The Bolingbroke Lecture

ON

THE TREATMENT OF ANTE-PARTUM HAEMORRHAGE.

DELIVERED AT THE BOLINGBROKE HOSPITAL.

BY

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WHEN I was asked to deliver this Bolingbroke Lecture I was told that I was free to choose any subject. I have chosen *ante-partum* haemorrhage because this is an event which always causes anxiety, and yet the rules for its treatment have not yet become so crystallized that they cannot be discussed without dealing in platitudes. I purpose to speak only of the kinds of haemorrhage that depend upon pregnancy: not of those that may occur also in women who are not pregnant.

The haemorrhages that are peculiar to pregnancy are conditioned by the existence of a placenta. The bleeding comes not from the placenta, but from the uterine wall to which the placenta was attached. Every one with an elementary knowledge of midwifery knows that these cases are divided into two classes—unavoidable and accidental. These names were introduced by the elder Rigby, whose book was published in 1776. The essential difference is that (with the exception of a few cases which are a sort of transition between the two kinds) in unavoidable haemorrhage or placenta praevia, however slight the bleeding, there is certain to be more before delivery; but this does not apply to accidental haemorrhage. The separation before delivery of a small or large part of the placenta, when it is not praevia, is called "*accidental*" because it is no necessary part of the process of childbirth, but is due to some cause or causes that have not yet been found out and therefore cannot be guarded against. In the large majority of cases the piece of placenta separated is only a small one, and is at the edge of the placenta. There being only a few vessels torn through, and those among the smaller utero-placental vessels, the bleeding is not great in amount and is soon stopped, first by the contraction of the uterus, which compresses the vessels, and then by the clotting of the blood in them.

It is next to impossible to give a numerical estimate of the frequency of accidental haemorrhage, because one patient will be frightened and send for the doctor on account of a loss of blood which a less fearful patient will say nothing about. No sharp definite line can be drawn between a great loss and a small one any more than you can between a dangerous wound and a slight one.

There is a distinction between two different kinds of accidental haemorrhage more important than that of the quantity lost—that is, the difference between internal and external haemorrhage, between concealed and revealed. In the external or revealed haemorrhage the vessels torn through are near the edge of the placenta; the blood separates the chorion from the decidua, trickles down to the os uteri, and escapes outside. The ease with which the chorion is detached from the decidua and the time that the blood takes to get to the os uteri is different in different cases; if it takes place slowly the blood will have time to clot, and then there will not be an escape of fluid which the patient recognizes as blood, but only of serous watery fluid.

The difference in gravity between concealed accidental haemorrhage and that which is from the first revealed is so great that some systematic writers on midwifery dismiss altogether cases in which the haemorrhage is not concealed as being too trifling to detain the reader.

The best estimate of the frequency of accidental haemorrhage, slight or great, that I can form is that it occurs in less than one case in a hundred. In the large majority of cases it is a trifle. The most dangerous cases—I might almost say the only dangerous cases—are those which are in the beginning cases of concealed or internal haemor-

rhage. This means that utero-placental vessels are torn through in the central part of the placenta, and blood is effused between the placenta and the uterus. In some cases the edge of the placenta is not detached, but the blood remains between the uterus and the placenta, bulging out the uterine wall into a hard, firm boss. The uterus is tolerant of gradual distension, but intolerant of sudden distension. The sudden distension caused by haemorrhage between uterus and placenta produces very severe pain, and an amount of collapse out of proportion to the amount of blood poured out. The blood may remain in this situation till after the patient has been delivered, but more often, when the haemorrhage was at first internal, it does not remain concealed until the end, but at some part the pressure of the effused blood overcomes the adhesion between the placenta and the uterine wall, and the blood escapes externally. The pressure on the uterine wall while the haemorrhage was still internal tends to weaken the contractile energy of the uterus and to favour the occurrence of dangerous *post-partum* haemorrhage.

It requires almost more courage and originality to revive what has been disused and almost forgotten than to come forward with a novelty. Sir W. J. Smyly has shown his possession of this courage and originality in his resuscitation of the practice of plugging the vagina for accidental haemorrhage. But admiring these great qualities, and knowing also the immense opportunities of clinical experience offered by the renowned institution over which Sir William Smyly for some years presided, I nevertheless cannot accept his judgement, even though supported by the distinguished men who have followed him as Master of the Rotunda.

I hold, on the contrary, that plugging the vagina in accidental haemorrhage (*a*) is faulty in theory, (*b*) has not brought improved results in practice, and (*c*) is horribly painful to the patient. For these three reasons I think it should be discarded from practice.

(*a*) The theory is that by plugging the vagina tightly enough its canal can be so occluded that the blood will be pent up behind the plug, cannot escape, and will in consequence so press upon the bleeding points that haemorrhage will be arrested.

The fault in this theory is that it assumes that the vagina is a rigid canal. But the vagina is a very dilatable canal. However tightly it is plugged the vagina soon dilates, and the plug within an hour or two becomes a slippery ball that easily moves within the relaxed vagina, so that blood can flow past it. And if it were possible actually for a long space of time to occlude the vagina this would not benefit the patient, for it would convert the case into one of concealed accidental haemorrhage, which is a more dangerous condition than that in which the blood escapes outside, for in concealed accidental haemorrhage the danger is of sudden distension of the uterus, producing severe pain and collapse, with temporary paralysis of the uterine muscle, leading to dangerous *post-partum* haemorrhage.

Concealed accidental haemorrhage is rare. Early in the last century attention was drawn to the subject of internal uterine haemorrhage by the death of Princess Charlotte of Wales,¹ and in 1818 the French Academy of Medicine offered a prize for the best essay on the subject. Baudelocque won the prize, and a silver medal was awarded to Madame Boivin. This lady and Madame Lachapelle could between them lay claim to the experience of 42,000 cases of labour. Madame Boivin not only had never seen a case of concealed accidental haemorrhage, but she did not believe in its possibility; and I ask attention to her reasons for not believing it. She said, "I cannot believe that the uterus, filled with the product of conception, can, at any stage of gestation, admit so considerable a volume of blood (unless it has been recently emptied), nor can the quantity be sufficient to occasion the death of the woman. *Internal haemorrhage in pregnancy, by over-distending this organ, is a sure means of determining its contractions; the disease itself becomes its own remedy* (*italics mine*). The internal uterine loss, instead of being more dangerous, is less so than an external one, the case being that of pregnancy." Since Madame Boivin's time many competent persons have observed concealed haemorrhage, so that we must without doubt pronounce her reasoning to be fallacious; but her fundamental fact is true—namely, that *the blood is poured out under great*

pressure—and her inference is partly true, for patients with concealed accidental haemorrhage do not die from the loss of the amount of blood that has been poured out between the uterus and the placenta before the child is born; they die because the effused blood stretches the uterus, produces great pain and nervous shock from the tension of the uterine wall, and temporarily paralyses the contractile power of the uterus, so that, when at last it is emptied, dangerous and often fatal *post-partum* haemorrhage follows. Now, note Madame Boivin's practical conclusion from her fallacious reasoning. She adds: "Were it otherwise, the tampon should be banished from the therapeutics of uterine haemorrhage." She saw that, if pressure on the vessels is effective in checking haemorrhage, a tampon in the vagina cannot do this anything like so effectively as the blood itself penned in between the placenta and the uterine wall. Madame Boivin's argument is not yet out of date, for the present Master of the Rotunda, Dr. Jellett, says: "If we prevent the blood which is being poured out from behind the placenta from leaving the uterus, the pressure inside the latter rapidly becomes equal to the blood pressure, and the haemorrhage ceases." This is exactly the theory upon which Madame Boivin refused to believe in the possibility of internal haemorrhage. As a therapeutic measure, it is on a par with the old practice of plugging the nares for epistaxis, now, I believe, almost disused, except that the nares can be effectively plugged, because the structures concerned are not capable of dilatation, whereas no plug will occlude the vagina for long.

There is, however, another and indubitable effect of plugging the vagina: The plug stimulates the uterus to contract, and this is what we want in accidental haemorrhage. But the question is not only what is good but what is best.

Pressure is the most primitive of all ways of stopping haemorrhage. The most accomplished operator at the present day, if he finds himself without proper instruments at hand, or without the needful light for their use, resorts to pressure to stop haemorrhage. It is therefore not surprising that in the early days of midwifery plugging the vagina was the first thing that was thought of in the treatment of haemorrhage during labour. From Paul of Aegina downwards, for accidental haemorrhage and for placenta praevia alike, midwives, male and female, used to stuff the vagina with towels, handkerchiefs, rolls of wool, lint, sponges, sometimes dry, sometimes wet, sometimes soaked in oil, butter, vinegar, alum, etc. It must be remembered that before the publication of the book of the elder Rigby in 1776, the profession had no clear conception of the difference between accidental haemorrhage and that due to placenta praevia. The use of a bag, to be placed in the vagina empty and then filled with air or water, began with Wellenberg in 1830. Since his time many kinds of bag and bladder have been used; some have put a bag in the vagina, some in the cervix. The latest kind of dilating bag, and, I think, the best, is that of Champetier de Ribes; and the part which this bag is designed to dilate is the cervix uteri. To this I shall recur presently.

I may mention that one advocate of the tampon actually says that by plugging the vagina he compresses the uterine arteries, and in that way stops the bleeding. He should tell that to the next surgeon he sees about to perform hysterectomy.

In short, I regard plugging the vagina for accidental haemorrhage as a treatment based on erroneous theory, the errors being: First, that the vagina can be thoroughly occluded; secondly, that retention of blood, if it could be accomplished, would stop the bleeding.

But theory ought not to count for much when confronted with the results of practice. What are these?

I take those of the Rotunda first. The death-rate among cases of accidental haemorrhage before Sir William Smyly had resuscitated the practice of plugging was 4.9 per cent. Since then it has been 4.5 per cent. Galabin (from whose work I take these figures) says that it is thus proved that plugging the vagina is a good treatment, but it is not yet finally demonstrated that it is better than the other method. The statistics of the results of treatment by plugging are very slightly better than those of the old method, not more than might be expected from the effect of modern improvements in antiseptic midwifery. I quote Dr. Galabin's opinion because elsewhere he says that this

treatment is now generally accepted. I think that the very small improvement in the results during the plugging period is amply accounted for by the much stricter antiseptic regulations of the later years.

A former Master of the Rotunda³ says that "treatment by plugging the vagina has met with far greater success than any other form of treatment." Has it? The late Master says "it is upon personal experience that we recommend it. It falls to the lot of the Master of the Rotunda Hospital to see so many cases of different severity that he learns to estimate with considerable accuracy the effect of different forms of treatment." In other words, the opinion of the Master of the Rotunda should be final.

In a book published in 1910 we have been told that in the six years previously there had been 39 cases. Nineteen were severe cases treated by plugging. There was one death. (P. 127.) In a table at the end of the book it is stated that there were two deaths. (P. 463.) The large number of "severe" cases—19 out of 39—shows that the Master of the Rotunda is easily convinced that a patient is in danger; more easily than Ramsbotham or Merriman. I think their results bear comparison with those of the Rotunda.

In every kind of bleeding from the placental site, the natural way in which bleeding is stopped is by uterine contraction, which compresses the vessels and arrests haemorrhage. The urgent need, therefore, is to bring about uterine contraction. The uterus cannot perfectly contract until it is empty; but the volume of the uterine content can quickly be diminished, and the tension within the uterine wall lessened, by rupturing the membranes. It is possible also that by putting on a tight binder some pressure can be applied directly on the bleeding points; though, as we cannot tell precisely where the bleeding points are, this is rather working in the dark; but the tight binder will do no harm, and it may do some good. If it is certain that there is no bony obstruction to delivery, and also that the child is a small one, it will be good to stimulate uterine contraction by giving ergot. As these cases are mostly multiparae, we usually have the help of a history as to former labours. In the worst cases—those in which the tension has made the wall of the uterus atonic—ergot unfortunately fails to make the uterus contract. But in such cases, though impotent for good, it is equally impotent for harm.

Mauriceau was, in 1688, the first person deliberately to teach the treatment of haemorrhage before delivery by rupturing the membranes. It was taught here by Francis Henry Ramsbotham,⁴ and I quote his experience. He says: "Out of twenty-five successive cases of this kind, of very aggravated nature, occurring within the space of eleven years, in twenty-three instances the labour was terminated naturally and safely after the rupture of the membranes, and in two the loss of blood had been so profuse before I saw the patients as to induce me to deliver artificially—in both instances with a fatal result."

Merriman, Ramsbotham tells us, "adopted the same means in upwards of thirty cases of accidental haemorrhage. . . . In every instance the discharge has either entirely ceased, or been so much diminished as to secure the safety of the patient; and yet there were some among these patients whose cases, from profuse haemorrhage, were abundantly alarming." I think Ramsbotham's experience justified his teaching, and I hope I am right in representing this as the prevalent teaching in the English schools of medicine.

Plugging the vagina has been for many generations a frequent resource against uterine haemorrhage of all kinds. It is difficult to find out the exact results of it as applied to accidental haemorrhage, because the early records of cases treated by plugging the vagina do not distinguish between placenta praevia and accidental haemorrhage. The reasons which dictate this treatment in the one kind of haemorrhage apply also to the other. If it checks the haemorrhage in accidental haemorrhage it should also check it in placenta praevia. Müller,⁵ writing in 1877, had collected 105 cases of placenta praevia treated by vaginal plugging; in 58 the bleeding was checked, in 47 it continued. Müller cautiously remarks, "We see well enough that the haemostatic effect of the tampon cannot be unconditionally trusted."

In placenta praevia there is a very clear and plausible reason for plugging the vagina. It is said that if you

pack the vagina very firmly the lower segment of the uterus—that is, the part which is bleeding—is compressed between the plug and the child's head. Now, this is plausible theoretically, but practically amounts to little, for the reason that the vagina is a canal capable of stretching. The knowledge of this has led the more thoroughgoing advocates of the vaginal plug to advise that plugging should be frequently repeated. This method of treatment of placenta prævia, though sound in intention, has now fallen out of practice because we have now better ways of pressing on the bleeding surface.

To my mind, therefore, plugging the vagina for accidental hæmorrhage is not only unsound in theory, but it has not given improved results in practice; and therefore I think my third reason—namely, that it is extremely disagreeable to the patient—should be enough to make a wise practitioner refrain from it. Its advocates insist much upon its being properly done.

Let me quote the picturesque description of a case given by a French writer.⁶ I have not met with an English description as dramatic and as clear:

"The bladder is emptied. The rectum was free. The vagina is cleaned, irrigated, rendered aseptic. The woman is put in the obstetrical position. To my left a nurse places herself with a large pot of sterilized vaseline. Professor Pajot says that about 500 grams (nearly a pound) is necessary. It is true. To my right, a midwife passes me, one after another, pads of absorbent wool, soaked in Van Swieten's solution, well expressed. The index and middle fingers of the left hand together touch with their pulp the lower segment. I take with the right the first pad, furnished with a double thread, and I plaster it with vaseline. The plugs form a cemented wall, the pads forming the stones and the vaseline the cement. I place the pad on the palmar surface of the fingers. I make it slip up with the thumb of the same hand, and I help it with the index of the free hand. The first pads are the most difficult to place. I dispose them as regularly as I can, like a crown, well piled up at the fundus. When the vagina begins to enlarge itself, the operation becomes easier. I unite the threads of the twenty-five first pads in a packet that I have held in one groin, to be out of the way. I use free plugs that I push at hazard into vacant spaces until there is a sensation of resistance. The cavity is filled, the perineum bulges, the vulva gapes. To get this result eighty-two pads of the size of a large nut are required. The operation is painful. The pad is pressed on by the perineum like a fetal part during expulsion. So one maintains it in position by a T bandage. I cause the woman to be isolated, for I am ignorant whether she has not been infected before admission; and I recommend, if the labour should be precipitate, to allow the plug and the fetus to be expelled. Next morning some plugs are withdrawn to allow the bladder to be emptied. They are white and dry. There has been no hæmorrhage—or, if there has been, the dyke has been insuperable. Pains feeble, contractions frequent, fetal heart inaudible, pulse rapid, temperature normal. I decide to remove the plug, for if it is a dyke against hæmorrhage, it is also a buttress against the expulsion of the child, driven on by mediocre contractions.

"Even the deepest plugs are free from smell. These are the only ones soaked. Their extraction is very painful. The threads are more troublesome than useful. It is necessary to break through this inextricable network, for to extract in one pull the whole mass of twenty-five plugs would be a torture, the vagina being sore, red, desquamated, as painful as a burn. The tampon has been described as heroic treatment. It may be; but what a punishment, and how many doors for infection it leaves open on the bleeding mucous membrane. The dilatation equalled a five-franc piece. Membranes intact. Although they were not tense, I dared not press on them to explore the fetal region. I have present to my mind the history of an accoucheur who, in examining, detached a cotyledon of the placenta. The woman, exhausted by antecedent losses, died, hardly giving him time to withdraw his finger.

"I ordered a large injection of boric solution, sublimate being intolerable in such a case; then the membranes were to be ruptured with a pointed instrument, not with the finger. Every effort at tearing them seemed to me dangerous, one would risk detaching some cotyledon.

Before this order was executed the bag of membranes burst spontaneously. A small, dead, slightly macerated fetus was expelled into the bed, followed almost immediately by voluminous black clots, and then the placenta and membranes. Examination showed that the margin of the placenta did not touch the cervix. About eight centimetres separated it from the opening in the membranes.

"The patient did well. It should have been incidentally mentioned that the urine before delivery was solid with albumen, but that this disappeared during the lying-in."

In this case the actual operation of plugging could not have been more perfectly carried out, and if we reason *post hoc ergo propter hoc*, we should pronounce it entirely successful. But I cannot help thinking that if this patient had been under the care of Ramsbotham he would have ruptured the membranes and given ergot, and the result would have been the same in the end, but the patient would have been spared the punishment, and probably been delivered more quickly.

The reply may be made, and it is a reasonable one: Experience shows that the vagina may be plugged without increasing the mortality; and it is possible that even if its benefits have been over-estimated, yet it is safer than doing nothing.

I think the torture that it causes to the patient is enough reason against it. If done with skilled assistance, sterilized instruments and plugging material, and careful supervision by skilled attendants, disaster is not likely to follow. But I am told there are those who teach that a midwife called to a case of accidental hæmorrhage should plug the vagina. Now an ordinary midwife cannot carry about in her bag a pound of sterilized vaseline and sterilized gauze or cotton-wool in quantity sufficient to fill up the vagina; and as the plugging is supposed to be wanted for the prompt arrest of bleeding, she cannot wait while these things are being procured. She must use what is at hand. Like her predecessors centuries ago, she will use handkerchiefs, towels, napkins, and the like. The midwife of to-day better understands the importance of cleanliness than did her predecessor of a hundred years ago, and she will therefore see that the things she uses are clean, in the domestic sense of the word. She may wait to boil them; but that takes time, and the waiting needs courage, if the patient is bleeding. She may saturate them in a germicidal solution. The duty of a midwife when called to a case of *ante-partum* hæmorrhage, as laid down by the rules of the Central Midwives Board, is to send for a registered medical practitioner; and there her duty ends, unless it be that she is in a place where a registered medical practitioner cannot be brought to the patient without dangerous delay; and I suppose it is in such circumstances that some may think it her duty to plug the vagina. If she does, in two hours' time she will find the plug loose in the vagina, and that if this canal is to be occluded she must take out the plug, and plug again. Repeated pluggings mean inevitable abrasions and small lacerations of mucous membrane and absorption of the germicidal drug that may have been used. A midwife may find great difficulty in persuading the patient to submit to such disagreeable treatment; and I think she had better not try, but content herself with rupturing the membranes and applying a binder.

But one cannot but admit that occasionally, even in hospital practice, there are bad cases in which the hæmorrhage is great; the patient is pale, the pulse small and quick, and yet the os uteri is so little dilated that if the labour is allowed to go on without interference it is probable that the patient will either die before she is delivered, or die from the hæmorrhage in the third stage of labour. If the vagina is plugged, the stimulation of the uterus will make delivery perhaps a little sooner, and the presence of the plug will for a little while prevent more blood from appearing outside, and in that way give the patient and her friends a fictitious sense of security. If plugging is done at all, it should be the cervix that is plugged, and the best plug is Champetier de Ribes's bag inserted after the membranes have been ruptured. This will more directly stimulate the uterus, prevent the escape of blood, and accelerate delivery, than any plug in the vagina. But assuming the case to be one in which there is cause for grave anxiety whether the patient will survive delivery, is plugging of any kind the best thing?

I think that in such a case the best hope lies in abdominal hysterectomy. Not the ordinary Caesarean

section, for in such a patient as I am imagining the bleeding on cutting into the uterus might be fatal. I should advise opening the abdomen, tying the ovarian and uterine arteries on both sides, so effectually guarding against haemorrhage, then opening the uterus and extracting the child, concluding the operation by amputating the uterus about a quarter or half an inch above the os internum, leaving the ovaries unless they should be found diseased. If the operation is completed in this manner the patient after recovery will still menstruate, so that she will have no reason to regard herself as unsexed. As accidental haemorrhage generally occurs in multiparae, the sterilization of the patient does not mean a great loss to her. If at the conclusion of the operation the patient's pulse is still small, its volume can be increased by filling up the abdomen with saline fluid.

It may be said: How, if we are dealing with a first pregnancy or with a woman still young enough to wish to have more children, is it the best thing to sterilize such a patient? The answer is that such cases are rare. Dangerous accidental haemorrhage is essentially a disease of multiparae. But assuming that we have to treat such a case, I would suggest that it would be good practice to perform Caesarean section, tying the uterine arteries before opening the uterus. The anastomoses between the branches of the ovarian and the uterine arteries would be enough to maintain the nutrition of the uterus.

I am told—I have no personal knowledge of the matter—that in America the uterine arteries have been repeatedly ligatured from the vagina in cases of placenta praevia, without any harm resulting. I think this is a very rational proceeding, for in placenta praevia the part bleeding is that chiefly supplied by the uterine arteries. It may be said, Why not do this for accidental haemorrhage? I do not think any harm would come of it, but, as we know of no way of determining the exact situation of the placenta, it might be that this part was chiefly supplied with blood by the ovarian arteries, and if so, no great effect would be produced by cutting off the flow from the uterine arteries. So that if the patient be really in danger I should regard trying the uterine arteries, except as a preliminary to immediate delivery, as a waste of time.

There is another mode of quick delivery which has of recent years come into vogue. I refer to rapid dilatation of the cervix with Bossi's dilator, or one of the modifications thereof. I take exception to the name of this instrument. It does not *dilate* the cervix; it tears it open. According to the dictionary the word "dilate" means to expand in all directions. When the cervix is opened up by the bag of membranes or by Champetier de Ribes's bag, the process takes many hours, but the cervix is expanded in all directions. But when it is rapidly forced open by diverging metal blades, it is not expanded in all directions, it is torn open in a few places. If proper precautions are taken to prevent infection, this tearing may be harmless. The bleeding from vessels torn across is, as every one knows, more quickly spontaneously checked than that from vessels divided by the clean cut of a sharp instrument. On the other hand, when the cervix is being torn open, it is not possible to control the direction or extent of the tear. I have been called upon to repair a vesico-vaginal fistula, produced by the manual opening up of the os uteri in a case of placenta praevia. The operator, when he began his manipulation, doubtless thought that he was going to "dilate" the cervix.

If the royal road to safety consisted in rapidly enlarging the cervix, so that the child can be dragged out by the vagina in a few minutes, I should think this could be done with less danger by Dührssen's operation of vaginal Caesarean section. I have not performed this operation, nor have I seen it done. Vaginal Caesarean section differs from the operation which is often called the classical Caesarean section in that it is not an operation the object of which is to avoid difficulty in delivery. It is only a method of effecting delivery more quickly than the natural forces will do it. The operator who performs vaginal Caesarean section may open the uterus, and get his hand on the child only to find that from contraction of the pelvis, large size of the child, or some other impediment, he cannot get the child out. In Caesarean section properly so called, not only can delivery be effected quickly, but all mechanical difficulty is avoided, for, if the incision in the uterus is long enough,

no mechanical difficulty can hinder the extraction of the child. The mortality of Caesarean section in Europe at the present time averages about 8 per cent. The mortality of vaginal Caesarean section is 14 per cent.,⁷ about double. It is not an operation to be undertaken by any one who has not entire confidence in his mastery of the method of stopping haemorrhage, and of the art of suture. From these comments it will easily be inferred that I do not think vaginal Caesarean section is an operation to be recommended for accidental haemorrhage.

To briefly sum up:

Accidental haemorrhage, slight in amount, is not uncommon, and seldom dangerous.

Concealed accidental haemorrhage is a very dangerous thing and is rare.

Plugging the vagina is bad treatment. Practically it is illusory, for it only prevents the escape of blood for a little while. Theoretically it is unsound, for if it did prevent the escape of blood from the uterus it would only convert the case into one of concealed haemorrhage, which is the most dangerous form. The private practitioner must also recollect that it is extremely disagreeable to the patient; to speak of it as "horrible torture" is scarcely too strong.

The best treatment for the majority of cases is to rupture the membranes. This acts instantly, lessens the tension within the uterus, and stimulates the uterus to contract. Before doing this, care should be taken that the long axis of the child coincides with the long axis of the uterus, and, if possible, that the head presents.

If the patient has lost so much blood that it seems likely that the inevitable haemorrhage of the third stage of labour will be fatal, then I think the best treatment will be amputation of the body of the uterus, after preliminary ligature of the vessels.

Placenta praevia, as a cause of unavoidable haemorrhage before delivery, has been known to many generations of medical men and midwives. Sir James Simpson, before the proper treatment of this condition had been made simple by Dr. Braxton Hicks and safe by Lord Lister, estimated the mortality of mothers with placenta praevia at 1 in 4 or more. Now, with due care, it does not exceed 1 in 20. Why this great difference? Why did the women with placenta praevia fifty years ago die in such numbers? First of all, because no patient with placenta praevia escaped internal examination, and no such patient was delivered without a wound. Before Lord Lister taught doctors and midwives how to procure asepsis by using antiseptics, many women with placenta praevia died because they were infected with septic poison by the vaginal examinations. This ought not to occur at the present time, and it will not occur when women are attended in their confinements solely by persons acquainted with the use of antiseptics.

There were and, I suppose, always will be, so long as human intelligence remains imperfect, a few who died from haemorrhage before the child was born. This is usually because the doctor either is not sent for soon enough or cannot get to the patient quickly enough, or it may be the patient's friends are perverse, and will not send for the doctor at all, or will not let him act when he does arrive. These cases are not usually due to any fault of the doctor.

The commonest cause of death, if the patient is not treated properly and early, is *post-partum* haemorrhage. Haemorrhage before delivery exhausts the patient, so that a moderate amount of bleeding in the third stage of labour is more than the ex-sanguine patient can tolerate.

But the most common cause of death in the past lay in the pernicious maxim, "Deliver as quickly as possible." This often meant that the medical attendant tore open the cervical canal, either with his fingers or his hands or with some dilator, or with the fetal head in the grasp of forceps, and dragged out the child, whether the uterus was contracting or not. The tearing open the cervix meant lacerations, the situation, extent, and direction of which the operator could not control; and the dragging out of the child while the uterus was passive was frequently followed by dangerous *post-partum* haemorrhage.

The path of safety is that laid down by Braxton Hicks, who in 1839 wrote that within the previous thirty years the mortality of placenta praevia had been reduced from 30 per cent. to somewhere near 5 per cent. He put the kernel of the matter thus: "The early handling of these

cases, and the general antiseptic management of midwifery cases, both before and after delivery, can rightly claim to have had much to do with these excellent results."

The first thing in the treatment of placenta praevia is never to forget that a pregnant woman with the placenta implanted on the lower uterine segment is not safe until she has been delivered. Therefore as soon as ever the diagnosis has been made, premature labour should be induced. The only reason that can be urged against the induction of labour in placenta praevia is the danger to the life of the child—the danger of its being killed by pressure on the cord during delivery, a risk which depends on the mode of delivery, and the danger of its death within a few hours or days after delivery from its being unable to assimilate food and maintain its body heat. This is a real, but only a comparative danger—a danger when compared with delivery of a child at term in a normal pregnancy. The pregnancy is not normal, and the longer it is allowed to go on the greater the danger both to mother and child. Therefore we ought to accept the fact that safety to the mother involves risk to the child from its premature birth, and induce labour as soon as the diagnosis of placenta praevia has been made.

I have already said that plausible reasons can be given for plugging the vagina in haemorrhage from placenta praevia which do not apply to accidental. But the reasons, though plausible, are not sound. I agree on this point with Braxton Hicks—a man whose name in this part of London ought to be, and will be, ever held in honour—who in 1889 wrote: "With regard to pressure by the tampon, I believe the general consensus in British midwifery is against its use, and with this I am in accord—partly because unless perfectly done, and this is difficult, it is of no use; and if perfectly done it is very distressing to the patient, especially if it be necessary, which it often is, to renew it to avoid septic generation. Still it has some advantages, because by distending the roof of the vagina we also dilate the os and provoke uterine action. But its action is tedious, and lacks the precision afforded us by the more recent methods."

In theory, of course, the doctor, when he goes to a case of labour, ought to be equipped with everything that can possibly be required. If some fatal or grave accident happens, and the doctor does not meet it with the best treatment, but when blamed pleads in extenuation of his fault that he had not the necessary instruments with him, he may be told that he ought to have had them. Books on obstetrical surgery assume that the accoucheur always has every instrument and drug at hand, for it is their business to teach the best thing, and not to describe makeshifts. Push this doctrine a little further, and apply it to every doctor on his daily round, and not only to the man in attendance on a labour, and you come to the principle that every doctor ought to carry about with him the wherewithal to perform every conceivable operation in surgery, which is absurd. There always will be emergencies in which the doctor has to do his best with his ten fingers and such adjuncts as can be carried in his waistcoat pocket. Supposing then a doctor with this scanty equipment is called to a case of placenta praevia, a long way from his house, what should he do? He will find the cervix uteri dilated enough to admit his finger. If it is not he cannot as a rule make the diagnosis. It is true that placenta praevia has been perceived by abdominal palpation, but this has been only in exceptional cases and by exceptional hands. The diagnosis cannot be made by the ordinary man until the finger can pass the internal os and feel the placenta. The bleeding occurs because the os internum has begun to dilate. When dilatation has begun the uterine contractions, which occur intermittently throughout pregnancy, tend to press the placenta into the dilating cervical canal. The placenta cannot move on without detachment of a small part of it bordering on the os uteri, and consequent bleeding from the severed uteroplacental vessels. Local violence may bring about detachment of a placenta which is praevia, but such cases are very rare, and cannot clinically be distinguished from accidental haemorrhage. The statement is true of nearly all cases of placenta praevia, that when the doctor reaches them after having been sent for on account of haemorrhage, the cervical canal is open enough to admit his finger. Being then able to pass his finger through the cervical canal, what is the doctor to do?

To settle this, let us first ask, What will happen if he does nothing? Let us first assume that the case goes on favourably. The favourable cases are those in which the uterine contractions are vigorous and frequent. If such good uterine action is present, each contraction presses the placenta through the os internum and into the cervical canal, and in doing so tears through vessel after vessel running from the uterus to the placenta. Each vessel, as it is torn through, bleeds. Each vessel, until it is torn through, is a hindrance to the proper dilatation of the os internum and the retraction of the lower uterine segment. The bleeding is stopped, first, by compression of the vessels, when the lower uterine segment is retracted, and then by thrombosis of the vessels. The successive haemorrhages weaken the patient; but if the labour has come on much before the full term of pregnancy the child will be small, and if the uterus acts powerfully the probability is that the child will be born before the patient has lost a dangerous amount of blood. After delivery good uterine contraction and retraction will continue, and the third stage of labour will be accomplished without disaster. But there are many possibilities. The pains may be weak and few. Then from every vessel that is torn across there will be bleeding until uterine contraction recurs. The attachment to it of the placenta will hinder the expansion of the lower uterine segment, and disturb the polarity of the uterus, making the separation of the placenta slow, and prolonging the period of bleeding from the torn vessels. The best way in which the doctor can use his fingers is to pass his finger through the os internum, sweep it round, and separate the placenta all round as far as he can reach. With his one finger he cannot reach much more than an inch and a half from the os uteri. He can thus separate the placenta over a circular area of about 3 in. in diameter. By so doing he helps to restore uterine polarity—that is, he promotes the contraction of the body of the uterus and retraction of the lower uterine segment. But although he has done something to promote uterine contraction, yet it may be slow in coming on, and the patient may lose a great deal of blood before retraction of the lower segment stops it, although not so much as if the case had been left to Nature. The next thing for the doctor to do is to put two fingers through the cervix instead of one. This amount of stretching can be done so gently that the term "dilatation" may be fairly applied to it. It is seldom that the middle of the placenta is exactly over the os internum. Usually when the doctor has stripped off the placenta all round as far as he can reach, he will at one place have come to the edge of the placenta.

When he has reached the edge of the placenta, he should rupture the membranes, seize the child's foot, and bring it down. To do this it will be necessary to still further gently dilate the cervical canal, so that it may allow two fingers, *plus* the child's foot, to pass through it. When the foot has been drawn through the cervical canal, the leg and thigh will easily follow it, and then the half breech comes to occupy the lower segment of the uterus. When this has been attained, the accoucheur can control the haemorrhage by pulling on the leg. This should be done gently, with no more force than is necessary to stop bleeding, so that the cervix may be dilated, and not torn. For the avoidance of *post-partum* haemorrhage the child should not be dragged out when the uterus is not acting; the uterus should be allowed to expel it, and, if possible, the placenta. As these labours are, or ought to be, premature, the child will be small, and there will be no mechanical difficulty; the uterus can, and will, expel the child, although it may take some time about it. This is the method of treatment recommended by Braxton Hicks. It is the method by which safety can be ensured for the mother in 95 per cent. of cases of placenta praevia, provided that it is carried out with strict antiseptic precautions. It is summarized in the words, Early turning, slow extraction, antiseptics.

But though this means safety for the mother, it is far from that for the child. The doctor who is about to carry out this treatment should always warn the parents that the interests of mother and child are in this condition antagonistic, and that it is his intention to act in the interest of the mother. Even if the child is born living, it will be so small and feeble that there will be difficulty in rearing it, and it will very likely be suffocated during

birth from prolonged pressure on the cord while the breech is slowly dilating the lower uterine segment.

However much we may think the march of invention has improved upon this method, yet cases will occur in which the need for treatment is urgent and the doctor has with him nothing but his hands. He must then either follow the simple method of Braxton Hicks, or let his patient go on bleeding.

Now let us consider what can be done when the patient is in a well-found lying-in hospital. We can hasten dilatation of the cervix, and at the same time stop haemorrhage by putting in Champetier de Ribes's bag. Since the days of Keiller and Robert Barnes many kinds of dilating bags have been made, and still are sold; and this great variety of instruments seems to me to show that the principles of construction of the dilating bag are not yet universally understood. I therefore ask your attention to the important points: First, the bag should be made of waterproof silk. This is the material that can be folded up in the smallest compass. It should not be made of india-rubber. India-rubber stretches, and therefore if the bag is elastic the operator cannot tell what the dimensions of the bag distended *in utero* may be. One of the objects of the bag is to press upon the lower segment of the uterus, and thus stop bleeding. This object cannot with certainty be attained with a bag of indeterminate shape. Another object of the bag is to dilate the cervix, so that the fetus may be delivered. I can see no advantage in inflicting on the patient successive operations, first a small bag, then a large one. Unless the patient is the subject of some pelvic deformity, the bag, when distended, should measure 3½ in. in diameter. When this bag has passed through the cervical canal the child can follow. The membranes are not necessarily ruptured in inserting Champetier de Ribes's bag; but if they are, as the bag plugs the lower segment of the uterus, much of the liquor amnii is retained. There is then no risk to the child in the actual delivery, but the danger to its life from having been prematurely born continues.

I know of no harm that has come from the careful use of a properly constructed Champetier de Ribes's bag. I have seen the statement made that rupture of the uterus is a risk that attends the use of this instrument. Rupture of the uterus may occur in easy labour, when there has been no interference, and therefore it may occur when Champetier de Ribes's bag is used; but I am not acquainted with any reported case in which there was reason to attribute the rupture to the use of this bag.

The method of treatment I have just described is simple and probably not unfamiliar. But it is not on that account unimportant. It has stood the test of trial, and by it Lord Lister and Braxton Hicks between them have brought down the mortality of placenta praevia from about 1 in 4 to something less than 1 in 20. But what about this 1 case in 20? We may be called to a case in which there has been great haemorrhage before the patient sent for treatment, and yet the cervix is but little dilated, although the patient is pallid from loss of blood.

A late famous surgeon, whose knowledge of obstetrics was less than his knowledge of surgery, Mr. Lawson Tait, recommended Caesarean section for placenta praevia. I am unable to concur with this. The collective mortality of Caesarean section is higher than that of placenta praevia; and I see no reason why in a patient rendered anaemic by bleeding from the placental site, Caesarean section should be attended with less risk than usual. By abdominal Caesarean section we avoid all mechanical difficulty and we can deliver quickly. Now in placenta praevia in order to prevent haemorrhage labour should be induced as soon as ever it has been found out that the placenta is praevia. The child will then be small, and there will be no mechanical difficulty in its delivery by the natural route. There is therefore no necessity for Caesarean section as a means of preventing difficulty in delivery. The risk of the child's death owing to its being born prematurely is the same whether it is delivered by Caesarean section or by the natural road.

If there were some good reason for performing Caesarean section in a case of placenta praevia, I think it would be sound practice to tie the uterine arteries before incising the uterus. It is not necessary to open the abdomen to tie the uterine arteries. This can be done by the vagina, and I am told that cases of placenta praevia have been successfully treated in this way in America. When the mortality

of hysterectomy was so high as to make surgeons welcome any less dangerous alternative, bleeding fibroids were sometimes treated by tying the uterine arteries by the vagina. I myself treated and published two such cases, in which I tied the uterine arteries by the vagina, and this reduced the monthly loss and produced no ill effect. These cases show that, after ligature of the uterine arteries, the collateral circulation is equal to maintaining the nutrition of the uterus. In a pregnant woman the operation would be easier than in a non-pregnant condition, for the reasons that in advanced pregnancy the cellular tissue is looser and the uterine arteries larger than in the unimpregnated state. The operation is a simple one. Seize the cervix uteri with a volsella and pull it down to the vulva. By pinching the mucous membrane up with a forceps determine the level at which the vesico-uterine cellular tissue begins. At this situation cut through the mucous membrane with blunt pointed scissors and extend the incision laterally through the vaginal fornix on each side. Then, with the finger or a blunt instrument, tear gently through the loose cellular tissue and separate the bladder and ureters from the uterus, taking care to carry the separation well out on each side. This done, you will be able with your finger to feel the uterine arteries beating on each side. Then with an aneurysm needle, or, better, with a needle specially made for the purpose (one of which can be bought in most instrument makers' shops), a ligature can be put round each artery and then tied. This will cut off the principal blood supply from the placental site.

Vaginal Caesarean section has been recommended. The mortality of this operation, in the latest table of results that I have seen, amounts to about 14 per cent., which is nearly double the average mortality of abdominal Caesarean section. It does not prevent mechanical difficulty in delivery. The objections that may be offered against the old Caesarean section appear to me to apply with greater force to the vaginal operation. A German critic has bluntly and crudely summed up the case against it that it is "too bloody an operation for private practice." In placenta praevia the part of the uterus cut into is precisely the most vascular part. It is true that bleeding can be controlled; but, granting this, I see no benefit to the patient from cutting open the uterus and dragging out the fetus in five minutes. It saves the time of the accoucheur, and that is the only advantage that I can see from it.

REFERENCES.

- ¹ See W. S. Playfair, *Science and Practice of Midwifery*, Part III, chapter ix. ² *Manual of Midwifery*, p. 708. ³ Hastings Tweedy and Wrench, *Practical Obstetrics*, 1910, p. 127. ⁴ *Principles of Obstetric Medicine and Surgery*, fifth edition, p. 428. ⁵ Müller, *Placenta Praevia*, 1877, S. 316. ⁶ *Consultations sur la grossesse l'accouchement*, etc. Par H. Stapfer, Paris, 1908, p. 39. ⁷ Dührssen, in Winckel's *Handbuch der Geburtshilfe*, Band III, Teil 1, S. 658, 1906. ⁸ On Placenta Praevia—in *Selected Essays and Monographs* (English). New Sydenham Society, 1901, p. 85.

THE usual monthly meeting of the Executive Committee of the Medical Sickness, Annuity, and Life Assurance Society was held at 429, Strand, London, W.C., on September 15th, under the chairmanship of Dr. de Havilland Hall. The accounts presented showed that the business of the society during the summer months had been unusually good. The number of new entrants has so far been greater this year than in any similar period of the operations of the society, while the disbursements for sickness claims have been well within the amount expected and provided for in the contribution rates. The great financial success of the society during the last few years has enabled the committee to add a further benefit to those already secured by membership in the society. This is in the shape of a sum payable at death of a member before reaching age 65. In future, on the death of a member who has secured £4 4s. per week, the following bonus will be paid to his representatives. If the death occur in the first ten years of membership the sum of £12, if in the second ten years the sum of £16, if in the third ten years the sum of £20, and if in the fourth ten years the sum of £24. This will in some degree mitigate the hardship felt when a member dies before 65, and thus loses the substantial cash bonus paid by the society to every member attaining that age. The financial result of the society's working for this year has been very satisfactory, and there is every reason to hope that when the books are closed next December a considerable addition will have been made to the already large reserves. Prospectuses and all further particulars on application to Mr. F. Addiscott, Secretary, Medical Sickness and Accident Society, 33, Chancery Lane, London, W.C.