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Original Articles.

HEMORRHAGE: ACCIDENTAL, INEVITABLE, POSTPARTUM.*

By ROBERT L. DE NORMANDIE, M.D., F.A.C.S., BOSTON.

OF the varied types of hemorrhage to which the pregnant woman is liable, there are three which I wish to speak about tonight. The cause of the first two, we have no control over; the other one is caused usually by some error of the attending physician. The types of hemorrhage I refer to are the so-called accidental, the inevitable and the post-partum, anyone of which, when severe, or even when slight and improperly managed, may jeopardize the woman's life in a very short time.

A large percentage of the laity do not regard as serious a slight show of blood from the vagina during pregnancy, and I have begun to feel that not a few physicians hold a similar view. Until the laity is educated to the fact that bleeding during pregnancy is abnormal and calls for immediate and careful diagnosis as to its cause, until all physicians take this definite stand and act accordingly, we shall have a large mortality, some of which is nothing short of criminal, some of which, however, will always be unavoidable, even with the most expert medical care.

The causes of accidental hemorrhage are not thoroughly understood. In a way, the phrase "accidental hemorrhage" is unfortunate, for in only a small percentage of cases is an accident, trauma, responsible for this condition.

* Read before the Springfield Medical Association, April 30, 1917.

Premature separation of a normally implanted placenta is an entirely adequate description of what occurs, but it is not concise.

Disease of the decidua or of the placenta, sudden shock, nephritis, or a toxemia have all been given as causes of this emergency. Possible mechanical causes, such as pulling off of the placenta by a short cord and separation of the placenta by sudden lessening of the size of the uterine cavity, I shall not consider.

There are two definite types of this condition characterized by the presence or absence of external bleeding. The first bleeding in this condition is always internal, concealed at the placental site—in other words, retroplacental. As the bleeding continues, the blood works its way downward between the chorion and the uterus and appears at the vulva. Therefore, an external show of blood when this condition is present, usually is an indication of much blood within the uterus. Not infrequently only a blood stained serum appears and this must always be regarded with suspicion and fear. The two types merge into one another and I would not lead you to infer that one may always distinguish the two.

The signs and symptoms in this condition are definite and usually very marked. To me, the one symptom suggestive of this condition is *abdominal pain*, sudden in onset, usually steady, severe in character, often excruciating, in a woman usually in the last two months of pregnancy. The pain is not infrequently localized over the placental site. The severity of the pain depends entirely upon the suddenness and completeness of the separation and whether the hemorrhage is entirely internal or not. The

second chief sign is a change from normal of the feel of the uterus on palpation. This causes definite pain. Not infrequently combined with this is an alteration of the shape and size of the uterus. These two latter signs depend entirely upon the amount of internal concealed hemorrhage which has taken place. The change in the feel of the uterus is very marked; it is hard, board-like; the normal, soft feel, if labor has not begun, is absent, the normal alternate contraction and relaxation, if labor has begun, is absent. Hemorrhage is most variable, depending, as I have already suggested, upon the type the case under consideration is best classified under. Remember, it may be absent entirely or only a very slight amount of blood-stained serum may appear.

The fetal heart shows marked alteration and in severe cases is lost entirely, for the fetus necessarily dies. The patient's pallor oftentimes is striking, in marked contrast to the amount of external bleeding that may be present. The pulse at the onset is only slightly elevated, usually under one hundred, the volume is small and the blood pressure is not always altered. Do not be deceived by the pulse, for even though the rate be slow, the moment any operative work is attempted, it at once goes to pieces.

Vaginal examination gives a normal lower uterine segment. The longer the duration of the bleeding, the more marked are the signs of the acute anaemia, and if the bleeding be chiefly internal the prostration of the patient is entirely out of proportion to the blood seen.

The diagnosis of this condition is not difficult, provided the condition is in mind. The sudden pain, the alteration of the feel and size of the uterus, the pain on palpation, the pallor, the prostration, the normal lower uterine segment, all point to the one condition.

In the differential diagnosis, placenta praevia is the one condition usually mixed up with it, but the only reason for the mistake is that the first condition is not considered. There are other conditions which might be considered in the differential diagnosis, but if the signs and symptoms as I have given them of this condition are carefully kept in mind, the diagnosis should not be confounded.

The prognosis of this very grave obstetric emergency depends entirely upon the correct diagnosis being made at once, and efficient and correct treatment immediately begun.

The treatment, without a question, is to empty the uterus with all possible speed with due regard to the patient's soft parts. The patient may be a multigravida or a primigravida, or she may be in labor. The os uteri may be dilated or readily dilatable or the cervix may not be taken up at all; all of these points must be determined and the proper treatment settled.

What is the proper treatment? There can be no one set treatment for this condition. There are too many variable factors. If the patient

be a multipara with a soft cervix, completion of the dilatation with version and extraction will be the operation of election. If the patient be a primipara with rigid soft parts, such an operation,—an *accouchement forcé*,—a delivery by force, is, I believe, the worst possible treatment. Such a patient should have a Caesarean section, even if the baby is dead. In a few cases, especially in primiparous women who are in labor and the cervix is thinned, rupture of the membranes, insertion of a Voorhees bag, and minute doses of pituitrin will quickly bring about full dilatation, so the uterus can be emptied. When a case is managed this way, the uterus must be watched constantly,—its size, its action and its feel all will go to show whether the case is progressing favorably or not. The moment the bag passes the cervix, delivery should be completed as rapidly as possible. Again, in a similar case, a version with a slow extraction, a Braxton Hicks, is permissible, but the criticism of using either of these methods is that one never can be certain how much bleeding is going on within the uterus. If either of these methods is used, then firm counter pressure over the fundus and sides of the uterus must be insisted upon and this can be obtained by a Skultetus bandage, or by firm and constant pressure by assistants.

I have as yet had no experience with the use of a tight vaginal pack in these cases. The Dublin school favors this method, but in none of the cases of this condition that I have met have I felt justified in using it.

From the cases I have seen, the one essential element in whatever treatment is decided upon is time. The sooner treatment is begun the better will be the result. A delay of a few hours, minutes even, will materially alter the prognosis of any case. If you make a diagnosis of a separation of a normally implanted placenta, then you must empty that uterus at once. How best that is to be done I have already suggested. I am confident that much better results would come if more Caesarean sections were done early. It is true that many observers have noted that the uterus acts badly after this operation and have by necessity been forced to do a hysterectomy on account of bleeding, but some of these observers have waited several hours before operating after the diagnosis was clear. Once the diagnosis is made, speed in checking the hemorrhage is essential and in all cases where the soft parts are not readily dilatable, then Caesarean section, I am confident, is the operation of election.

Two cases will show you clearly my contentions:

The first, a ix-para, was admitted one evening to the Boston Lying-in Hospital, at 9.45, without any intelligent history obtainable, as she spoke no English. A physician sent her to the hospital with the diagnosis of placenta praevia. On entrance she had a pulse of 92, temperature of 97.4°, with slight

bloody vaginal discharge. Her skin was dry, and the pallor was marked. Blood pressure, 160. The uterus, on inspection, showed a full-termed uterus. Palpation showed it to be very tense and exquisitely tender to the touch. No position was determined and no fetal heart was heard. Vaginal examination by the house officer showed the cervix to be rigid, the os dilated two inches, and no placenta felt. A bloody show was present. During the examination, her pulse went to pieces completely. She was stimulated, and given subcutaneously salt solution. Her pulse came back and then was counted at 128. I had been notified that the patient was in the hospital and saw her about quarter past ten. My findings were the same as my house officer's. Her pallor was extreme, and she unquestionably was in the gravest condition. Her blood pressure at this time had dropped to 100. I felt that no matter what I did she would die, but that the safest way was to dilate her by vagina and deliver as quickly as the soft parts would allow. I hoped for an easy dilatation, as she was a multipara. Preparations for delivery were completed, and I passed two fingers through the cervix and obtained a foot. The membranes ruptured and a quantity of blood and blood-stained amniotic fluid came away. The cervix proved to be very rigid. Her pulse stayed about 130. Traction on the foot was begun at 10.45, and the delivery of a small, dead baby was completed in thirty minutes, with craniotomy to the after-coming head. The placenta and a gush of blood came away at once. During the delivery, constant pressure was kept on the sides and fundus of the uterus. Pituitrin and ergot were at once given. A hot intra-uterine douche was followed by an intrauterine gauze pack. Her blood pressure at this time was but 60. Intravenous salt solution was given at once, but she steadily failed and died at 11.45. A catheter specimen of urine, which was obtained just before delivery, showed it to be of high color, acid, specific gravity 1015, with a very large trace of albumen. Sediment showed numerous red blood corpuscles, many hyaline and granular casts, with small round epithelial cells and red blood corpuscles adherent; a few epithelial casts; occasional white blood corpuscles.

From the urinary findings and the high blood pressure found on entrance, it is fair, I think, to assume that a toxemia of some type was present.

The next day a physician I knew well asked me if I had operated on this case, for he said he had seen this case at two o'clock in the afternoon, and that he had made the diagnosis of a separated placenta, and tried to send her to the hospital, but that the physician whose patient she was had arrived and taken charge, and so he withdrew. From my friend, I learned the patient had first had pain about ten a.m., but had obtained no medical aid until two p.m., when he saw her.

Here was a case where much valuable time was lost, for the diagnosis was first correctly made nine hours before the delivery was accomplished.

The second case was a primigravida at term. She was seen in consultation at seven-thirty one morning, at a private hospital, to which she had been removed by her physician. She gave the following story: At five-thirty this morning she got up out of bed and went to the bathroom to have a defecation,

and as she came back to bed she was seized with a sudden sharp pain in the left lower abdomen. She then felt that there was moisture at the vulva, and on investigating she found she was passing blood. She at once sent for her physician and he saw her within the hour. At that time he found her having slight abdominal discomfort, with a rigid uterus. He did not make a vaginal examination, but took her at once to the hospital. When I saw her, her color was good. She was complaining of slight abdominal pain. Her pulse was 86 and of good quality. Palpation of the uterus showed a full-termed uterus, though apparently a small baby. The patient complained that palpation hurt her, especially on the left side. The contour of the uterus was normal. The uterus was harder than normal and it did not soften. No fetal heart was heard. Vaginal examination showed only a slight amount of dark-colored blood at the introitus; the cervix was not taken up; there was no sensation of boggy in the lower uterine segment.

The physician said that her pregnancy had been normal, her blood pressure had not been over 120 mm. of Hg., and at no time had there been any albumen in the urine.

Our diagnosis was a premature separation of a normally implanted placenta. I advised that a Caesarean section be done at once, and I told the husband that I thought the baby was already dead. My advice was accepted and I at once opened the abdomen; coincident with the opening of the abdomen she was given ergot and pituitrin. As the uterus was incised, the membranes bulged and blood was seen coming from between the uterus and the membranes. Beneath the membranes was meconium-stained liquor. The baby, dead, was at once extracted. The placenta was found almost entirely separated on the left side. Between the membranes and the uterine wall was a thin layer of blood, over nearly three-quarters of the entire uterus. By the time the baby, placenta and blood clots were removed, the uterus was contracting well, and although there was bleeding, there was no question of doing a hysterectomy. The operation was speedily completed. At one time the pulse rose to 160. She went off the table with a pulse of 120 in fair condition. She made an uncomplicated convalescence, and at the present time is in the best of health.

These two cases stand in marked contrast to each other. A wrong diagnosis with delay, a correct diagnosis with no delay in the carrying out of the treatment,—a tragic result in the first and an excellent result in the second. Had the physician in the first case been willing to send his patient to the hospital early, there need not have been a mortality, for a saving of those several hours would have in all probability altered the outcome. Whether this patient would have survived, whether the hemorrhage would have been uncontrollable without a hysterectomy, is open to question on account of the toxemia which was present. The fact, however, is clear that hours were lost. It is this loss of time I insist must not occur if we are to improve the maternal mortality in this, one of the gravest of obstetric emergencies.

Now let me take up with you the second type

of hemorrhage, namely, the inevitable,—inevitable because bleeding must take place before the contents of the uterus can be expelled. The placenta is ahead of the presenting part of the fetus. It is in some part of the lower uterine segment and therefore in an abnormal position; it is a *praevia*. The textbook division of the varieties is convenient for reference, and the usual one of complete or incomplete, with the further subdivisions of the latter into partial, marginal or lateral, is as satisfactory as any.

As to the etiology of a *placenta praevia*, I have nothing to say except that there is no satisfactory explanation for it. It is a fact, however, that it is much more frequent in *multi-gravidae* than in *primigravidae*.

In marked contrast to the onset of an accidental hemorrhage, a *placenta praevia* announces itself by bleeding, without pain, without apparent cause; not infrequently while the patient is sitting or lying down; quite commonly she is awakened by the warm blood trickling down her vulva.

This one sign in a woman pregnant more than three months, of bleeding without pain or cause, should make any thinking physician suspect even before he saw the patient that a *placenta praevia* was present.

For some years I have taught that any patient who showed bleeding from the vagina without pain in the latter half of pregnancy must be *regarded* as having a *placenta praevia* until it is conclusively proved that such is not the case. Remember, I do not say that every woman who bleeds without pain has a *praevia*.

Palpation of the uterus with this condition shows it to present the normal uterine feel, either of a uterus in labor, or not in labor. The presenting part not infrequently is quite high, because of the position of the placenta, and the position of the fetus may be abnormal for the same reason. The fetal heart is heard, or is absent, depending entirely upon the amount of bleeding which has taken place.

A vaginal examination gives almost without exception a very soft cervix, not infrequently a patulous os, especially if the patient is a *multi-gravida*. Further careful examination gives a boggy feel to the examining fingers in one or the other of the *culs-de-sac* or if the variety is complete over the entire vaginal vault. The examining fingers do not come directly to the presenting part.

The bleeding without accompanying pain, the presence of a boggy mass in the lower uterine segment, are the necessary points on which a diagnosis is based. I do not believe the statement that "in the absence of evidences of a toxemia it (this condition) is probably a *placenta praevia*" is correct.

There is one point in making a vaginal examination in a suspected *praevia* that must always be kept in mind. If the examining finger is passed through the cervix, as usually can be

done with but little or no pain, and you open the sinuses, remember there may occur a tremendous hemorrhage, one which may seriously jeopardize the patient's life. Because of this danger, it is my custom to palpate carefully the *culs-de-sac* first and if the diagnosis is clear, never to touch the cervix until I am prepared to do more if necessity should arise. Occasionally bleeding is profuse and a vaginal examination gives unsatisfactory data; then I never hesitate to pass the finger through the os in order to palpate the lower segment. Remember however, that this never should be done unless everything is prepared for further treatment.

A recent case will explain more clearly my meaning about vaginal examinations in cases of possible *placenta praevia*.

A *primigravida*, 24 years old, in her eighth month, telephoned one evening that she was flowing very profusely. I went to her at once and obtained the following story. She was in the midst of taking a warm bath in the bathtub when she noticed that the water became red in color. She at once got out of the tub and found that blood still continued to run down her legs. She went at once to bed and placed at her vulva a heavy bath towel. I saw her within half an hour, and found that there still was a slight amount of fresh bleeding going on. By this time she had soaked through several layers of the towel. She stated that in the last few minutes the bleeding was distinctly less. Her pulse was 80, her color good. The uterus was soft, no evident contractions, and not tender to palpation. The fetal heart was regular.

I decided to take her at once to a nearby hospital and there make the necessary examination. She was at once prepared, and when all the preparations for operative interference were completed she was examined under rigid asepsis. She was given gas and oxygen, as at a previous vaginal examination it was found that she had a very tight introitus. No definite placenta was felt in the lower uterine segment through the *culs-de-sac*. The head was entering the pelvis. The cervix was very soft. Inspection showed that the blood was coming from the uterus. I determined to make positive that there was no partial *previa*, so I pushed a finger through the cervix, but in no portion that I could reach was there any placenta to be found. I gave her at once a quarter of morphia. The diagnosis was a slight detachment of a low-situated placenta. There was no indication to operate. Rest in bed, with small amounts of morphia and careful observation, was indicated. The next morning she passed a small amount of dark-colored blood and one or two small clots. The uterus was normal in its feel and the fetal heart was regular. At the end of a week she was sent home, not having had any further bleeding. Four weeks later she started up in labor and was delivered of a seven-pound baby by low forceps very readily. The placenta came away intact with all the membranes, and inspection showed one small portion at the periphery to be much darker and more firm than the rest of the placenta. The break in the amniotic sac was not noted as being close to the placenta.

Here was a case conservatively managed. Undoubtedly some of you will say radically treated

because of the thorough examination. It is much better to cause an occasional patient to miscarry than to allow a possible praevia to go undiagnosed.

The prognosis in these cases is at the present time relatively bad, and it is bad for two reasons,—the first because an inevitable hemorrhage must occur, and how serious that will be no one can foretell. One single hemorrhage may kill. The second reason is because by far the majority of these cases are badly managed. Hospital statistics are no criterion for the prognosis which should hold in this condition. The patients are sent into the hospital not infrequently moribund and so the statistics are necessarily very high.

The prognosis for the child is very bad and is capable of but little improvement because of the fact of the hemorrhage and because so many of the babies are premature. In the treatment of this condition the first thing to do depends entirely upon the amount of blood already lost and whether the patient still is losing blood. If the hemorrhage is severe, a tight vaginal pack may be the only possible treatment at first. Such a condition is fortunately rare. The bleeding is caused by the normal intermittent uterine contractions which are constantly going on in pregnancy, opening the sinuses and allowing hemorrhage to take place. These sinuses, then, by the same normal contractions and retractions of the uterine fibres, close and the bleeding ceases. It is generally at this point that the physician arrives and must at once lay out an intelligent line of action.

Unquestionably a well-equipped hospital is the place to handle any bleeding case, but such hospitals are not always to be had. If the patient is not removed to a hospital, then complete preparations must be made for the delivery at home. What that means, there is no need of my going over with you tonight, but do let me warn you never to attempt a delivery of such a case without sufficient help. As in accidental hemorrhage, so in inevitable hemorrhage, the best treatment in any individual case will vary. Though the need for immediate delivery is not many times as urgent in this latter condition as in the former, no unnecessary delay is permissible.

The condition of the cervix is the chief underlying point in what treatment had best be given the individual problem, and this presupposes the determination of whether the patient is in labor or not and whether she had other pregnancies before this one. The size and the condition of the child is a further aid in helping decide what is the best treatment. If the child is full-term and in good condition, we are, I think, justified in subjecting the mother to a slightly increased operative risk for the child's sake, unless the parents definitely demand that not the slightest risk be added to the mother's burden. Remember that the Catholic church

holds a fetus cannot be deliberately sacrificed and this must be respected when operating in a Catholic family.

With these few general statements of the underlying principles of meeting this condition, let us go on to the separate methods to be employed.

In order to gain time to complete preparations for delivery, to check or lessen a severe hemorrhage and to start labor, a tight vaginal pack of sterile gauze is not infrequently permissible. But remember, the pack, to be efficient, must be tight and fill the entire vagina, going up against the placenta if possible. The pack is a preliminary procedure to emptying the uterus, usually by internal podalic version. Bleeding may take place between the placenta and the pack, and therefore the patient's general condition must be accurately followed.

Similar to the use of the gauze pack is the Voorhees bag. The bag is put in either extraovular or intraovular. Each position of the bag has its advocates, each has its advantages. The bag can be placed extraovularly, usually more readily than intraovularly, and in inserting it in this position, generally there is less bleeding than when the bag is thrust through the placenta. When the bag is placed beneath the placenta, the danger that more of the placenta will become detached, and bleeding take place between the placenta and the bag, is real and must not be forgotten, even though some of the advocates of this position of the bag say this accident does not occur. I have had better results, I think, with the intraovular position of the bag, especially in the incomplete varieties of this complication. In these incomplete varieties, the bag is thrust through the amniotic sac where there is no placenta. Some of the liquor necessarily escapes, but the bag is quickly filled with water, and all leakage of liquor stops. The largest size Voorhees bag measures three and a quarter inches and after not a few times using this bag in this complication, I decided to have a bigger one of the same type made. The bag I now put in measures four and a half inches across, and by means of its greater surface, the placenta is more efficiently compressed and therefore the bleeding stopped the better.

As soon as the bag passes the cervix, be sure and extract it at once over the perineum, for serious bleeding may take place if this is not done. As soon as the bag is out, then finish the delivery either by version or by forceps, depending upon the variety of the praevia the case presents.

A third method much in use is the so-called Braxton Hicks version. With a small, puny baby, probably dead at the beginning of the version, it is unquestionably the operation of election. If the baby is dead, no matter what its size, here also is it the operation of election. In performing this slow extraction, be sure and keep pressure over the uterus, over the fundus, for more than one internal concealed hemor-

rhage has taken place by failure to observe this simple precaution. A true Braxton Hicks, a very slow extraction, almost always sacrifices the baby; when the delivery, however, is speeded up, some of the babies will be saved. But by speeding up the delivery, the character of the delivery changes and we in reality are using the fourth method of treatment, namely, *accouchement forcé*.

Accouchement forcé, delivery by force, oftentimes a wicked divulsion of the maternal soft parts, has of recent years been rightly condemned. I am sure it has killed many more patients than it will ever save. This sudden, ruthless divulsion I am as much opposed to as anyone, but there can be done a manual dilatation with a woman in labor, or in a multipara with a soft cervix, so gently without tearing, that I am confident it is a justifiable thing to do. The cases in which it is justifiable must be picked, but to condemn absolutely, a careful manual dilatation, especially when the os uteri is partially dilated, is as wrong as it is to do a rapid divulsion and lose the patient from a ruptured uterus, as not infrequently happens. In doing a careful dilatation, with a patient presenting an incomplete praevia, I am more fearful of doing damage than when the praevia is of the complete variety. The reason for this is because of the great friability where the placenta lies, in marked contrast to the remainder of the os uteri. This reason does not hold in the complete variety, for here it is all soft and dilates much more readily and evenly. I would not give you the idea that I favor unreservedly a manual dilatation. I do not, but in certain cases I know it is justifiable, if not the operation of election.

There remains one more method to be considered, namely, Caesarean section. In the rare, picked case, it is the operation of choice. There are, however, certain facts which must be known before it should be attempted. These are, the mother must be in good condition and under no suspicion of being septic: her soft parts must be rigid and the baby must be in good condition. These conditions are not often fulfilled, and therefore it is not an operation to be done as a routine measure. It has been done many times and, as the saying goes, "the operator has got away with it." But does that justify our recommending it as the operation of election?

The third and last kind of bleeding which I want to speak about is that occurring after delivery of the child, and a further subdivision, secondary post-partum hemorrhage or puerperal hemorrhage.

Earlier in the paper, I said this type of bleeding was usually caused by some error of the attending physician. Now let me prove this. Someone has said that a physician's skill in obstetrics may, to some extent, be measured by the number of post-partum hemorrhages that he has

had. This statement is simply putting in another way what I have already said.

The bleeding which occurs from lacerations is usually not profuse and does not, except in lacerations of the cervix, endanger the woman's life. The external bleeding, which occurs from tears about the clitoris, vaginal wall and perineum, are readily distinguished from uterine bleeding by inspection and by the fact that the uterus is hard and well contracted. Bleeding of this variety is stopped at once by sutures. Bleeding from a lacerated cervix is much more serious. The tear may be so deep into the broad ligament that death rapidly occurs. Bungling operating, through imperfectly dilated soft parts, or hurried deliveries in incomplete praevias are the chief causes for this type of hemorrhage. When death follows in these cases, it usually is caused by the fact that the uterus is ruptured, and bleeding into the broad ligament or abdominal cavity occurs, depending whether the rupture is incomplete or complete. A severe cervical tear which is bleeding should at once be sutured. If the tear runs off well into the broad ligament, packing the tear oftentimes gives better results than attempting to sew. If the uterus is ruptured, a hysterectomy must be considered, but consideration of that will take us tonight much too far from our subject, so I only mention it.

I have just said severe cervical tears are usually caused by bungling operation; of course, a precipitate labor will do serious damage and if the physician is present, etherization of the patient will minimize this danger. Another very common cause of serious cervical tears with hemorrhage, at the present time, is the indiscriminate, I might almost say criminal, use of pituitrin. This extract, powerful in its action, when it does act, is, if carefully used within certain definite limitations, a great help to physicians. But to give it before the os uteri is fully dilated and the head in the pelvis will prove sooner or later harmful in the hands of any man. I know the good results that have been obtained, the saving to the patient hours of labor and the physician many a dinner engagement. But the bad results—the ruptured uteri, the bad cervical tears, to say nothing of the severe perineal tears, the dead babies—are these reported as fully and carefully as when pituitrin is given and all goes well? The bad results do occur, in spite of what many physicians say.

The bleeding from lacerations is not always external, for not very infrequently do we see a haematoma of the vagina as a result of laceration of the pelvic walls and the bleeding takes place beneath the fascia.

These are the traumatic types of hemorrhage and they are all distinguished from uterine hemorrhage by the condition and action of the uterus: The outpouring of blood that may come in a true uterine post-partum hemorrhage is un-

believable until one has been so unfortunate as to have seen it. The causes are multiple and many of them are definitely controllable by intelligent foresight. Anything which interferes with the normal mechanism of labor is the underlying factor in a post-partum hemorrhage.

A tumor body may interfere with the normal mechanism of labor. A hemorrhage following this complication is not the physician's fault but it is due the patient that the physician have the foresight to meet this emergency promptly and effectively.

A slow, prolonged inefficient labor either from primary inertia of the uterus or from an over-distended uterus, as with a big baby, multiple pregnancy, or hydramnios, is a common cause of bleeding. Precipitate labor I have already mentioned, for it allows uterine hemorrhage to occur as the normal retraction and contraction of the uterus is interfered with.

I believe that the true atonic uterine hemorrhage is very rare, and when an analysis of the conditions surrounding the labor is made, some abnormal mechanism will almost always be found.

The most usual cause of post-partum hemorrhage is an abnormal third stage. The abnormal point usually is in the way the physician hurries this stage. If there is no bleeding, if the fundus contracts, if the patient's pulse drops, there is absolutely no indication to hurry the separation of the placenta. If there is no bleeding and there is no internal concealed hemorrhage going on, the placenta has not separated, the fundus needs only to be held. If there is bleeding, another problem arises and the placenta then must be expressed; but if no bleeding, do not hurry the placenta. A half-hour wait or six contractions of the uterus and then the fundus Credé, whether the placenta has separated or not, is all wrong. As soon as it separates, then express it if you wish, for nothing is gained by waiting. Another cause of post-partum hemorrhage is that many physicians fail to inspect the membranes and placenta. If the membranes are lacking, or only a part lacking, I never go after them unless the uterus shows signs of inefficient retraction and therefore a tendency to bleed. If the placenta is not complete, especially if a placenta succenturiata is diagnosed, then the interior of the uterus should be explored under the strictest aseptic precautions and the piece removed, when the sinuses will close and hemorrhage cease. A piece of retained placenta gives rise to the so-called secondary post-partum hemorrhage or puerperal hemorrhage, which I will speak of in a moment.

The first and most important point in the treatment of this condition is to prevent it, and that can be done if the patients are watched carefully during their labor, and labor is not allowed to go on without progress being made. Do not allow the uterus to act badly,—to fail to

relax, without the necessary and indicated treatment to be begun. Never fail on any obstetric case to be prepared to meet a post-partum hemorrhage. Diagnose at once where the bleeding comes from and act accordingly. As soon as the uterus is emptied, then, if bleeding persists, give the patient pituitrin, ergot and put ice to the fundus. Remember, if pituitrin alone is given, not infrequently a relaxation of the uterus follows and further bleeding may take place.

Personally, I seldom use an intrauterine douche to stop a hemorrhage. If massage, careful holding of the uterus, combined with ice and ergot, will not stop the bleeding, I at once pack the uterus with sterile gauze; and in packing, always carry the gauze to the fundus with the one hand, while the other gives counter pressure over it. Do not pack in too much but, on the other hand, never fail to place the gauze in all parts of the uterus. I have seen two or three hemorrhages which were so severe that the only way I could stop them was to thrust my hand into the vagina, surround the cervix with my fingers and with the other hand on the fundus sharply anteflex it against the symphysis.

If the uterus is packed, then counter pressure should be maintained for some time until it is clear that no relaxation and bleeding behind the pack is going on. Stimulation and the giving of salt solution is, of course, used as is indicated.

A few words about the secondary post-partum hemorrhage. It practically always is caused by the retention of pieces of placenta. A case that I recently saw will illustrate this type of bleeding best. The patient was delivered by low forceps and after the delivery bled very profusely. The placenta was expressed, but she continued to bleed more than the attending physician liked, but he did not think it necessary to pack the uterus. She made an uncomplicated recovery save for the fact that red lochia persisted quite profuse, longer than usual, and the uterus was slow in involuting. She went home in three weeks but continued to have considerable red lochia. After she was at home for one week, she was seized with sudden severe pain low down in the abdomen which doubled her up and at once had a sudden and profuse hemorrhage. Her physician at once took her to the hospital. When he telephoned me he said he thought he had a tear between the bladder and the uterus. I saw the patient two days after the hemorrhage. Her temperature was normal and pulse 100. She was markedly anaemic, mucous membranes very pale. Palpation of abdomen negative save for the fact that the fundus was one finger breadth above the symphysis. It was soft but not tender. Pressure over the fundus caused slight flowing of a dirty, foul-smelling discharge. She was put across the bed for a vaginal examination and a bivalve speculum exposed the cervix,—protruding from the cervix was a mass the size of a hen's egg, dark red in color, oozing

blood. The anterior vaginal wall was normal and I could see no tear as the physician feared. What he took to be a tear was the cleft between the anterior lip of the cervix and this mass. The diagnosis of retained piece of placenta which the uterus was trying to expel was clear. I decided to etherize the patient and clean out the uterus with the finger and gauze. When etherized, palpation of this mass showed it to run to the fundus of the uterus, and by quickly freeing it at the base it was removed without serious bleeding. She was given ergot and the uterus contracted at once very hard. She made an uncomplicated convalescence and in a week went home with the uterus well involuted and with no lochia. In this case the physician undoubtedly failed to observe a placenta succenturiata. This patient lost much blood unnecessarily but her ultimate recovery was satisfactory. Another case, the counterpart to this one, had a different outcome; here the uterus went septic and she ran a complicated septic chart with a double phlebitis and was sick for some months, all because of a placenta succenturiata.

Such, then, are the various points to be considered in these three kinds of hemorrhage. Remember, all bleeding in a pregnant woman is serious, never to be lightly regarded, for if we do, a desperate condition may very quickly develop and we have only ourselves, if we are willing to face the outlook honestly, to blame.

CHRONIC VALVULAR HEART DISEASE IN PREGNANCY AND LABOR.

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I.

THIS paper is a study of chronic valvular heart disease complicating pregnancy and labor. The total material from which this study is made is roughly 30,000 cases as follows: 7,200 pregnant women observed in the Prenatal Clinic at the Boston Lying-in Hospital from May, 1911, to July, 1915, and 22,055 pregnant women entering the Boston Lying-in Hospital for delivery or care in pregnancy from January, 1873, to June, 1915.

Acute endocarditis, myocarditis without demonstrable valvular lesions and congenital heart cases are not considered. Cardiorenal cases, i. e., chronic nephritis with secondary cardiac changes, or chronic valvular cases with secondary chronic kidney, have been ruled out because they present an entirely different problem and show entirely different results. Acute toxæmia of pregnancy coming on top of chronic valvular disease is considered as a

complication of the pregnancy and cardiac disease, and such cases are therefore retained.

This material, however, is available for study only within the limits of its accuracy of observation and record, and it is with this limitation in mind that the arbitrary division of material for study of different types of chronic valvular disease and pregnancy is made. To illustrate: it is not accurate to estimate the percentage incidence of *compensated* cardiacs from the house records because there is evidence to show that many such cases were not recorded; it is accurate to estimate the percentage incidence of *decompensated* cases because symptoms presented which the observer recorded. This being the fact, the 7,200 Prenatal Clinic cases in which observation and record have been, on the whole, good, and in which cardiac defects are, as a rule, checked up by medical consultation, will be used for a general study of the subject, especially of compensated cardiac disease, while the 22,000 hospital cases will be used for a study of decompensated cardiac disease only.

Of 7,200 pregnant women observed in the Prenatal Clinic, 113 had chronic endocarditis, 1.5%, 1 woman in every 75.

Functional murmurs are reported 411 times, 5%, 1 woman in every 20.

The lesions in the chronic endocarditis cases follow:—

Mitral insufficiency	52
Double mitral	44
Mitral stenosis	10
Mitral insufficiency and aortic disease ..	3
Double mitral and aortic disease	2
Aortic disease	2

113

The diagnosis of cardiac disease as opposed to merely functional murmur is based on signs being present other than the murmur itself sufficient to make the observer believe that the case was a true cardiac lesion, or on medical consultation.

Of these 113 cases, 11 failed to return, reducing the number for further study to 102.

Of these 102 cases, 83 showed no sign of decompensation while under the care of the Prenatal Clinic or in labor or the puerperium, 19 cases showed decompensation in greater or less degree.

Decompensation may be divided somewhat arbitrarily for the purpose of classification into first and second degree,—first degree decompensation includes those signs which may occur in the course of pregnancy without the heart as a cause, but which, in the presence of heart lesions, point to the heart as, at least, contributory to the signs, namely, insomnia, nervousness and depression, slight, dry cough, dyspnea, edema of feet and ankles, rapid pulse; second degree decompensation includes cases showing the classic signs of frank cardiac decompensa-