

CHAPTER XIII.

HEMORRHAGE BEFORE DELIVERY: PLACENTA PRÆVIA.

THE hemorrhages which are the result of an abnormal situation of the placenta, partially or entirely over the internal os uteri, have formed a most fruitful theme for discussion. The explanation of the abnormal placental site, the sources of the blood and the causes of its escape, the means adopted by Nature for its arrest, and the proper treatment, have, each and all of them, been the subject of endless controversies, which are not yet by any means settled. It must be admitted, too, that the extreme importance of the subject amply justifies the attention which has been paid to it; for there is no obstetric complication more apt to produce sudden and alarming effects, and none requiring more prompt and scientific treatment.

Definition.—By *placenta prævia* we mean the insertion of the placenta at the lower segment of the uterine cavity, so that a portion of it is situated, wholly or partially, over the internal os uteri. In the former case there is *complete* or *central* placental presentation, in the latter an *incomplete* or *marginal* presentation.

Causes.—The causes of this abnormal placental site are not fully understood. It was supposed by Tyler Smith to depend on the ovule not having been impregnated until it had reached the lower part of the uterine cavity. Cazeaux suggests that the uterine mucous membrane is less swollen and turgid than when impregnation occurs at the more ordinary place, and that, therefore, it offers less obstruction to the descent of the ovule to the lower part of the uterine cavity. An abnormal size, or unusual shape, of the uterine cavity may also favor the descent of the impregnated ovule; the former probably explains the fact that placenta prævia more generally occurs in women who have already borne children. Müller believes that it results from uterine contractions occurring shortly after conception, which force the ovum down to the lower part of the uterine cavity. These are merely interesting speculations having no practical value, the fact being undoubted that, in a not inconsiderable number of cases—estimated by Johnson and Sinclair as 1 out of 573—the placenta is grafted partially or entirely over the uterine orifice, although it is now generally admitted that the placenta is never attached to any portion of the cervix itself.

History.—Placenta prævia was not unknown to the older writers, who believed that the placenta had originally been situated at the fundus, from which it had accidentally fallen to the lower part of the uterus. Portal, Levret, Roederer, and especially the British author Rigby, were among those whose observations tended to improve the

state of obstetrical knowledge as to its real nature. To Rigby we owe the term *unavoidable hemorrhage*, as a synonym for placenta prævia, and as distinguishing hemorrhage from this source from that resulting from separation of the placenta at its more usual position, termed by him, in contra-distinction, *accidental hemorrhage*. These names, adopted by most writers on the subject, are obviously misleading, as they assume an essential distinction in the etiology of the hemorrhage in the two classes of cases, which is not always warranted.

It is of the utmost importance to a right understanding of the nature and treatment of placenta prævia that we should fully understand the source of the hemorrhage and the manner of its production; but we shall be able to discuss this subject better after a description of the symptoms.

Symptoms.—Although the placenta must occupy its unusual site from the earliest period of its formation, it rarely gives rise to appreciable symptoms before the last three months of utero-gestation. It is far from unlikely, however, that such an abnormal situation of the placenta may produce abortion in the earlier months, the site of its attachment passing unobserved.

The earliest symptom which causes suspicion is the sudden occurrence of hemorrhage, without any appreciable cause. The amount of blood lost varies considerably. In some cases the first hemorrhage is comparatively slight, and is soon spontaneously arrested; but, if the case be left to itself, the flow after a lapse of time—it may be a few days, or it may be weeks—again commences in the same unexpected way, and each successive hemorrhage is more profuse. The losses show themselves at different periods. They rarely begin before the end of the sixth month, more often nearer the full period, and sometimes not until labor has actually commenced. The hemorrhage is said, but this is doubtful, to often coincide with what would have been a menstrual period; possibly on account of the physiological congestion of the uterine organs then present. Should the first loss not show itself until at or near the full time, it may be tremendous, and a few moments may suffice to place the patient's life in jeopardy. Indeed, it may be safely accepted as an axiom, that once hemorrhage has occurred, the patient is never safe; for excessive losses may occur at any moment without warning, and when assistance is not at hand. It often happens that premature labor comes on after one or more hemorrhages.

In any case of placenta prævia, when labor has commenced, whether premature or at the full time, the hemorrhage may become excessive, and with each pain fresh portions of placenta may be detached and fresh vessels torn and left open. Under these circumstances the blood often escapes in greater quantity with each successive pain, and diminishes in the interval. This has long been looked upon as a diagnostic mark by which we can distinguish between the so-called "unavoidable" and "accidental" hemorrhage; in the latter the flow being arrested during the pains. The distinction, however, is altogether fallacious. The tendency of uterine contraction in placenta prævia, as in all other forms of uterine hemorrhage, is to constrict the vessels from which the blood escapes, and so to lessen the flow. The appar-

ently increased flow during the pains depends on the pains forcing out blood which has already escaped from the vessels. In one way, up to a certain point, the pains do favor hemorrhage, by detaching fresh portions of placenta; but the actual loss takes place chiefly during the intervals, and not during the continuance of contraction.

On vaginal examination, if the os be sufficiently open to admit the finger, which it generally is on account of the relaxation produced by the loss of blood, we shall almost always be able to feel some portion of presenting placenta. If it be a central implantation, we shall find the aperture of the cervix entirely covered by a thick, boggy mass which is to be distinguished from a coagulum by its consistence, and by its not breaking down under the pressure of the finger. Through the placental mass we may feel the presenting part of the fœtus; but not as distinctly as when there is no intervening substance. In partial placental presentations the bag of membranes, and above it the head or other presentation, will be found to occupy a part of the circle of the os, the rest being covered by the edge of the placenta. In marginal presentations we may only be able to make out the thickened edge of the afterbirth, projecting at the rim of the os. If the cervix be high, and the gestation not advanced to term, these points may not be easy to make out, on account of the difficulty of reaching the cervix; and, as accurate diagnosis is of the utmost importance, it is proper to introduce two fingers, or even the whole hand, so as thoroughly to explore the condition of the parts. The lower portion of the uterine ovoid may be observed to be more than usually thick and fleshy; and Gendrin has pointed out that ballottement cannot be made out. The accuracy of our diagnosis may be confirmed, in doubtful cases, by finding that the placental bruit is heard over the lower part of the uterine tumor.

Dr. Wallace¹ has suggested that vaginal auscultation may be serviceable in diagnosis, and states that, by means of a curved wooden stethoscope, the placental bruit may be heard with startling distinctness. This is, however, a manoeuvre that can hardly be generally carried out in actual practice.

It is now generally admitted by authorities that the immediate source of the hemorrhage is the lacerated utero-placental vessels. Only a few years ago Sir James Y. Simpson advocated, with his usual energy, the theory, sustained by his predecessor, Dr. Hamilton, that the chief, if not the only, source of hemorrhage was the detached portion of the placenta itself. He argued that the blood flowed from the portion of the placenta which was still adherent into that which was separated, and escaped from the surface of the latter; and on this supposition he based his practice of entirely separating the placenta, having observed that, in many cases in which the afterbirth had been expelled before the child, the hemorrhage had ceased. The fact of the cessation of the hemorrhage, when this occurs, is not doubted; but Simpson's explanation is contested by most modern writers, prominent among whom is Barnes, who has devoted much study to the elucidation of the subject.

¹ Edin. Med. Journ., vol. 1872-73, p. 427.

He points out that the stoppage of the hemorrhage is not due to the separation of the placenta, but to the preceding or accompanying contraction of the uterus, which seals up the bleeding vessels, just as it does in other forms of hemorrhage. The site of the loss was actually demonstrated by the late Dr. Mackenzie in a series of experiments, in which he partially detached the placenta in pregnant bitches, and found that the blood flowed from the walls of the uterus, and not from the detached surface of the placenta. The arrangement of the large venous sinuses, opening as they do on the uterine mucous membrane, favors the escape of blood when they are torn across; and it is from them, possibly to some extent also from the uterine arteries, that the blood comes, just as in post-partum hemorrhage, when the whole, instead of a part, of the placental site is bared.

Various explanations have been given of the causes of the hemorrhage. For long it was supposed to depend on the gradual expansion of the cervix during the latter months of pregnancy, which separated the abnormally placed placenta. It has been seen, however, that this shortening of the cervix is apparent only, and that the cervical canal is not taken up into the uterine cavity during gestation, or, at all events, only during the last week or so. This, therefore, cannot be admitted as an explanation of placental separation. Jacquemier proposed another theory, which has been adopted by Cazeaux. He maintains that during the first six months of utero-gestation the superior portion of the uterus is more especially developed, as shown by the pyriform shape of the fundus during the time; and that, as the placenta is usually attached in that situation, and then attains its maximum of development, its relations to its attachments are undisturbed. During the last three months of pregnancy, on the contrary, the lower segment of the uterus develops more than the upper, while the placenta remains nearly stationary in size; the inevitable result being a loss of proportion between the cervix and the placenta, and the detachment of the latter. There are various objections which can be brought against this theory; the most important being that there is no evidence at all to show that the lower segment of the uterus does expand more in proportion than the upper during the latter months of pregnancy. Barnes's theory 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. The placenta, on this hypothesis, grows away from the site of its attachment, and hemorrhage results. It will be observed that neither this theory nor that propounded by Jacquemier is readily reconcilable with the fact that hemorrhage frequently does not begin until labor has commenced at term. Inasmuch as the loss of relation between the placenta and its attachments, which they both presuppose, must exist in every case of placenta prævia, hemorrhage should always occur during some part of the last three months of pregnancy. Matthews Duncan¹ has recently investigated the whole subject at length, and maintains that the hemorrhages are

¹ Edin. Med. Journ., vol. 1873-74, pp. 385, 520; and Brit. Med. Journ., 1873, vol. II, pp. 499, 507, 625.

accidental, not unavoidable, being due to causes precisely similar to those which give rise to the occasional hemorrhages when the placenta is normally placed. The abnormal situation of the placenta of course renders these causes more apt to operate; but in their action he believes them to be precisely similar to those of accidental hemorrhage, properly so called. Separation of the placenta from expansion of the cervix he believes to be the cause of hemorrhage after labor has begun, and then it may strictly be called unavoidable; but hemorrhage is comparatively seldom so produced during the continuance of pregnancy. "There are," says Duncan, "four ways in which this kind of hemorrhage may occur:

"1. By the rupture of a utero-placental vessel at or about the internal os uteri.

"2. By the rupture of a marginal utero-placental sinus within the area of spontaneous premature detachment, when the placenta is inserted not centrally or covering the internal os, but with a margin at or near the internal os.

"3. By partial separation of the placenta from accidental causes, such as a jerk or fall.

"4. By a partial separation of the placenta, the consequence of uterine pains producing a small amount of dilatation of the internal os. Such cases may be otherwise described as instances of miscarriage commencing, but arrested at a very early stage."

I see no reason to doubt the possibility of hemorrhage being due, in many cases, to the first three causes, and in its production it would strictly resemble accidental hemorrhage. The fourth heading refers the hemorrhage to partial separation, in consequence of commencing dilatation of the cervix, but it explains the dilatation by the supposition of commencing miscarriage. This latter hypothesis seems to be as needless as those which presuppose a want of relation between the placenta and its attachments. We know that, quite independently of commencing miscarriage, uterine contractions are constantly occurring during the continuance of pregnancy. There is no reason to suppose that these contractions do not affect the cervical as well as the fundal portions of the uterus; and in cases in which the placenta is situated partially or entirely over the os, one or more stronger contractions than usual may, at any moment, produce laceration of the placental attachments in that neighborhood.

Pathological Changes in the Placenta.—A careful examination of the placenta may show pathological changes at the site of separation, such as have been described by Gendrin, Simpson, and other writers. They probably consist of thromboses in the placental cotyledons, and effused blood-clots, variously altered and decolorized, according to the lapse of time since separation took place. Changes occur in the portion of the placenta overlying the os uteri, whether separation has occurred or not. There may be atrophy of the placental structure in this situation, as well as changes of form, such as complete or partial separation into two lobes, the junction of which overlies the os uteri.¹

¹ Sinelivus: Arch. gén. de Méd., 1861, tom. II.

The history of delivery, if left to Nature, is specially worthy of study, as guiding to proper rules of treatment. It sometimes happens, when the pains are very strong and the delivery rapid, that labor is completed without any hemorrhage of consequence. "Although," says Cazeaux, "hemorrhage is usually considered to be inevitable under such circumstances, yet it may not appear even during the labor; and the dilatation of the os uteri may be effected without the loss of a drop of blood." Again, Simpson conclusively showed that, when the placenta was expelled before the birth of the child, all hemorrhage ceased.

Barnes's theory of placenta prævia, which has been pretty generally adopted, explains satisfactorily both these classes of cases.

He describes the uterine cavity as divisible into three zones or regions. When the placenta is situated in the upper or middle of these zones, no separation or hemorrhage need occur during labor. When, however, it is situated partially or entirely in the lower or cervical zone, the expansion of the cervix during labor must produce more or less separation and consequent loss of blood. As soon as the previous portion of the placenta is sufficiently separated, provided contraction of the uterine tissue be present to seal up the mouths of the vessels, hemorrhage no longer takes place. The placenta may not be entirely detached, but no further hemorrhage occurs, in consequence of the remaining portion being engrafted on the uterus beyond the region of unsafe attachment.

In the former, then, of these classes of cases, the absence of hemorrhage is explained on this theory, by the pains being sufficiently rapid and strong to complete the separation of the placental attachment from the lower cervical zone before flooding had taken place; in the latter it ceases, not necessarily because the entire placenta is expelled, but because of its detachment from the area of dangerous implantation.

The amount of cervical expansion required for this purpose varies in different cases. Dr. Duncan¹ estimates the limit of the spontaneous detaching area to be a circle of four and a half inches diameter, and that, after the cervix has expanded to that extent, no further separation or hemorrhage takes place. To admit of the passage of a full-sized head, Barnes estimates that expansion to about a circle of six inches diameter is necessary; on the other hand, he has sometimes observed "that the hemorrhage has completely stopped when the os uteri opened to the size of the rim of a wineglass, or even less."

It will be seen then that in this, as in every other form of puerperal hemorrhage, the tendency of uterine contraction is to check the hemorrhage; and that, provided the pains are sufficiently energetic, Nature may be capable of stopping the flooding without artificial aid. It is but rarely, however, that she can be trusted for this purpose; and we shall presently see that these theoretical views have an important practical bearing on the subject of treatment.

Prognosis.—The prognosis to both the mother and child is certainly

¹ Obst. Trans., 1874, vol. xv. p. 189.

grave in all cases of placenta prævia. Read, in his treatise on placenta prævia, estimates the maternal mortality, from the statistics of a large number of cases, as one in four and a half cases, and Churchill as one in three. This is unquestionably too high an estimate, and based on statistics the accuracy of which cannot be relied on. The mortality will, of course, greatly depend on the treatment adopted. Doubtless, if cases were left to Nature, the result would be quite as unfavorable as Read supposes. But if properly managed, much more successful results may safely be anticipated. Out of sixty-seven cases recorded by Barnes, the deaths were six, or one in eight and a half. Under any circumstances the risks to the mother are very great. Churchill estimates that more than half the children are lost. The reasons for the great danger to the child are very obvious, subjected as it is to the risk of asphyxia from the loss of the maternal blood, and from its oxygenation being carried on during labor by a placenta which is only partially attached; many children also perish from prematurity, or from malpresentation.

Treatment.—Whenever, in the latter months of pregnancy, a sudden hemorrhage occurs, the possibility of placenta prævia will naturally suggest itself; and by a careful vaginal examination, which under such circumstances should always be insisted on, the existence of this complication will generally be readily ascertained. It is seldom that the os is not sufficiently dilated to enable us to satisfy ourselves whether the placenta is presenting.

The first question that will arise is, Are we justified in temporizing, using means to check the hemorrhage, and allowing the pregnancy to continue? This is the course which has generally been recommended in works on midwifery. We are told to place the patient on a hard mattress, not to heat or overburden her with clothes, to keep her absolutely at rest, to have the room cool and well aired, to apply cold cloths to the vulva and lower part of the abdomen, to administer cold and acidulated drinks in abundance, and to prescribe acetate of lead and opium, or gallic acid, on account of their supposed hæmostatic effect. Of late years the judiciousness of these recommendations has been strongly contested. Not long ago an interesting discussion took place at the Obstetrical Society of London,¹ on a paper in which Dr. Greenhalgh advised the immediate induction of labor in all cases of placenta prævia. No less than six metropolitan teachers of midwifery took part in it, and, although they differed in details, they all agreed as to the unadvisability of allowing pregnancy to progress when the existence of placenta prævia had been distinctly ascertained. The reasons for this course are obvious and unanswerable. The labor, indeed, very often comes on of its own accord; but should it not do so the patient's life must be considered to be always in jeopardy until the case is terminated, for no one can be sure that most dangerous, or even fatal, flooding may not at any moment come on; and the nearer to term the patient is, the greater the risk to which she is subjected. Nor is the safety of the child likely to be increased by delay. Pro-

¹ Obst. Trans., 1865, vol. vi. p. 158.

vided it has arrived at a viable age, the chances of its being born alive may be said to be greater if pregnancy be terminated at once, than if repeated floodings occur. I think, therefore, that it may be safely laid down as an axiom, that no attempt should be made to prevent the termination of pregnancy, but that our treatment should rather contemplate its conclusion as soon as possible. An exception may, however, be made to this rule when the hemorrhage occurs for the first time before the seventh month of utero-gestation. The chances of the child surviving would then be very small, and if the hemorrhage be not alarming, as at that early period is likely to be the case, the measures indicated above may be employed, in the hope of carrying on the pregnancy until there is a prospect of the patient being delivered of a living child. But little benefit is likely to accrue from astringent drugs. Perfect rest in bed is more likely to be beneficial than anything else.

When the period of pregnancy, or the urgency of the case, determines us to forego any attempt at temporizing, there are various plans of treatment to be considered. These are chiefly: 1. *Puncture of the membranes.* 2. *Plugging the vagina.* 3. *Turning.* 4. *Partial or complete separation of the placenta.* It will be well to consider in detail the relative advantages of, and indications for, each of these. It is seldom, however, that we can trust to any one *per se*; in most cases, two or more are required to be used in combination.

1. **Puncture of the membranes** is recommended by Barnes as the first measure to be adopted in all cases of placenta prævia sufficient to cause anxiety. "It is," he says, "the most generally efficacious remedy, and it can always be applied." The primary object gained is the increase of uterine contraction by the evacuation of the liquor amnii. Although the first effect of this may be to increase the flow of blood by further separation of the placenta, the flooding can generally be commanded by plugging until the os is sufficiently dilated to permit the passage of the child. As a rule, there is no great difficulty in effecting the puncture, especially if the placental presentation be only partial. A quill, or other suitable contrivance, guided by the examining finger, is passed through the cervix and pushed through the membranes. In complete placenta prævia it may not be so easy to effect the evacuation of the liquor amnii; and, although many authorities advise the penetration of the substance of the placenta itself, I am inclined to think that it would be better to abandon the attempt, in such cases, and trust to other methods of treatment.

The objections which have been raised to puncture of the membranes are chiefly that it interferes with the gradual dilatation of the os, and renders the operation of turning much more difficult. The os is not, however, so regularly dilated by the bag of membranes in cases of placenta prævia as it is in ordinary labors. Moreover, as the cervical tissues are generally relaxed by the hemorrhage, the dilatation is easily effected. Should we desire to dilate the os preparatory to turning, we can readily do so by means of fluid dilators. The new dilator of Champetier de Ribes will probably be found very useful, since it will not only rapidly and effectively dilate the cervix and thus pre-

pare the way for subsequent turning, but also act as an efficient plug. The objections, therefore, are not so weighty as they might have been before these artificial dilators were used. I am inclined, for these reasons, to agree with the recommendation that puncture of the membranes should be resorted to in all cases of placenta prævia.

2. **Plugging of the vagina**, or, still better, of the cavity of the cervix itself, is especially serviceable in cases in which the os is not sufficiently dilated to admit of turning, or of separation of the placenta, and in which the hemorrhage still continues after the evacuation of the liquor amnii. By means of this contrivance the escape of blood is effectually controlled.

A good way of plugging is to introduce a sponge tent of sufficient size into the cervical canal, and to keep it *in situ* by a vaginal plug; the best material for the latter, and the method of introduction, are described under the head of Abortion (p. 262). The sponge tent not only controls the hemorrhage more effectually than any other means, but is, at the same time, effecting dilatation of the cervix. It cannot be left in many hours, on account of the irritation produced and of the fetor from accumulating vaginal discharges, and the consequent risk of septic absorption. This is by no means slight, and it is now pretty generally recognized that the plug should not be used unless other means of treatment are inapplicable on account of the want of dilatation of the os. As long as it is in position, we should carefully examine, from time to time, to see that no blood is oozing past it. If preferred, a Barnes bag may be used for the same purpose.

While the plug is *in situ* other modes of exciting uterine action may be very advantageously employed, such as a firm abdominal bandage, occasional friction over the uterus, and repeated doses of ergot. The last is specially recommended by Dr. Greenhalgh, who used, at the same time, a plug formed of an oblong India-rubber ball inflated with air and covered with spongio-piline.

On the removal of the plug we may find that considerable dilatation has taken place, perhaps to a sufficient extent to admit of labor being safely concluded by the natural efforts. In that case we shall find that, although the pains continue, no fresh hemorrhage occurs. Should it do so, it will be necessary to adopt further measures.

3. **Turning** has long been considered the remedy *par excellence* in placenta prævia; and it is of unquestionable value in suitable cases. Much harm, however, has been done when it has been practised before the os was sufficiently dilated to admit of the passage of the hand, or when the patient was so exhausted by previous hemorrhage as to be unable to bear the shock of the operation. The records of many fatal cases in the practice of those who taught, as did the large majority of the older writers, that turning at all risks was essential, conclusively prove this assertion.

It is most likely to prove serviceable when, either at first or after the use of the tampon, the os is sufficiently dilated to admit the hand, and when the strength of the patient is not much enfeebled. If she have a small, feeble, and thready pulse, it is certainly inapplicable, unless all other methods of arresting the hemorrhage have failed.

And, even then, it would be well to attempt to rally the patient from her exhausted state by stimulants, etc., before the operation is commenced.

Provided the placental presentation be partial, the operation can be performed without difficulty in the usual way. In central implantation the passage of the hand may give rise to some difficulty. Dr. Rigby recommends that it should be pushed through the substance of the placenta until it reaches the uterine cavity. It is hardly possible to conceive how this could be done without completely detaching the placenta, and still less to understand how the fetus could be dragged through the aperture thus made. It will be far better to pass the hand by the border of the placenta, separating it as we do so; and, if we can ascertain to which side of the cervix it is least attached, that should be chosen for the purpose. In all cases in which it is possible, turning by the bi-polar method should be preferred. In cases of placenta prævia especially it offers many advantages. The operation can be soon performed; complete dilatation of the os is not so necessary; and it involves less bruising of the cervix, which is likely to be specially dangerous. When once a lower extremity has been brought within the os, the delivery should not be hurried. The limb of the child forms a plug, which effectually prevents all further loss; and we may then safely wait until we can excite uterine contraction and terminate the labor with safety. The results of this method of treating placenta prævia have been excellent. Hoffmeier relates thirty-seven cases managed in this way with only one death, and Behm thirty-five with none.¹ Fortunately, the relaxation of the uterus, which is so often present, facilitates this manner of performing version, and it can generally be successfully accomplished. Should the case be one which is otherwise suitable for turning, and the requisite amount of dilatation of the cervix not be present, the latter can generally be effected in the space of an hour or more (while at the same time a further loss of blood is effectually prevented) by the use of fluid dilators.

4. **Entire separation of the placenta** was originally recommended by Simpson in his well-known paper on the subject. The reasons which induced him to recommend it have already been stated. It is a mistake to suppose, however, as is so often done, that he intended to recommend it in all cases alike. This supposition he was always careful to deny. He advised it especially—

1. When the child is dead.
2. When the child is not yet viable.
3. When the hemorrhage is great and the os uteri is not yet sufficiently dilated for safe turning. This was the state in eleven out of thirty-nine cases (Lee).
4. When the pelvic passages are too small for safe and easy turning.
5. When the mother is too exhausted to bear turning.
6. When the evacuation of the liquor amnii fails.
7. When the uterus is too firmly contracted for turning.²

¹ Zeitschr. f. Geburt. und Gynäk., 1882, Bd. viii. S. 89; 1883, Bd. ix. S. 373, "Die combinirte Wendung bei Placenta Prævia."

² Selected Obst. Works, p. 68.

These are very much the cases in which all modern accoucheurs would exclude the operation of turning; and it was specially when that was unsuitable that Simpson advised extraction of the placenta. As his theory of the source of hemorrhage is now almost universally disbelieved, so has the practice based on it fallen into disuse, and it need not be discussed at length. It is very doubtful whether the complete separation and extraction of the placenta was a feasible operation; unquestionably it can be by no means so easy as Simpson's writings would lead us to suppose. The introduction of the hand far enough to remove the placenta in an exhausted patient would probably cause as much shock as the operation of turning itself; and another very formidable objection to the procedure is the almost certain death of the child, if any time elapse between the separation of the placenta and the completion of delivery. The modification of this method, so strongly advocated by Barnes, is certainly much easier of application, and would appear to answer every purpose that Simpson's operation effected. It is impossible to describe it better than in Barnes's own words:¹

"The operation is this: Pass one or two fingers as far as they will go through the os uteri, the hand being passed into the vagina if necessary; feeling the placenta, insinuate the finger between it and the uterine wall; sweep the finger round in a circle so as to separate the placenta as far as the finger can reach; if you feel the edge of the placenta, where the membranes begin, tear open the membranes carefully, especially if these have not been previously ruptured; ascertain, if you can, what is the presentation of the child before withdrawing your hand. Commonly, some amount of retraction of the cervix takes place after the operation, and *often the hemorrhage ceases.*"

It will be seen from what has been said, that no one rule of practice can be definitely laid down for all cases of placenta prævia. Our treatment in each individual case must be guided by the particular conditions that are present; and, if only we bear in mind the natural history of the hemorrhage, we may confidently expect a favorable termination.

It may be useful, in conclusion, to recapitulate the rules which have been laid down for treatment in the form of a series of propositions:

1. Before the child has reached a viable age, temporize, provided the hemorrhage be not excessive, until pregnancy has advanced sufficiently to afford a reasonable hope of saving the child. For this purpose the chief indication is absolute rest in bed, to which other accessory means of preventing hemorrhage, such as cold, etc., may be added.
2. In hemorrhage occurring after the seventh month of utero-gestation, no attempt should be made to prolong the pregnancy.
3. In all cases in which it can be easily effected, the membranes should be ruptured. By this means uterine contractions are favored and the bleeding vessels compressed.
4. If the hemorrhage be stopped, the case may be left to Nature.

¹ *Obstet. Operations*, 2d ed., p. 417.

If flooding continue, and the os be not sufficiently dilated to admit of the labor being readily terminated by turning, the os and the vagina should be carefully plugged, while uterine contractions are promoted by abdominal bandages, uterine compression, and ergot. The plug must not be left in beyond a few hours, and careful antisepsis should be used.

5. If, on removal of the plug, the os be sufficiently expanded, and the general condition of the patient be good, the labor may be terminated by turning, the bi-polar method being used if possible, and the lower extremity of the child will form a plug until delivery is completed. If the os be not open enough, it may be advantageously dilated by a fluid dilator bag, which also acts as a plug.

6. Instead of, or before resorting to, turning, the placenta may be separated around the site of its attachment to the cervix. This practice is specially to be preferred when the patient is much exhausted and in a condition unfavorable for bearing the shock of turning.

[Dr. J. Braxton Hicks's bimanual method of turning, as tested in Berlin by Drs. Hofmeier, Behm, and Lomer, promises much better results than any other method of treatment in cases of placenta prævia. According to Dr. Lomer's report in the *Amer. Journ. of Obstetrics* for December, 1884, Dr. Hofmeier operated upon 37 cases, and saved 36 women and 14 children; Dr. Behm, upon 40 cases, all saved, but lost 31 children; and he himself, with eight other assistants, upon 101 cases, saving 94, with 50 children. This gives 8 deaths of women and 105 of children in 178 cases, or a mortality of 4½ per cent. of the former and 60 per cent. of the latter. Dr. Lomer's directions are as follows: "Turn by the bimanual method as soon as possible; pull down the leg, and tampon with it and with the breech of the child the ruptured vessels of the placenta. *Do not extract the child then; let it come by itself, or at least only assist its natural expulsion by gentle and rare tractions. Do away with the plug as much as possible; it is a dangerous thing, for it favors infection and valuable time is lost with its application. Do not wait in order to perform turning until the cervix and the os are sufficiently dilated to allow the hand to pass. Turn as soon as you can pass one or two fingers through the cervix. It is unnecessary to force your fingers through the cervix for this. Introduce the whole hand into the vagina, pass one or two fingers through the cervix, rupture the membranes, and turn by Braxton Hicks's bimanual method.*" . . . "If the placenta is in your way, try to rupture the membranes at its margin; but if this is not feasible, do not lose time; perforate the placenta with your finger; get hold of a leg as soon as possible, and bring it down."—ED.]