ectopic placenta while the child is still in utero?

Thus far the reported cases of Cæsarian section for placenta previa are as follows:

YEAR.	OPERATOR.	RESULT.
1891.	Hypes and Hulbert. ¹⁰	Mother dead; child dead.
1891.	J. M. Sligh. ¹¹	Mother dead; child dead.
1893.	A. C. Bernays. ¹²	Mother lived; child lived.
1899.	Mattoli. ¹³	Mother lived; child lived.
1898.	Lawson Tait (Porro). ¹⁴	Mother lived; child lived.
1900-1.	Donoghue ¹⁵ (2 cases).	One mother lived; one lost. Both children lived.
1901.	C. H. Hare. ¹⁶	Mother died; child lived.
1901.	W. J. Gillette (Porro). ¹⁷	Mother lived; child lived.
1901.	P. D. Covington. ¹⁸	Mother lived; child lived.
1902.	MacCalla (Porro). ¹⁹	Mother lived; child lived.
1902.	P. J. Conroy. ²⁰	Mother lived; child dead in utero.
1902.	P. E. Truesdale.	Mother lived; child died in one half hour.

Thirteen cases are recorded. Four mothers lost, or 44.4%; four babies, or 44.4%.

These figures seem appalling unless a more critical study of each case is made.

All that can be learned of the case by Hypes and Hulbert is that it was done after everything else had been tried.

In the case reported by J. M. Sligh there was a rigid, probably malignant cervix. Tampons, forcible dilatation by steel dilators, Barnes' bags and bimanual version were attempted before Cæsarian section. Mother died twelve hours after operation. The fetus had been dead for two days.

If the result in these two cases teaches anything, it is that Cæsarian section should be done before everything else has been tried or not at all.

Nobody of fair mind would object to ruling out these cases with such histories.

In the eleven succeeding cases, then, the maternal mortality is 22.2% and the fetal 22.2%. Of these eleven, three were Porro operations. All were operated on after alarming hemorrhages had occurred, and many of them when there seemed to be little hope for mother or child by any method of treatment. Therefore these mortality figures cannot, in any way, be justly used for comparison. It would be interesting to know how many, if any, of these 22 lives could have been saved by version.

These results prove that the Cæsarian operation is not contra-indicated when the vitality of the patient is low from loss of blood.

I will report a case in harmony with this statement.

REPORT OF CASE.

Sarah K., thirty-three years of age; married ten years; born in Scotland. Seventh pregnancy. No miscarriage. Previous labors normal.

Last catamenia Jan. 1 to 5, 1902. Labor expected Oct. 10, 1902. Early symptoms were similar to those of former pregnancies. Worked in cotton mill July 1 to 4. After a long walk on July 5 had a slight hemorrhage. On the same day she consulted Dr. John B. Trainor at his office. During the rest of July and during August she was up and about the house. Had slight hemorrhages at intervals of from three days to two weeks. These usually came on after exertion.

Sept. 6 had a moderate hemorrhage accompanied by uterine contractions lasting about two hours. Did not consult her physician at this time, remained quiet for three days, and flowing stopped.

Sept. 16, on account of a profuse hemorrhage, she sent a messenger for Dr. Trainor. He responded promptly, and after a vaginal examination quickly realized the gravity of the case. An ambulance was summoned immediately, and she was

removed to the Fall River City Hospital, arriving at 3 P.M. When admitted to the ward she was bleeding freely. Pulse 128, temperature 99.2°. Absolute quiet, a pad to the vulva and a firm T bandage were sufficient to control the hemorrhage. On the following day, Sept. 17, I was requested to see the patient. At 4 P.M. I saw her for the first time. She appeared fairly well developed and nourished, noticeably anemic. Pulse 112, temperature 99.2°.

The position of the child could not be definitely made out by palpation, although it was thought to be oblique or nearly transverse. The fetal heart was heard loudest to the left, and on a level with the umbilicus. Rate 160.

The pad at the vulva and the sheet about the buttocks were saturated with blood. Vaginal examination revealed slight flow of blood, a few small clots in the vagina. Cervix broad, not taken up, resistant, but not rigid. Pulsations distinctly felt on every side. Os admitted one finger readily, two with difficulty. Placenta was attached all around the internal os, except a small detached area on the right side, which admitted the finger for some depth. Ballottement absent.

It was said that the amniotic fluid had escaped.

I called Dr. J. H. Gifford to see the patient with a view to discussing the propriety of performing Cæsarian section. Soon after his arrival, we made another vaginal examination, whereupon a violent hemorrhage occurred.

A firm packing of iodoform and dry sterile gauze controlled the bleeding. The pulse then counted was 140, and feeble.

It was evident that interference of any kind at this time would result in the loss of mother and child. We concluded to temporize for a few hours at least. It was now 5 P.M. At 6 o'clock, pulse was 180, and of better character. Uterus began to contract, and continued at five-minute intervals. The pad at the vulva gave evidence of more bleeding. Morphine sulph. gr. $\frac{1}{4}$ was administered hypodermically. Uterine contractions and flowing ceased.

At 10 P.M. appearance of the patient had much improved. Pulse was 120, and of comparatively good volume. There had been a very little more bleeding, but uterus was beginning contractions again. Fetal heart now 170-180.

Should we temporize longer? If not, what method of interference would offer the best chance for mother and child? The condition of the patient was poor, but she seemed to be on the right side of the dividing line for operation.

More morphia would be required to control contractions, and, inasmuch as there was more show of blood on the pad, it was decided not to postpone interference.

Operations considered were rapid dilatation and version and Cæsarian section. The method selected must be that which would result in the loss of the least amount of blood. Surely this patient had little more in reserve than her last pint, and at this stage is it not the ounce lost or saved that gives the result?

The history of the escape of the amniotic fluid, the abnormal presentation, the central implantation of the placenta, and the undilated os, if not abso-

lutely contra-indicating version, forbode grief as the result of the attempt. As for the Cæsarian section, the risk rested almost entirely in the shock of this operation, and it was concluded that she would withstand this better than the unavoidable hemorrhage attending version.

Accordingly the patient was prepared in the usual way for emergency laparotomy. The ether was administered by Dr. E. F. Curry, and Drs. J. H. Gifford and H. G. Wilbur assisted me.

Operation.—Median abdominal incision eight inches in length. Uterus delivered through the abdominal opening, and thoroughly walled in with gauze towels. It appeared small for an eight-month uterus, but more dense. The second incision was made from the fundus uteri to the lower segment, not cutting into the placenta. The uterine wall was about half an inch in thickness. No amniotic fluid escaped from the cavity.

Baby found lying nearly in transverse position. Cord tied and cut. Child handed to Dr. R. J. Thompson. At this point m. X of ergotine were given hypodermically. The uterus closed down well. Membranes adhered firmly, so that it was necessary to scrape them off with a sponge. Patting the uterus with the hand a few times stimulated it to contract, so that when the placenta was removed, there was scarcely any loss of blood. Two thirds of the placenta lay to the left and one third covered the os. Dr. Wilbur made moderate pressure with the thumb and forefinger of each hand, encircling the cervix, and thereby controlled the very slight bleeding which occurred. The vaginal gauze was removed, and a long sponge was passed through the cervix into the vagina. The uterus was then closed with mass interrupted sutures of silk. The abdominal cavity was flushed with normal salt solution and closed with mass interrupted sutures of silkworm gut. Strychnia gr. $\frac{3}{8}$ and gr. $\frac{2}{8}$, with nitroglycerine gr. $\frac{3}{8}$, were administered during the operation. The patient was apparently in good condition at the end of the operation. Pulse 128; fairly good volume. The child was removed from the uterus within three minutes, and the operation completed in thirty minutes. The baby died in half an hour of asphyxia.

Convalescence was marked by a rise in temperature to 103° on the fourth day; dropped to 101° on the fifth, and then gradually down to normal. Pulse was 112 on the day after the operation, and at no subsequent time was it more rapid. At the time of the rise in temperature there was no abdominal distention, no tenderness, abdominal incision uniting by first intention, and the lochia remained sweet at all times. Vaginal examination revealed nothing. However, it is probable that there was some absorption at the cervix.

At the end of the fourth week the patient was discharged well. Jan. 15, or about four months after operation, I visited her at her home. She was doing her housework, and said she felt as well as ever. The abdominal cicatrix was firm.

The loss of the child was regretted very much, and it seems a question whether or not a further delay of a few hours before operating would have given it a better chance. In interest of the mother, however, this was not done.

It is unwise and unnecessary to do this operation

on a patient *in extremis*, when a firm vaginal packing of dry sterile gauze will control any degree of hemorrhage sufficiently long to allow the woman to recover a fairly good pulse. This is the only time when the vaginal tampon is of any value, for in the mild hemorrhages that occur earlier, the recumbent position with the hips well elevated suffices to stop bleeding.

The technique in the above operation was similar to that used at the Boston Lying-in Hospital.

Dr. A. Palmer Dudley²¹ recommends a more modern method. It is essentially as follows: The gas and oxygen as the anesthetic, saline irrigations instead of sponges. Abdominal incision six inches long from above the bladder to within two inches of the umbilicus. Elastic tubing passed around the cervix to control the ovarian and uterine vessels is drawn tight, half-knotted, and given to the care of an assistant. A second assistant places a hand at either side of the upper angle of the incision, and makes steady, firm pressure against the fundus uteri. The traction made upon the rubber tubing will keep the uterus firmly pressed against the abdominal wall below. The uterine incision is then made.

There are objections to this method, especially for placenta previa, which are quite obvious. In the first place, it is desirable not to cut into the placenta in making the uterine incision, but instead to begin at the fundus and cut down to the placenta. Unnecessary bleeding is thus avoided. To do this the abdominal incision must be long.

The elastic tube drawn tight around the cervix compresses the uterine nerves. Temporary paralysis may result in inability of the uterus to contract, with a resulting hemorrhage that may necessitate a Porro.

Gillette¹⁷ was obliged to do a Porro on account of hemorrhage resulting from the inability of the uterus to shut down. He used a rubber tube drawn tightly around the cervix and tied. The hemorrhage was attributed to anemia, but was it not more probably due to pressure paralysis of the uterine nerves?

In cases where placenta previa is suspected I wish to emphasize the importance of rigid cleanliness in making vaginal examinations. The hair about the vulva should be removed, the external genitals scrubbed with green soap and water, then with lysol or corrosive sublimate solution. An antiseptic douche should be given. The examination should be made with rubber gloves, for the finger goes into a perfect culture medium for bacterial growth.

The recent progress in obstetrics may be very materially attributed to the adoption of the principles of modern surgery, and in the operation of Cæsarian section is found a relief for a hitherto unsatisfactory treatment of a formidable type of placenta previa.

In conclusion, then, the Cæsarian operation would seem to be the best treatment for placenta previa, complete or partial, when the child is viable, and when the diameters of the pelvis or the conditions of the soft parts render the operation of dilatation and version, performed with sufficient rapidity to save the child, a dangerous procedure for the mother.

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FURTHER REMARKS ON THE TREATMENT OF PLACENTA PREVIA.¹

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It is not my intention to weary this society indefinitely by the discussion of a subject to which it has already devoted considerable time, but so long as the proper treatment of placenta previa remains a matter of doubt to many in the profession, and so long as such widely different views as to its treatment are held by the members of this society as was evinced at a recent meeting, any further evidence which one can bring to bear on the subject can scarcely be out of place.

Since the first of January of this year I have seen and operated upon five cases of placenta previa. Two of these were of the partial or marginal variety, while three had complete placenta previa. All five of the mothers made excellent recoveries and without complications. All five of the infants were born dead or died soon after birth. One of the five possibly might have been saved under a different method of delivery, but in only one of the cases did the fetus before delivery appear to be in such a condition that any hope of its survival could be entertained. In three of the cases the patient was at full term, but in two of these the fetal heart could not be heard at any time, and whatever chance the third child might have had was deliberately sacrificed for the sake of the mother, her life being considered of much greater importance. The other two cases were hopelessly premature. Therefore in all the cases I proceeded with only one aim—that of making the operation absolutely safe for the mother, so far, of course, as it is ever possible to do so.

Of the two cases of partial placenta previa the first was seen Jan. 10, at the Lying-in Hospital, having been brought in by Dr. Denny of Brookline, who packed the vagina to control the hemorrhage. The patient had lost considerable blood, and was still bleeding slightly. No fetal heart could be heard, and there was no pulsation in the cord. The mother being in fair condition, I delivered her immediately by version, and rapid recovery followed. It was my intention to allow the body to slowly follow after extraction of the foot, but its small

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