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ON THE PREVENTION AND TREATMENT OF POST-PARTUM HEMORRHAGE.

BY

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Notwithstanding the progress of modern obstetric science, the accident which forms the subject of this communication remains one of the most frequent complications of delivery. Hence, the advantage of our once again discussing the prevention and treatment of flooding, and, by the interchange and record of our individual experiences, assist in freeing midwifery practitioners from the ever-present dread of witnessing death from hemorrhage after childbirth.

Under ordinary circumstances and with ordinary care in the management of labor, death from flooding should be an extremely rare accident. Thus, during a tolerably long practice

in different countries, and in various climates, and during my connection with a large lying-in hospital, I have met with only three cases of fatal flooding after delivery. Nor probably would any of these cases be generally considered as coming within the ordinary meaning of the term post-partum hemorrhage—one being a death from flooding caused by inversion of the uterus; in another, the same result was occasioned by hemorrhage consequent on rupture of the uterus; and the third was a case of secondary hemorrhage, proving fatal on the eighth day after delivery, and induced by malignant variola.

If we put out of consideration, for the present, cases such as those just alluded to, it will be found that, as a rule, post-partum hemorrhage is a preventible accident. In most instances, its victims are pluriparæ. Thus, of one hundred and sixteen instances of flooding noted in the Dublin Lying-in Hospital, in eighty-three the patients had borne children previously. The reports of the same institution also prove the beneficial results of that attention to the preventive treatment of flooding, the importance of which was first explicitly pointed out by Dr. McClintock. In Dr. Churchill's tables on this subject, collected from all available obstetric statistics in different countries, it was shown that, in a total number of 170,221 cases of labor, post-partum hemorrhage occurred in 1,370 instances; that is, in the proportion of 1 to 124; and, further, that the maternal mortality thus caused was about one in six of these cases. Now, I have collected the four published reports of the Masters of the Rotunda or Dublin Hospital, and find that, in 47,175 deliveries, there were only 206 cases of post-partum hemorrhage, and that only 16 of these proved fatal.

It must be borne in mind, however, that these statistics merely represent the frequency of cases of severe post-partum hemorrhage under the most favorable conditions—that is to say, in women delivered under careful and experienced medical supervision, and in no way show the probability of that accident under less favorable circumstances. The vast majority of women are delivered without any such specially skilled assistance, and, in their cases, should death from hemorrhage or any other accident occur, a reliable statement as to its cause is as little to be hoped for as any efficient means for its prevention or treatment.

But it requires no statistical statement or lengthened argument to prove so obvious a fact as the importance of anticipating the occurrence of flooding, especially in pluriparous patients, as these are twice as liable to this accident as primiparæ; and of placing such patients on suitable preventive treatment before delivery. The value of a course of some preparation of iron, such as the tincture of the sesquichloride, for this purpose during the last couple of months of pregnancy needs no observation here.

Inertia, or inefficient contraction of the uterus, is the cause of post-partum hemorrhage in sixty-five per cent of such cases; and in twenty-five per cent of them this accident is due to irregular or intermittent uterine action, the uterus alternately contracting and relaxing after delivery. The primary importance of therefore securing efficient contraction is obvious, and has been expressed by none more forcibly than Dr. Blundell, who speaks of this contraction as "Nature's tourniquet against hemorrhage after labor." But, even in cases where there is no failure in the force of this action, hemorrhage may result from its irregularity or misdirected energy. In cases of such irregular or partial uterine action, the os and cervical zone may be securely sealed by firm contraction, whilst the cavity of the uterus may be enormously distended by hemorrhagic effusion. This condition is, however, less common as a cause of hemorrhage than that last referred to; and the so-called hour-glass contraction may be entirely dismissed from consideration in this connection as a theoretical fiction.

Amongst the several circumstances that predispose to the accident that forms the subject of this paper, none is more frequently met with at the present time than the hemorrhagic diathesis or hemophilia. The most serious cases of flooding after labor that I have met with occurred in persons of this diathesis, or suffering from the "bleeder disease."

In London obstetric practice, according to Dr. Playfair, hemorrhage after childbirth is most frequent in the upper ranks of society, and this is due, he says, "to the effects of civilization, and to the mode of life of patients of that class, whose whole surroundings tend to produce a lax habit of body which favors uterine inertia, the principal cause of post-partum hemorrhage."

In Irish midwifery practice, however, I believe that the con-

verse of Dr. Playfair's proposition is the case, as I have found the hemorrhagic diathesis and a consequent tendency to flooding after labor more frequent amongst the poorer than amongst the better classes in Dublin. The difference between Dr. Playfair's experience and the results of my own observation are probably due to the different circumstances of the places in which our obstetric experience has been gained; Dr. Playfair's views being the result of extensive practice in the wealthiest and most healthy, as well as the largest centre of population in the world, whilst mine are founded on clinical observation in a notoriously unhealthy and comparatively poor city. The greater frequency of the hemorrhagic diathesis amongst the humbler, as compared with the better classes in Dublin, is, I think, amply accounted for by the unfavorable dietetic and hygienic circumstances of the former. In the condition of the ill-fed and ill-housed population, who inhabit the poorest and filthiest quarters of the ill-drained, low-lying city of Dublin, we find combined all the causes, predisposing and exciting, of the bleeder diathesis. Amongst the women of this class, semi-starvation on bread and tea is a state of existence by no means uncommonly met with. As a necessary result of this, the blood of such persons is deficient in fibrin and red corpuscles; the retaining vessels are in a pathological state, from defective functional restitution and impaired nutrition, producing thinness of the vascular walls and diminished tonicity, and giving rise to local congestions and hemorrhagic effusions. Under these circumstances, it is evident that, at the time of labor, when the cardiac action is quickened and the force of its impulse is greatest, there will be a tendency on the part of the congested uterine vessels to yield to the strain then put on them, and thus give rise to post-partum hemorrhage.

Another cause of post-partum hemorrhage should be also alluded to as being now more liable to be met with in practice than was formerly the case—namely, laceration of the cervix uteri, generally resulting from the revival of the abuse of the premature application of the long double-curved forceps during the first stage of labor, by which the undilated os uteri is forcibly torn open, and frequently is lacerated in the process.

The connection between the length of the second stage of labor and the occurrence of post-partum hemorrhage has been

demonstrated by the last annual report of the late master of the Dublin Lying-in Hospital, which, although intended to prove the safety of the use of the forceps at the earliest possible moment, yet shows that of thirty-one hemorrhage cases, twenty occurred in cases where the child was delivered within one hour from the beginning of labor.

The state of the circulation is of great importance as affording an early indication of the probable occurrence of hemorrhage and of the need for prophylactic treatment for its prevention. I have never seen the pulse permanently quickened during labor—that is, not subsiding to its normal rate in the intervals between the pains in any case in which post-partum hemorrhage did not follow, unless it was obviated by proper anticipatory treatment.

Amongst the causes of fatal hemorrhage after delivery, inversion of the uterus is one which is occasionally, although rarely, met with. In a memoir on this subject read before the Obstetrical Society, I showed that in 190,883 cases of labor in the hospital with which I was connected, there had been only one instance of flooding caused by inversion of the uterus. In private practice I have seen one fatal case of this kind.

In that case, to which I was called whilst lecturing at the hospital, when I arrived at the patient's house, I found her in a state of complete collapse from hemorrhage. The uterus was inverted and protruding externally, with the placenta still adherent. The history of the case was that the patient, who was only eighteen years of age, had been delivered of her third child after a very easy and quick labor, about an hour before I saw her. The nurse informed me that there had been considerable hemorrhage during the third stage, and, as there was delay in the expulsion of the placenta, she introduced her fingers into the os to ascertain whether it was adherent or not, another woman making firm pressure over the fundus, when suddenly the womb became completely inverted, and was extruded from the vulva. Dr. Tormey was then called in, and by him I was sent for. Stimulants having been administered, we peeled off the placenta, which was morbidly adherent to the fundus, and the profuse, active flooding ceased. I then returned the displaced organ within the vagina, and applying steady pressure to the fundus, with great difficulty slowly forced it through the inverted cervix, until I had the satisfaction of finding the uterus spring back before my hand into the pelvic cavity. Dr. Tormey then also introduced his hand, and found the parts in their natural situation. It is needless to repeat the details of the further treatment, which was that required by the state of collapse in which the patient then was.

Despite all our efforts, however, she sank rapidly and died within an hour's time, from the effect of the hemorrhage she had suffered before the reposition of the uterus.

The complication of labor with uterine fibroids is another occasional cause of post-partum flooding. The following case is a fair example of the instances of this kind which have come under my observation:

I was sent for by Dr. Boyle, of Rathgar, to see a lady some distance from Dublin, and, on my arrival, finding that she had been for a considerable time in the second stage, delivered her with the short forceps. Hemorrhage set in during the third stage; and, the placenta being morbidly adherent, on introducing my hand to remove it, I found a large fibroid tumor growing from the fundus uteri. After the removal of the placenta, the hemorrhage became still more profuse than before, so that the flooding saturated the bed and floor of the room, and having reduced the patient to apparently the last extremity, was at last arrested by the perchloride of iron and firm pressure on the uterus.

Rupture of the uterus, although generally the most fatal, as well as one of the rarest complications of childbirth, may be possibly recovered from as far as the shock of the accident is concerned, and yet may cause death from the accompanying hemorrhage after delivery, and hence must be referred to in connection with the subject of this paper. A table, elsewhere published, which I compiled from the Reports of the Rotunda Hospital, shows that in 61,814 cases of labor, there were 92 instances of rupture of the uterus, of which only 5 occurred in primiparous patients. Of these cases, 86 proved fatal. In my own experience, four cases of rupture of the uterus have occurred, and of these, in only one did the patient recover.

In that case, which I saw in consultation with Dr. Dudley White, of Dublin, rupture of the uterus resulted from arrested delivery in a transverse presentation, and had occurred before any medical assistance was sought. When we arrived, the patient was in a state of collapse, and on delivering her by version, we found a large rent in the anterior wall of the uterus, extending from the cervix up to the fundus. From this laceration, and from every part of the uncontracted uterus, profuse hemorrhage was pouring into the peritoneal cavity as well as externally. As it would have been impossible to inject the perchloride of iron in the ordinary way, in such a case, without sending the injection into the abdominal cavity; and as the woman was obviously dying from the effect of unarrested hemorrhage, as well as from the shock of the

accident, I saturated a sponge with strong liquor ferri perchloridi, and introduced it in my hand into the uterus, applying it freely. The effect was instantaneous, the hemorrhage at once ceasing. It would be out of place to follow the history of this case here further than to add that, nothwithstanding the intense collapse and subsequent severe attack of metro-peritonitis, the patient recovered.

With regard to the preventive treatment of flooding, I may here observe that I have learned, by long experience, the value of a suggestion made by my lamented friend and former master, the late Dr. McClintock, by whose death the Dublin School of Midwifery has been recently deprived of its most distinguished teacher. Dr. McClintock's practice, in cases in which there was any reason to anticipate post-partum hemorrhage, was to rupture the membranes (provided the presentation was natural) at as early a stage of labor as was possible, so as to allow the liquor amnii to drain off before the completion of the first stage, and thus secure that gradual and firm contraction of the uterus which is the only safeguard against flooding. At the same time, however, care must be taken that in such cases the second stage be not so long protracted as to exhaust the muscular contractility of the uterus, and thus directly occasion the accident which we seek to prevent. For labor, and especially the second stage, cannot be needlessly cut short by the premature application of instruments, or unduly protracted by timidity or want of skill in the use of the forceps, without, in either case, exposing the patient to an increased risk of post-partum hemorrhage.

With this restriction, a slow labor is always, as far as the liability to flooding is concerned, safer, ceteris paribus, than precipitate delivery. One of the most useful preventives of hemorrhage is the subcutaneous injection of a full dose of the fluid extract of ergot, or of ergotine, as soon as the child's head begins to press on the perineum. Dr. Atthill, of Dublin, and Dr. Routh, of London, have found this practice frequently followed by troublesome abscesses, and the last-named authority has ascribed death in one case to this cause. But I may venture to observe that, in an extended experience of the hypodermic use of ergot, or ergotine, as a prophylactic against post-partum hemorrhage, I have found that, provided the preparation employed was fresh and reliable, this expedient was generally most effectual; and in but one instance have I seen any abscess thus produced, and in that case the ergotine was not sufficiently deeply injected into the gluteal muscles.

The most certain and most important of all the preventives of flooding is the steady pressure of the trained obstetric hand above the fundus uteri as the child emerges from the vulva. Nor should this pressure be relaxed for a moment until the completion of the third stage, and the subsequent permanent contraction of the uterus is secured.

My experience of the most important measures employed in the actual treatment of post-partum hemorrhage may be very briefly stated, as we may, I believe, more profitably employ our time in considering the means by which it may be prevented—

—"Principiis obsta. Sero medicina paratur
Cum mala per longas convaluere moras."

The injection of warm water as a means of arresting flooding was tried in a few cases under my observation; and the results of these thermal injections were not such as would lead me, in dealing with any serious case of post-partum hemorrhage, to depend on this expedient alone for its arrest. But I can well understand its utility in certain cases of great exhaustion from flooding, still unrestrained by other measures, and especially where the application of cold has been previously pushed too far. Even in these cases, warm-water injections should be conjoined with other suitable remedies, such as perchloride of iron, ergotine, or ether, as may be required by the special exigencies of each case.

Unquestionably the first place in the treatment of serious post-partum hemorrhage must be assigned to the use of the perchloride of iron. It is no exaggeration to say that by his introduction of this styptic into British and American midwifery practice Dr. Robert Barnes has probably been vicariously instrumental in saving more human lives than any physician since Jenner's time. The safety of using the perchloride of iron for the arrest of flooding in the manner it is generally employed has been very fully, and very warmly, debated elsewhere. But, apart from prejudice, it would, I believe, be hardly possible for any practical obstetrician to question the general efficiency of this active uterine stimulus, as well as powerful styptic, in the cases under consideration.

During the last eleven years, I have had occasion to inject the solution of perchloride of iron in sixteen cases of grave post-partum hemorrhage. In fifteen of these, the flooding was thus

arrested, and in one instance, and that a very exceptional case, the styptic failed. I need hardly repeat here, however, that a remedy such as the perchloride of iron cannot be, with any safety, indiscriminately employed in all cases, as some practitioners seem to think who at once resort to its use on the least appearance of hemorrhage. In most cases, the desired effect may be attained by safer means, and therefore this treatment should be restricted to those cases in which the imminent danger of death from flooding outways any remote risk of secondary consequences from the measures employed to obviate the immediate danger of death, which it is our primary duty to stave off, if possible.

One death from embolism three days after delivery, following the injection of the perchloride of iron solution, occurred in my practice some years ago. Whether the fatal event in that case was due to the perchloride of iron or not may be fairly questioned. Death from embolism soon after delivery is not confined to cases in which this remedy has been employed. In the American Journal of Obstetrics, I have recorded three cases of death from embolism after delivery, and in which the perchloride of iron had not been used.

An objection which has been urged against the injection of the liquor ferri perchloridi in the manner usually employed in these cases, namely with the ordinary siphon syringe, is that the injected fluid may be driven through the Fallopian tubes into the abdominal cavity and thus cause fatal peritonitis, or else that it may probably be forced into the patulous uterine sinuses, and, as already stated, may thus occasion embolism. These objections may be met if the styptic be applied by aninstrument, such as my irrigator, which is capable of sending a gentle continuous current of any fluid, at any temperature, and for as long a time as may be desired, into either the vagina or the uterine cavity.

In cases of severe flooding, however, the perchloride of iron may be best used without either syringe or irrigator, by a method to which I have already alluded, and which I tested in several cases of post-partum hemorrhage since I first brought it before the British Medical Association, in a paper read at Norwich some years ago. This method of arresting flooding is simply the introduction of a sponge soaked in strong liquor ferri into the uterine cavity, where it is to be held in the accoucheur's

hand, steady pressure being at the same time made from without over the fundus uteri, until a firm contraction is produced by which the hand and sponge are gradually expelled, and the loss of blood is arrested. In this way we conjoin the direct application of this styptic together with the most powerful stimulus that can be used to induce contraction, namely the introduction of the hand into the uterine cavity.

It is needless to add that a remedy such as this is by no means free from subsequent risk, or to be used without grave necessity and due consideration. Having elsewhere recorded my experience of the use of other remedies, such as turpentine, opium, cold, Faradization, tincture of iodine, vinegar, compression of the aorta, etc., that have been recommended in the treatment of post-partum hemorrhage, I shall not again refer to any of these, but shall conclude with a few words concerning the use of transfusion and its substitutes in cases of collapse from flooding after delivery.

Theoretically, transfusion should be the physiological remedy in such cases, and is a measure undoubtedly destined to fill an important place in the medical as well as in the obstetric practice of some future day. But as yet its success is not such as to justify overmuch dependence on this operation as now practised in the cases we are here discussing. The results obtained by the most improved recent scientific methods of transfusion are little, if anything, more favorable than those attained by Dr. Blundell in his experiments on this subject upwards of sixty years ago.

In those sudden emergencies in which transfusion is indicated in midwifery practice, the assistance afforded should, in the words of an ancient writer, Dr. Willoughby, be "not the feigned or surmised thoughts of man's fantasie sitting and meditating in his study, but that which really have been performed in the travailing woman's chamber." In a case of collapse from flooding, the issue of life or death must be determined within a very short time: and unless transfusion can be rendered facile and rapid in its application it will be generally useless.

In these respects, even the best methods of transfusion which are now practised are obviously defective. Thus Dr. Aveling's direct venous, or Mr. Shaffer's immediate arterial transfusion, or Dr. McDonnell's operation with defibrinated blood, either require such exceptional nicety of manipulation, or are so complicated and take so much time, as to render them inapplicable, in

the majority of cases, to those who may suddenly, and under circumstances the most unfavorable for the leisurely performance of any complex operation, meet with a case of collapse from flooding after delivery.

Healthy human blood should be the only fluid used for transfusion, if it be possible to procure it. But in this "little if" lies a very important question. I have more than once seen transfusion stopped by the impossibility of obtaining the required supply. And hence it is a matter of great interest to ascertain what substitute for blood, if any, can be employed in such cases. The recent experiments of Mr. Shaffer and others have confirmed the old views of Blundell as to the injurious effects of the admixture of the blood of other animals on the human red blood-corpuscles, and hence this source of supply must be excluded. Nor, according to Messrs. Dowdeswell and Shaffer's experiments, can we fall back on the injection of milk in such cases. For, in five out of six instances in which this was attempted in animals, the result was rapidly fatal, and on examination after death, the blood-corpuscles were found to be extensively destroyed and a large development of bacteria to have occurred in the blood. Therefore, notwithstanding the exceptional success of one interesting case reported by my friend, Dr. Meldon, it seems incontrovertible that milk or other similar fluids which contain the germ of septic organisms, should not be used for transfusion after post-partum hemorrhage.

Many years ago, Dr. Martin, of Portlaw, suggested the venous injection of a weak saline solution in these cases, and from what I have myself seen, I have no doubt that, where healthy human blood cannot be obtained, the emergency may thus possibly be tided over and life saved by this expedient, by which the emptied vessels may be so refilled as to afford the heart some mechanical resistance to its rapid contractions and bring back the pulse to an approach to its normal volume, and at least give time for the use of other remedies. I am, of course, aware of the physiological objections which are advanced against this substitute for transfusion, by those who say, that in cases of collapse from hemorrhage, "it is the deficiency in quality, the deficiency in number of the red corpuscles, that is the cause of the dyspnea, etc." "The system is suffering," they add, "from deficiency of hemoglobuline, and it is useless to supply it with any fluid that does not contain this." Such reasoning may be

scientifically accurate, but the practical conclusion is at variance with clinical observation; and where theory and experience clash in midwifery practice, there can, I think, be no question as to which should be followed.

In the hypodermic injection of sulphuric ether, as suggested by Professor von Hecker, of Munich, we have an excellent, easily applied, and generally reliable substitute for transfusion in the treatment of collapse from flooding after labor. Therefore, for some years past, I have always carried with me to every midwifery case a syringe which I have had specially constructed for the purpose, and which differs from the ordinary hypodermic syringe, in holding upwards of a drachm of ether, as less is useless in these cases, and which is not cemented by any gum that might be dissolved by this solvent and thus give way as the common subcutaneous syringe may do. During the past three years, I have resorted to this expedient in several instances of depletion from severe flooding after delivery and believe that it would be impossible to speak too highly of its value in rallying the flagging vital powers, even in cases apparently hopeless, in more than one of which I have seen life thus saved.