HÆMORRHAGE FROM THE ORGANS OF GENERATION DURING PREGNANCY AND PARTURITION.*

By ARTHUR V. MACAN, M.B., M.Ch., M.A.O., Univ. Dub.,
Fellow and Examiner in Midwifery of the King and Queen's College of Physicians;
Gynaecologist to the City of Dublin Hospital; Lecturer in Midwifery in
the Carmichael Medical College, etc.

UNDER the short and apparently simple title of "Hæmorrhage from the Organs of Generation during Pregnancy and Parturition" are included a number of the most distinct and separate affections, which, though capable of generalisation under the common symptom "hæmorrhage", bear no sort of family resemblance to each other, and are, therefore, extremely difficult to treat of under one common head. This will, I think, be obvious, by a simple enumeration of the various subjects that are embraced by the above definition. They are—

1. Menstruation during pregnancy.
2. Irregular, or periodic, non-menstrual discharges (erosion, polypus, carcinoma).
3. Abortion and miscarriage, including the various forms of moles and hydatids.
4. Accidental hæmorrhage.
5. Unavoidable hæmorrhage.
6. Other forms of hæmorrhage occurring during labour, from rupture of the uterus, thrombus, or velamentous insertion of the cord.
7. *Post partum* hæmorrhage, both from the site of the placenta (including acute inversion of the uterus), and that due to rupture of the cervix, vagina, or external genitals; and in some rare cases, even from the rectum.

It is manifestly impossible to treat all these subjects, even superficially, within the limits which have been very properly assigned to all communications read at these meetings. I have not, therefore, essayed the task, but will confine the observations I have to make to the following subjects.

1. The occurrence of menstruation during pregnancy.
2. The symptoms that justify us, in a case of threatened abortion, in ceasing all further efforts to save the ovum.
3. The treatment of imperfect abortion.
4. The treatment of placenta prævia.
5. The prevention and treatment of *post partum* hæmorrhage, especially that described by Gooch as "a peculiar form of hæmorrhage".
1. Among recent writers, there is a singular unanimity as to the possibility of menstruation occurring in a pregnant woman. Montgomery, in his book on the *Signs and Symptoms of Pregnancy* (page 85), gives instances of its occurring, not only once or twice after conception, but even continuing during the whole pregnancy, and quotes Deventer, Dewees, and Baudelocque, as authorities for the fact that some women menstruate only during pregnancy. There can be no doubt that a periodically recurring discharge of blood from the vagina is not a very rare occurrence during pregnancy. The question is, Is this true menstruation, or merely hæmorrhage from some pathological condition that has taken on a periodic type? This latter is the view held by Professor Spiegelberg (*Geburtshülfe*, 1878, p. 372), who sees no reason to doubt the theory of Bischoff, that menstruation depends on ovulation. Ovulation has, however, never been demonstrated as occurring during pregnancy. Hence there is no proof that menstruation takes place during pregnancy. Indeed, he considers that the changes which take place in the uterine mucous membrane during menstruation are quite incompatible with the further continuance of pregnancy.

2. As to the symptoms which justify us in giving up all hope of saving the ovum, authors are by no means agreed. Scanzoni says (*Geburtshülfe*, 4th edition, vol. ii, p. 84) that if, during the first two months of pregnancy, the symptoms of abortion, viz., hæmorrhage and uterine action, are once well marked, the abortion is almost inevitable; others think that, if we can feel any part of the ovum in the cervix, its expulsion is a mere question of time. Spiegelberg considers that the discharge of blood-clots, especially if somewhat decolorised, points to inevitable abortion.

The rupture of the membranes and the escape of the waters is also necessarily fatal to the ovum. This, however, very rarely takes place in abortions before the beginning of the fourth month, that is, until the placenta is fully formed. Indeed, Leblond goes so far as to say that if, during the first three months of pregnancy, a healthy ovum be not expelled entire, then there has been some interference with pregnancy,

most probably of a criminal nature (*Annales de Gynécologie*, August 1875, p. 95).

3. The question, again, often resolves itself into whether the ovum be alive or not; but the symptoms of the death of the ovum are, in the great majority of cases, most untrustworthy, and the ovum will sometimes survive the most persistent efforts to produce abortion. Scanzoni gives a case in illustration of this point, where, being called in to a woman with persistent hæmorrhage at the third month, he diagnosed retention of a portion of the membranes. For this he gave ergot, both by the mouth and *per rectum*; plugged the vagina for thirty-six hours; passed the sound into the uterus for two inches and a half, and moved the point freely within the cavity; and finally injected a weak solution of perchloride of iron, but the ovum nevertheless did not lose its vitality, nor did this treatment lead to abortion (Scanzoni, vol. ii, p. 83). In such cases, perhaps, the use of the thermometer would help us to make the diagnosis; for Cohnstein and Fehling have shown that, if the temperature of the uterus be not higher than that of the vagina, the fœtus has most probably lost its vitality (*vide* Schroeder, 5th edition, p. 118). It is to Dr. Matthews Duncan (*Researches in Obstetrics*, p. 274), and Dr. McClintock (Smellie, vol. i, p. 169), that we are chiefly indebted for what we know about imperfect abortion or imperfect deliverance. The chief difficulty of these cases is the diagnosis, the treatment being in all cases to remove, as soon as possible, the retained portion of the membranes or placenta. This has, till quite lately, generally necessitated the dilatation of the cervix, though now and then the mere introduction of the sound and the administration of ergot have led to the expulsion of the retained portion of the placenta or membranes. With the object of avoiding dilatation, Dr. Paul Mundé, of New York, uses one of Dr. Thomas's blunt wire curettes, or one of Simon's scoops, which, he says, can be readily introduced without any previous dilatation of the cervix, and by means of which the retained portion of the placenta or membranes may readily be detached and removed (*American Journal of Obstetrics*, 1878).

4. The subject which of all others, however, requires elucidation and discussion, is that of placenta prævia; for there is hardly a question, whether concerning its etiology, pathology, diagnosis, or treatment, that is not still involved in obscurity or confusion—very often in both. Thus, at the very threshold of any inquiry as to the proper treatment of this affection, we are called on to determine what is the source of the hæmorrhage; does it come from the placenta or from the uterus? The direct evidence on this question is very slight; and while Dr. Barnes (*Obstetric Operations*, p. 404) supports the theory that the hæmorrhage is uterine and arterial, and quotes the experiments of Mackenzie to prove his assertion, Schroeder believes in the theory warmly advocated by the late Sir J. Y. Simpson, that the larger part comes from the detached portion of the placenta (Schroeder's *Geburtshülfe*, 5th edition, p. 671); while Spiegelberg thinks that the chief hæmorrhage is from the uterine sinuses, though at the moment of detachment a sudden gush of blood also takes place from the curling arteries and from the placental vessels; the arteries, however, soon contract, and the placental sinuses soon become occluded by the formation of thrombi (Spiegelberg's *Geburtshülfe*, p. 392). Thus these authorities differ *to toto calo* as to the source and character of the hæmorrhage; Barnes says it is uterine and arterial, Spiegelberg that it is uterine and venous. Barnes and Spiegelberg agree that it comes from the uterus, while Schroeder and Simpson maintain that its source is the placenta. One thing seems certain, that, whether it comes from the uterus or from the placenta, it very frequently ceases spontaneously; if from the uterus, then from expansion, not contraction, of the placental side; if from the placenta, from the formation of thrombi.

A far more fertile source of confusion, however, has arisen from many, if not all, of our most recent authorities writing as though, in placenta prævia, the placenta were inserted, wholly or in part, into the cervix itself. Thus Leishman speaks of each pain as tending "still further to the separation of the placenta from its cervical attachments" (2nd edition, p. 440), and further on: "It sometimes, though rarely, happens that the effect of the uterine contractions is to separate the placenta either from its cervical attachments, or from its entire uterine connection, etc." (p. 440). Dr. Milne, in his *Midwifery*, when speaking of the placenta, says, "It is sometimes placed over the whole os and cervix, in which case it is termed placenta centralis; at other times, it is attached over a part of its margin, and a portion of the cervix, when it is called placenta lateralis" (*Midwifery*, 2nd edition, p. 296). Tyler Smith uses almost exactly the same words: "In placenta prævia", he says, "it (the placenta) is attached over the whole of the os and cervix uteri, or it may be implanted over some part of the margin of the os, and one half or more of the cervix" (*Midwifery*, p. 375). Dr. Churchill holds the same theory, for he says: "The cause of the hæmorrhage is evidently the separation of the placenta

* Read in the Section of Obstetric Medicine at the Annual Meeting of the British Medical Association in Cork, August 1879.

from the cervix uteri" (*Midwifery*, 6th edition, p. 504); and Dr. Roberts speaks of the placenta being partly or completely implanted over the cervix (*Midwifery*, p. 92). Dr. Playfair, however, when defining placenta prævia, does not make this mistake, but falls into it further on, when he says, "Dr. Barnes's theory (of the cause of the hæmorrhage during the latter months of pregnancy) is based on the supposition that the loss of relation between the uterus and placenta is caused by excess of growth on the part of the placenta itself over that of the cervix, which is not adapted for its attachment" (*Midwifery*, vol. ii, p. 83). This confusion is, I think, kept up and fostered by the use of the term "cervical zone" to express the lower segment of the body of the uterus. Indeed, Dr. Barnes himself seems to be guilty of thus confusing the "cervical zone" with the "cavity of the cervix"; for, when speaking of paralysis of the cervix following labour, he says: "This state is more likely to occur in cases of placenta prævia, and it is doubly dangerous because the cervix is the placental site" (*Obstetric Operations*, p. 421). The error of thus speaking of the placenta as inserted either partly or completely into the cervix, was ably pointed out by Dr. C. Bell in a paper read by him before the Edinburgh Obstetrical Society in May 1878, in which, curiously enough, he still adheres to the old idea that the cervix is taken up during the later months of pregnancy. It has recently been again most forcibly brought forward by Dr. Isaac E. Taylor of New York, in a paper published in vol. iii of the *Transactions of the American Gynecological Society*, (p. 310), in which he quotes largely from Dr. Barnes, and criticises him very severely as teaching this doctrine.

Once this proposition is plainly stated, it carries with it its own refutation, but we must ever beware of confounding the "cervical zone" of Dr. Barnes with the true "cervix uteri", a mistake which, once committed, involves the whole subject of the treatment of placenta prævia in inextricable confusion.

Let us now pass on to consider the various theories that have been put forward to explain why the hæmorrhage is so liable to come on during the later months of pregnancy. The oldest of these is, that, during the later months of pregnancy, the cavity of the cervix gradually becomes dilated, and taken up into the body of the uterus. The placenta which is attached over the cervix does not grow fast enough to keep pace with this rapid dilatation; separation necessarily follows, and is accompanied by hæmorrhage. This theory involves two errors; first, that the placenta is inserted into the cervix; and second, that the cervix is taken up during the later months of pregnancy. The former of these has been already noticed, so we may at once pass on to consider whether the cervix uteri is gradually taken up into the uterus during the last few months of pregnancy. This subject was, more than ten years ago, made the subject of a striking paper by Dr. Matthews Duncan (*Researches in Obstetrics*, p. 243), in which he showed conclusively, I think, that the cervix uteri remains intact till the painless contractions which precede labour set in.

Dr. Barnes also rejects this theory, but supplants it by another, in support of which he does not, however, offer any proof, and in explaining which he is, I think, again guilty of confounding his own "cervical zone" with the "cervix uteri". He says: "The first detachment of placenta, then, arises from an excess in rate of growth of the placenta over that of the cervix: a structure which was not designed for placental attachment, and which was not fitted to keep pace with the placenta. Hence loss of relation; the placenta shoots beyond its site, and hæmorrhage results" (*loc. cit.*, p. 401).

These objections do not, I think, apply to the explanation given by Dr. Duncan, which, briefly stated, is as follows. The placenta, when prævia, is inserted more or less completely over the inner os. For some time before labour (varying greatly, however, in different cases), painless contractions of the uterus set in. These contractions cause a slight dilatation of the inner os, which must lead to separation and consequent hæmorrhage. If the hæmorrhage set in before the occurrence of painless contractions, then it is due to the same accidental causes which would lead to accidental hæmorrhage from a normally situated placenta. In other words, we may have accidental hæmorrhage from a placenta that is prævia. Indeed, there are many circumstances in placenta prævia that combine to increase the tendency to accidental hæmorrhage. The first of these is, that the pressure on the placental and uterine vessels is greater than when the placenta is situated at the fundus, in consequence of the additional length of the column of blood that has to be supported. The placenta, when prævia, is also more exposed to shocks than when inserted into the fundus. For the cervix is so fixed that any sudden concussion is transmitted almost directly to the placental site; whereas, when it is inserted at the fundus, the shock is broken by the free mobility of the point of insertion. The effects of coitus and straining at stool are also much more likely to affect a placenta when prævia than when inserted normally.

Another very common error is the idea that, during the first stage of labour, the cervix becomes retracted or shortened. This is quite contrary to what is really the case; for the length of the cervix, instead of being in any way taken up or retracted, is, on an average, doubled during the first stage of labour; and its circumference is increased from that of the finger to that of the foetal head. This fact is beautifully shown in the accompanying plate, which is a copy of a section made by Braune of the frozen body of a woman who died at the end of the first stage of labour; and the mechanism by which this lengthening and thinning of the cervix are produced is illustrated by three plates copied from the last edition of Schroeder's *Midwifery* (pp. 149, 151).

The question of treatment need not now detain us very long. Our great object should be to separate the membranes freely from one edge of the placenta. If the cervix be dilated and the presentation partial, this is readily accomplished; and, once it is done, the placenta is free to move upwards and outwards along with the lower segment of the uterus, to which it is attached, and the hæmorrhage generally ceases. If the presentation be, however, complete, we must first separate the placenta at one side or other from the uterus; if possible, from that side to which it has the smallest attachment. If it be doubtful on which side the smaller segment lies, then we should, with a view to future turning, separate it at the side where we find by external examination that the legs of the child are situated. If we be unable to reach the membranes, and the hæmorrhage be formidable, we must plug until the membranes are within reach; and, if any considerable portion of the placenta overlap the inner os, we should turn as soon as practical, in the interest of the child. In no case of partial presentation should any artificial separation be attempted; for we can never tell the exact amount of separation that may be necessary to allow the inner os to become fully dilated. The only circumstances that justify the artificial separation of the placenta are where the presentation is complete, where it is done to convert the case into one of partial presentation, or in those rare cases where the total separation of the placenta may be advisable before the birth of the child.

5. The prevention and treatment of *post partum* hæmorrhage are perhaps the most important of all the questions that have been proposed. As it will be the subject of a paper by my friend Dr. Madden, I need not enter into it in detail. The most suggestive paper I have seen on the preventive treatment of *post partum* hæmorrhage is one read by Dr. McClintock before the Dublin Obstetrical Society, and which he has incorporated into his annotations to the Sydenham Society's new edition of Smellie's *Midwifery* (Smellie, vol. i, p. 386). There is one point, however, on which I think he hardly lays sufficient stress as a preventive of *post partum* hæmorrhage; and that is the careful management of the third stage of labour by what he himself has called the "Dublin method", an imperfect edition of which has lately been introduced into England as Credé's method, and has been written and spoken about as something quite new. The Dublin method differs from Credé's method, however, very considerably; for, whereas the former, if properly practised, renders *post partum* hæmorrhage extremely rare, Credé's method accomplishes nothing but the early expression of the placenta.

Another point on which there seems to be great confusion is the "peculiar hæmorrhage" described by Gooch, the peculiarity of which consists, according to this author, in an excited state of the circulation forcing the blood through a well-contracted uterus; in other words, *post partum* hæmorrhage from a well-contracted uterus. So little does this correspond to more modern ideas, that Dr. Barnes, when speaking of it, says: "I have no doubt that laceration of the cervix is the true explanation of that form of hæmorrhage which Gooch described as due to an over-distended circulation, driving blood through the contracted uterus" (*Obstetric Operations*, 1st edition, p. 455). If, however, we read Gooch's own description carefully, we will find that in not one instance that he gives did any hæmorrhage occur while the uterus was firmly contracted; for he again and again tells us that the hæmorrhage ceased as soon as he succeeded, by putting his hand into the uterus and applying cold, in arousing uterine contraction, but returned again as often as the uterus again relaxed. He says: "The first time I attended this lady, after the violence of the hæmorrhage was over, although the abdomen was covered with pounded ice, it returned again and again, slightly in degree, yet sufficiently, in the debilitated state of the patient, to produce alarming recurrences of faintness. The uterus, too, which had become firm and distinct, became so soft it could no longer be felt." He then poured a jug of cold water on the woman's abdomen from a height of several feet. "The effect", he says, "was instantaneous; the uterus, which the moment before had been so soft and indistinct as not to be felt within the abdomen, became small and hard, the bleeding stopped, and the faintness ceased" (Gooch *On the Diseases of Women*, p. 351). I think the idea Gooch intended to convey was that the

uterus had at first contracted well; but after a time the excited state of the circulation caused it again to relax, and profuse hæmorrhage to occur. For, when giving advice to medical practitioners, he says: "I advise them after delivery, though the uterus may feel contracted, to be slow to leave their patient if the circulation is greatly disturbed" (p. 359). Hæmorrhage from the site of the placenta, when the uterus is firmly contracted, is only possible when some cause such as retained placenta, fibrous tumour, or adhesions of the fundus, mechanically prevent the closure of the uterine sinuses.

Rupture of the cervix uteri is now very generally recognised as a not unfrequent cause of *post partum* hæmorrhage; and rupture of one of the crura of the clitoris has been known to lead to a fatal result: a fact to which I drew the attention of the profession in a report on midwifery published in the *Dublin Journal of Medical Science* for May 1876.

There is, I think, hardly any doubt that, with the exception of transfusion, the most powerful remedy we possess in combating the collapse which frequently follows severe *post partum* hæmorrhage, is the subcutaneous injection of sulphuric ether, as proposed by Professor von Hecker of Munich, and on the use of which I read a paper before the Dublin Obstetrical Society in March 1876, and which, it has since been amply proved, is thoroughly deserving of the high place in obstetric therapeutics which its original proposer claimed for it.

ON THE PREVENTION AND TREATMENT OF POST PARTUM HÆMORRHAGE.*

By THOMAS MORE MADDEN, M.D., M.R.I.A.,
Obstetric Physician to the Mater Misericordiarum Hospital, etc.

No circumstances can occur in medical or surgical practice calling more imperatively for the exercise of the highest qualities of the medical attendant, than those in which the midwifery practitioner may at any moment be placed when suddenly called on to treat a case of violent flooding. Nor can the power of the obstetric art be more strikingly illustrated than when it enables us to rescue from the tomb a patient who is pale, pulseless, unconscious, and collapsed from hæmorrhage after childbirth. Therefore, I think that it would be difficult to find any questions of greater importance that could occupy the attention of the Obstetrical Section of the British Medical Association than the prevention and treatment of flooding. And, although both these subjects have been discussed by obstetric writers in every age, from the dawn of our art in the Hippocratic treatise *Περὶ Γυναικείων* down to the present day, their further consideration is not unnecessary, as long as women still occasionally die from hæmorrhage after labour, despite all treatment.

With the advancement of midwifery, this lamentable accident has gradually become less and less frequent, and we have every reason to anticipate that in the more perfect obstetric practice of a not distant future its occurrence will be entirely unknown. To contribute towards this end, it behoves all who have extensive opportunities of trying different methods of preventing or arresting flooding to record their experience; for it is only by the accumulation of such individual experiences, that conclusions of practical value can be ever arrived at on disputed points in the practice of our art.

Within the last few years, several new methods of treating *post partum* hæmorrhage—such, for instance, as the uterine injection of solution of perchloride of iron, tincture of iodine, and hot water, or the hypodermic employment of ergotine, etc.—have been introduced into practice and each advocated as the remedy in all cases of this kind; whilst other plans of treatment which have not the recommendation of novelty are unduly neglected. Therefore, recognising the value of each of these in appropriate cases, and not believing in the universal applicability of any of them, I shall briefly submit to the Association my experience of some of the methods, old and new, which I have employed in hospital and private practice for the prevention or suppression of flooding.

At the present time, there appears to be a great tendency to resort to heroic treatment in all cases of so-called hæmorrhage. It should not be forgotten that a certain loss of blood is a normal, and within due limits a beneficial, accompaniment of the termination of labour. What these limits are cannot be rigidly defined; they depend on the condition of the patient in each case. But, in the majority of instances, a greater loss can be borne with impunity than seems to be generally supposed by those who resort to ergotine, or perchloride of iron, or the injection of hot water into the uterus, on the least appearance of hæmorrhage after delivery. In saying this, however, I certainly have no wish to depre-

ciate the value of any of these remedies, or, by underestimating the gravity of the accident under consideration, to encourage remissness in its recognition and treatment.

Causes of Post Partum Hæmorrhage.—In considering the prevention and treatment of this complication of labour, its causes must be referred to, and these vary widely. Inertia of the uterus, although the most frequent, is almost equalled in this respect as a cause of flooding by an intermittent action or alternate contraction and relaxation of the muscular fibres, so that at one instant we can feel the womb in what should be its normal condition immediately after labour—viz., as hard as a cricket-ball under our hand—and a moment later it relaxes, and becomes impossible to grasp.

The uterine action may be neither deficient in force nor intermittent, and yet fatal hæmorrhage may occur from the contraction being irregular or partial. The os and cervix may be firmly contracted, whilst the body is distended by hæmorrhagic effusion. Or we may have irregular uterine energy exhibited in the form of so-called hour-glass contraction. In one remarkable case, I have seen the uterine cavity thus divided into several distinct chambers, each filled by the effused blood.

I refer to this point merely to show that cases of hæmorrhage from irregular and generally too forcible uterine action obviously require very different treatment from the more frequent atonic powerless state of the uterus, although both may be productive of this accident.

Laceration of the cervix uteri is an occasional cause of severe *post partum* hæmorrhage. In my notes of nearly four thousand midwifery cases in hospital and private practice, only two cases of this kind are recorded. But, there is reason to anticipate that, when the practice recently advocated of applying the forceps before the natural dilatation of the os uteri becomes generally adopted, as seems likely, the next generation of midwifery practitioners will thenceforth have an ample opportunity of witnessing this accident than was the case in the practice of their possibly slower but certainly safer predecessors in the obstetric art.

Some of the other causes of flooding, such as the mismanagement of the third stage of labour, especially by the neglect of proper pressure over the uterus, or by attempts to hurry away the placenta by traction on the cord (which should never be touched for this purpose), and the causes of secondary hæmorrhage, have not been here referred to, being far too important to be summarily discussed in a short practical paper on *post partum* hæmorrhage.

In most instances, flooding is a preventable accident, and should be comparatively unfrequent in first confinements. Thus, of eighty-nine cases of this kind in the Dublin Lying-in Hospital, in only twenty-four instances were the patients primiparous. Moreover, the risk of this occurrence in any case is almost invariably in exact proportion to the number of the patient's previous confinements.

Having, therefore, in the first instance, ascertained the patient's obstetric history, we may prevent her from again suffering from hæmorrhage by prophylactic treatment suitable to her constitutional state. Thus, if she be plethoric, saline purgatives, restricted diet, avoidance of stimulants, and free exercise must be enjoined for some time before labour. If, on the contrary, as is more generally the case, she be anæmic or broken down by repeated childbearing, there is no better prophylactic of hæmorrhage, as I have found by experience, than a course of the old-fashioned tincture of the perchloride of iron, given in large doses for the last two months of pregnancy.

Flooding is occasionally obviously connected with the hæmorrhagic diathesis; and this condition, although rare amongst the well-fed upper and middle classes, is not uncommon amongst the half-starved wives of the poor in the humid atmosphere and rain-saturated soil of the city of Dublin. I have met with several cases of flooding occurring in patients who suffered from a general tendency to hæmorrhage from all the mucous surfaces, the gums, the nose, and stomach, in whom the most trifling operation or the slightest scratch gave rise to considerable bleeding, or the least bruise to extensive ecchymosis, and whose catamenia were either unduly frequent or excessive without any active disease to account for it. It may be added, that those who suffer from menorrhagia are almost invariably more liable than others to hæmorrhage after delivery. Therefore, whenever we are consulted beforehand by a pregnant woman who is of this diathesis, we should endeavour to prevent the probable occurrence of *post partum* hæmorrhage by correcting the impaired tonicity of the vessels and the morbid state of the blood, by the free administration of ferruginous tonics and a generous and nutritious regimen.

Many years ago, the connection between an excited state of the circulation during labour and subsequent flooding, was impressed on my mind by the late Dr. Churchill, at the bedside of a lady who was in the commencement of the second stage of labour, when he was thus enabled to forewarn me of flooding which followed some hours after delivery.

* Read in the Section of Obstetric Medicine at the Annual Meeting of the British Medical Association in Cork, August 1879.