

ART. XV.—*The Physiology and Treatment of Placenta Prævia*. Being the Lettsomian Lectures on Midwifery for 1857. By ROBERT BARNES, M.D., F.S.S., &c. &c. London: John Churchill, 1858. 12mo. pp. 208.

THE difficulties attendant upon the management of cases in which the placenta is attached to the cervix uteri, the diversity of views held by practitioners of acknowledged experience as to its proper conduct, the high mortality which has everywhere been found to attend it where the records of a large number of deliveries can be consulted, and the importance of the interests at stake, invest with unusual interest every suggestion calculated to throw light upon the physiology of placenta prævia, or its successful treatment.

Dr. BARNES has been for some time favourably known by his contributions to the pathology of the placenta. The present volume is devoted to the exposition of certain original views in relation to the physiology and treatment of placenta prævia, which are introduced by a sketch of the doctrines generally taught.

Nearly all the older writers recognized the attachment of the placenta to the cervix, though some considered it as having been accidentally detached from the fundus and fallen down; and they taught, with more or less distinctness, the necessity of delivery by turning. Puzos, having more confidence than his contemporaries in the powers of nature, advised the excitement of uterine contractions by irritating the os by the finger, followed by a rupture of the membranes as a means of terminating the hemorrhage, and left the case to nature. RIGBY, unaware that others had entertained and even published similar views, announced as the result of his own observation that the attachment of the placenta is to the internal surface of the os uteri, and that, when thus placed, hemorrhage is unavoidable; that these cases differ essentially from those of accidental detachment from the fundus, and hence he drew the distinction of unavoidable and accidental hemorrhages, the one demanding early delivery, the other seldom requiring it.

Our author proceeds to cite the opinions of more recent authors, in which the *unavoidable* character of the hemorrhage and the necessity of *artificial delivery* is distinctly avowed. Thus, Dr. COLLINS says: "We may conclude that where the placenta is fixed over or near the os uteri, nothing but delivery will put a stop to the loss of blood." Also, INGLEBY says: "Pain, efficacious as it is in the accidental form of hemorrhage, unless adequate to the expulsion of the child, is *neither* to be *expected* nor to be *desired* to any material extent in the unavoidable form, as it only renders the effusion more abundant."

"By all these authors it is assumed as law," says Dr. Barnes, "that the hemorrhage is in direct ratio to the activity of the labour. It is assumed that the cervix cannot expand without causing hemorrhage. This assumption, partly true, involves a fundamental error or oversight."

These are unquestionably the doctrines and practice which have prevailed during the past hundred years. Since the publication of Puzos' memoir in 1743 we know of no author who has taught that simple rupture of the membranes and the encouragement of the expulsive efforts of the womb afford the best chance in cases of complete cervical attachment, though in cases of partial attachment this has become the established rule of practice.

A few years since, Prof. SIMPSON proposed an expedient, which, though designed as a resort only in exceptional cases, has been by many designated as the "new treatment." It is true that Mr. Kinder Wood and Mr. Radford had both successfully adopted this plan; but, whether this fact was known to Prof. Simpson or not, to him is due the merit of first offering it to the profession, accompanied by facts of sufficient number and importance to challenge a thorough examination of its merits. Finding that in numerous recorded cases of placenta prævia, in which the placenta had been spontaneously expelled before the birth of the child, the flow of blood had at once ceased, Dr. Simpson proposed artificial detachment as a remedy for those cases of alarming hemorrhage in which delivery is impossible or unadvisable. Incidentally connected with this proposed practice was the theoretical dogma that the hemorrhage in cases of this accident proceeds chiefly from the mouths of the placental vessels, and not from the exposed surface of the uterus. The plan, thus fortified by the doctrine of the placental source of hemorrhage, from which, if true, it seemed quite clear that artificial separation must necessarily put an end to the loss of blood, enlisted the attention of the entire profession.

The practice has been adopted in not a few instances, and the results reported in the medical journals. In his prize essay¹ on placenta prævia, Dr. TRASK has presented the collective experience of the profession on this subject, so far as it could be learned from reported cases; and the result of the inquiry confirms the assertions of Dr. Simpson, and renders it very clear that artificial detachment of the placenta may be relied upon as a generally effectual means of terminating the hemorrhage, subject to the disadvantage that the life of the child is almost necessarily sacrificed by the destruction of the placental connection with the mother. The design of Dr. Simpson's recommendation has been misapprehended by those who have delivered by turning immediately after separating the placenta, inasmuch as this operation was proposed only for cases in which turning could not be safely performed. The plan of artificial detachment may be regarded, therefore, as one of the expedients at present resorted to for the management of the most hazardous cases of this accident.

The views presented by Dr. Barnes as new, and as furnishing a more correct explanation of the physiology of the accident in question, and a more rational treatment, may be briefly stated as follows: Uterine contractions, so far from being deprecated in labours complicated with placental presentations, are to be encouraged as the agency upon which the patient's safety depends. In every case there is a point up to which the separation of the placenta will take place, and beyond which it will not proceed; which being attained, hemorrhage will spontaneously cease. In cases of extreme urgency, a *partial separation* by the hand, to the extent to which it would take place could labour proceed without extraneous interference, will secure all the benefit claimed for entire separation of the organ, with the great advantage that it allows a continued connection between the mother and the fœtus through the undetached portion of the placenta.

We propose briefly to examine the grounds upon which these doctrines are based, and the practice recommended. "What is the course of a labour complicated with cervical or central attachment?" The prevailing doctrine is that there is an essential difference between the circumstances attending the separation of the placenta from the fundus and its detachment from the

¹ See Transactions of the American Medical Association for 1855.

cervix; that the separation from the fundus occurs without hemorrhage, and that from the cervix with hemorrhage, which is unavoidable; that contractions of the womb, which in fundal attachment secure against flooding, in cervical attachment necessarily cause flooding. This doctrine Dr. Barnes regards as physiologically erroneous.

If we watch a case of placenta prævia which does not require the interference of art, we observe that every contraction of the longitudinal fibres of the womb, by which the lower segment of the womb is drawn upward and the os uteri opened, is accompanied by a gush of blood, which ceases as the contractions subside, and that the successive contractions are accompanied by successive discharges of blood, with intervals of freedom from hemorrhage, until at last, if the child has not been first expelled, "a stage arrives when the recurrent contractions of the womb do not entail further flooding," and hemorrhage ceases. Other authors have remarked this circumstance. Our author quotes, by way of illustration, several cases from Dr. LEE and others, in which hemorrhage spontaneously ceased before the birth of the child. The question arises, why does hemorrhage in these cases cease? The prevailing opinion is that the presenting part of the child, under uterine contractions, acts as an internal plug for the bleeding vessels; to which our author objects that "bleeding has often ceased before the membranes were ruptured, and consequently before the child was brought into contact, by pressure, with the neck of the womb."

Our author cites at length a case reported by himself, in which report, as he believes, the true physiology of the accident was for the first time unfolded. In this case of partial presentation the hemorrhage ceased after the employment of the tampon, under a presentation of the feet, the membranes being intact. "The detached portion of the placenta had become plugged up by coagula, and the remainder, being attached to the *body* of the uterus, was not liable to become separated during the contractions of that organ," and the case was resolved into one of natural labour so far as the placental attachment is concerned. Dr. Barnes maintains that the placenta is cast off from the cervix, in concentric zones or rings if the case be one of placenta centralis, and in segments of rings if it be a partial presentation.

"Zone after zone is bared by recurring contractions, and necessarily sealed up until that physiological limit, that line of demarcation between normal and abnormal placental implantation, the boundary-line of placental detachment which I claim to have discovered, has been reached. This zone attained, the labour is a natural labour!"

It is not, says Dr. Barnes, the "separation of the placenta which secures immunity from flooding, but the contractions of the womb." Dr. Barnes quotes the very pertinent views of Sir CHARLES BELL relating to the muscularity of the womb; they are in fact, says our author, the anatomical foundation of the physiological views which he seeks to enforce. Our author divides the superficies of the uterus into three zones: the fundal zone, the seat of usual and safe placental attachment; the middle zone, the seat of lateral attachment; and the cervical zone, or the seat of dangerous placental attachment; the boundary-line between this last and the middle zone he terms "the lower polar circle," or the "limit of spontaneous placental detachment." Below this boundary-line we have spontaneous placental detachment, with hemorrhage; above it, spontaneous separation, and exemption, for the most part, from hemorrhage.

The position of the lower polar circle, or boundary-line between hemorrhage and safety, our author considers to correspond with the line occupied

by the os uteri when sufficiently expanded to allow the passage of the full-grown foetal head, which, by measurement, he finds to be about three inches; so that "if we describe a circle within the womb, at three inches distant from the os, * * * we shall have the boundary-line between hemorrhagic and non-hemorrhagic placental attachment." Confirmatory of this, we find, on examining the placenta after its expulsion, that the portion which had been adherent within the cervical zone is infiltrated with coagulated blood, presenting a different appearance from that which had remained attached above the line, and which had been detached after expulsion of the child; and this part, according to our author, usually measures from three to four inches in depth. Our author expresses the belief that this boundary-line of safety is often practically reached, and the hemorrhage stopped, when the os has not opened wider than a wineglass, from the distension by the bag of membranes under expulsive pains. He next considers the two classes of cases in which partial detachment of the placenta may be artificially resorted to, viz., those of undilated os uteri, and those of extreme prostration, the classes in which total detachment has been recommended. Our author's reprobation of forced delivery in cases of undilated cervix meets our hearty concurrence. Though sanctioned by some eminent authorities, it was characterized by DEWEES as an "outrageous practice;" and he declared that during his practice of thirty years the indications, so far as he had witnessed, were "readily met by the use of the tampon and other auxiliary remedies."

The value of total detachment is next considered. He expresses the belief that in the reported cases of this operation, hemorrhage ceased not because the whole placenta was separated, but because the separation had reached that physiological limit which he has pointed out. Of this he offers no proof, except that in some of the cases hemorrhage had ceased *before* the placenta was wholly detached. He finally says: "We are amply justified in concluding that the artificial detachment of the placenta cannot be relied upon to arrest the hemorrhage." Now, without stopping to discuss the point which we consider satisfactorily settled by the researches of Dr. Trask, in which it is shown that, of *sixty-six* cases, in *thirty-five* hemorrhage ceased "immediately and entirely," and in a large proportion of cases hemorrhage ceases "either at once and entirely * * * or within a short time, and that if it continues at all, it is but to a trifling degree"—we cannot but express our surprise that our author should seek to throw discredit upon a procedure which certainly embraces his own plan; for if total separation is inadequate to suppress hemorrhage, it seems difficult to understand how a partial detachment should accomplish this end.

In the partial detachment of the placenta from within the cervical zone, we have, according to our author, a remedy adapted to cases in which "ordinary means are impossible or dangerous."

It cannot be denied that the plan of Dr. Barnes, should its promises be realized, presents great advantages over the entire separation of the placenta both in ease of performance and in the superior chance afforded the child.

Dr. COHEN, of Hamburg, has proposed a somewhat similar course, without recognizing the physiological doctrine upon which that of Dr. Barnes is based. Dr. Cohen advises that in those cases where the symptoms are too urgent to allow us to trust the case to nature, we are to convert the case from a central to a lateral placenta. To accomplish this, we are directed to find out on which side of the uterus the greatest bulk of the uterus is situated, and to feel for the edge of the placenta upon the side

opposite to this, then tear the membranes freely from the border of the placenta and sweep the finger round half the circumference of the os uteri, so as to detach the placenta completely from that side of the uterus occupied by the smaller portion of the placenta. The uterus expands, the detached portion of placenta drops down by the side of the presenting part and is compressed by it, and hemorrhage is suppressed. Dr. Cohen affirms that he has often practised this with success, having never lost a mother, and seldom a child. This is precisely what occurs in partial presentations, when the membranes are ruptured after more or less spontaneous separation. In the very instructive series of cases of placenta prævia published by Dr. Radford, and republished in this *Journal*, April, 1856, a case is reported which occurred in 1826, in which Dr. Radford performed the very operation recommended by Dr. Cohen. Under increase of pains the detached portion "took a lateral position, allowing the child to pass by, and which was born alive in about three hours." Dr. Radford remarks: "I detached the placenta as freely as I thought necessary for the passage of the child, as it is better systematically to do this, rather than risk the tearing of the placenta," &c. This operation was performed in several other cases reported by Dr. Radford. In cases of central placenta, Cohen's plan must often be adopted to afford an opportunity for the passage of the child. Whether the plan of Cohen or that of our author is followed, in either case active contractions of the womb are indispensable to the safety of the patient. To this end, while the plug is used to favour coagulation, friction of the abdomen, a firmly applied bandage, ergot, &c., must be resorted to, and in the failure of these, galvanism may be employed, which our author affirms rarely or never fails.

Whatever may be thought of the reasonableness of the views here presented, they are susceptible of being tested by experiment; and had the publication of this book been delayed until it could have been fortified by a series of cases in which the operation had been performed, a more intelligent judgment could be formed. Our author has chosen to depend upon the arguments drawn from the sources indicated, rather than to wait for an accumulation of facts in support of his views. Total separation of the placenta has been put to the practical test, and has proved successful in accomplishing the great object for which it is employed, with the very serious disadvantage, however, that it almost necessarily entails the destruction of the child. If partial separation, as recommended by our author, will accomplish the same good, and yet secure to the child the means of sustained existence, it will prove an invaluable boon. We have sought in vain in the medical journals for the record of any trials of this method; it remains to be seen if it will accomplish this good. Our author provides for the contingency of its failure by suggesting total separation as a last resort, though he has previously expressed a belief that it cannot be relied upon.

In the appendix are a number of cases, original and selected, in which hemorrhage had existed, but ceased spontaneously before delivery of the child, from which circumstance our author argues that the doctrine that hemorrhage in cases of placental presentation is unavoidable, is untrue, and leads to serious errors in practice.

"Under the prevailing dogmas the arrest of hemorrhage inspires no hope in the heart of the accoucheur. He is taught to believe that it will *unavoidably* return; he hastens to deliver, and the poor woman, who had reached the haven of safety, is destroyed by the operation, a victim of the '*nimia diligentia medicum*.'"

There follow two cases in which the placenta was partially detached by the hand. One is reported by Dr. Simpson, as of probable entire separation, which our author claims, and which very probably was but partial detachment; the other a case occurring to our author himself at the sixth month.

The alleged discovery of our author that hemorrhage ceases in the cases above referred to because a certain degree of dilatation is reached beyond which separation is no longer induced, is not, we think, clearly established, though his views must be regarded as very ingenious, and calculated to give precision to our knowledge and practice. The character of the evidence upon which he relies is, to a certain degree, the same that he has justly criticized in the paper of Dr. Simpson on total detachment. He relies upon the fact that hemorrhage sometimes ceases spontaneously before the birth of the child. Dr. Trask has shown a very essential difference between labours in which the placenta was spontaneously expelled before the birth of the child, and those in which it became subsequently detached. In the first class the child also was born by the unaided efforts in 57 per cent. of the cases, while in the latter class spontaneous delivery occurred in only 17 per cent. "The only explanation that can be given is, that cases in which the placenta is expelled before the birth of the child, as a class, are characterized by a tonicity of the womb and a vigour of uterine contraction which we do not find in ordinary cases of this accident." In the cases of spontaneous arrest of hemorrhage quoted by our author, it is highly probable the labours were of a similar character, and we see the risk of assuming upon such a basis that a partial artificial separation will arrest the flow.

Although our author attaches but little importance to the amount of hemorrhage proceeding from the separated portion of placenta, but believes that the principal source of bleeding is the exposed mouths of the uterine arteries upon the uterine walls, it is by no means clear that the hemorrhage in these cases does not depend in a very important degree upon the placenta. Great stress is laid upon the consolidated, indurated condition of the detached portion of placenta. The experiments of Dr. DALTON (see *Amer. Med. Monthly*, July, 1858), seem to demonstrate that there is a free intercommunication of all parts of the maternal portion of the placenta. The uterus of a woman who had died undelivered was removed and placed under water. Air introduced through a blowpipe into the mouths of the divided vessels of the uterus passed freely through every part of the placenta, and escaped in bubbles on making punctures in any portion of the transparent chorion. Now, although the detached portion of placenta may, after the lapse of time, on its delivery, be found infiltrated with coagulated blood, and refuse, as in the experiments of Mackenzie and Sharpy, to allow the escape of blood injected through the hypogastric arteries, it by no means follows that the vessels were thus impervious immediately upon the separation of the detached portion of placenta. Indeed, the more reasonable view seems to be that during a pain, when hemorrhage is most active, the bleeding is to a large extent through these vessels, the womb at that time being acknowledged to be in a state of active contraction; hemorrhage is kept in check between the pains by tonic contraction of the womb, and by coagulation in the separated portion of placenta which sooner or later takes place. The peculiar cellular cavernous or reticular structure of the placenta is well adapted to favour coagulation.

Whether the proposal of partial detachment prove in practice adequate to suppress alarming hemorrhages or not, the work of Dr. Barnes may be

read by all practitioners with great profit. With a confidence in the resources of nature, the result of a careful study of the processes by which he believes the various steps of labour accomplished, he thus speaks in her behalf:—

“Nature declares and pronounces emphatically that the hemorrhage is not in all cases unavoidable and progressive in proportion to the dilatation of the mouth of the womb. She protests against the assumption that, in this great emergency, she is altogether at fault, and powerless to arrest the flooding. Let not those who have never had the courage to trust her, the patience to observe her, or the skill to interpret her, too confidently deny her power”—p. 40.

In cases of partial presentation we know that nature most generally proves equal to the emergency, and effects spontaneous delivery; and this, we must believe, would always be the case could the bleeding be kept in check until the os uteri is dilated. Delivery by turning is regarded by every well-informed practitioner as an evil to be deprecated. How much encouragement is offered in the assurance, should it prove well founded, that after a certain degree of dilatation hemorrhage spontaneously ceases, and a spontaneous delivery may be expected. How to accomplish this temporary arrest is the great problem. That it may, in many instances, be accomplished by the tampon, experience amply shows; repeated examples of its successful employment will be found in the cases of Dr. Radford, already referred to; these form a most instructive series which, in connection with this subject, we advise our readers to consult afresh.

The diversity of opinion in regard to the value of this remedy must depend upon the difference of manner of its employment. Dr. Lee, in speaking of cases of rigidity of the os, says:—

“The tampon or plug has no power to restrain hemorrhage in such cases, nor do I know of any other means—either cold, quietness, or opium—which effectually have, and it is sometimes absolutely necessary to deliver by turning before the hand can be possibly introduced into the uterus without producing fatal contusion and laceration of the soft parts.”

In this we think Dr. Lee differs from most practical accoucheurs. We are satisfied from our own experience, that success in the use of the tampon depends upon its thorough and efficient application. The pieces of sponge or strips of linen should be successively introduced until the vagina is completely filled, a compress placed over the vulva, and the whole confined by a T bandage, and a dry folded sheet placed beneath the hips. The least return of bleeding can thus be readily detected, and the dangerous oozing which sometimes undermines the patient without the knowledge of the attendant, may be guarded against. We have completely succeeded by first introducing a full-sized tubular speculum, packing it with the plugging material, after the ordinary mode had failed to arrest the bleeding. Dr. Radford, in addition to the plug, attaches much importance to compression of the abdomen, by a broad bandage which he calls a “retaining bandage,” passed around the body, one end being attached to the bedstead, and the other tightly drawn by an assistant. It has been objected to the use of the plug in the early months, that its presence tends to induce premature labour, whereas we ought to try to conduct the case to full time. This is a matter of no little importance, but we are of the opinion that this result is not to be regarded as necessary or general.

Dewees did not so regard it, and the cases of Radford exhibit proof positive to the contrary.

Prof. MILLER, in his *System of Obstetrics*, advocates with great earnest-

ness and ability the substitution of Puzos' method slightly modified, in place of artificial delivery; this method consisting in "*originating expulsive contractions* of the uterus by the tampon or plug, and then puncturing the membranes, relying on the tampon to control the flooding until the liquor amnii is evacuated."

If the plug prove inefficient, and the hemorrhage continues, our author's plan of partial separation may be resorted to, and if it fail, we have total separation as a resource which will rarely fail to arrest the flow of blood. But in every class of cases, if our author's views be sound, we have the encouragement that the hemorrhage is not strictly *unavoidable*, as generally understood—that it will not *necessarily* continue until delivery, but that if we can keep it in check until a certain degree of dilatation is reached, and sustain and stimulate the powers of nature, as by ergot and galvanism if need be, it will eventually cease, not to return. J. D. T.

ART. XVI.—*Sur une Fonction peu connue du Pancréas la Digestion des Aliments azotes.* Par LUCIEN CORVISART. Paris, 1857–58.
On a Function of the Pancreas but little known. BY LUCIEN CORVISART.

If we except the liver and spleen, there is no organ of the body whose exact function has been so long veiled in obscurity as that of the pancreas. There are several reasons for the uncertainty which has existed, and under which we, in some measure, still labour in regard to the office performed by the pancreas in the economy. Not the least of these is the fact (with the exception of one or two anomalous instances in the cat, in the seal, and in certain fish of the genus *salmo*) of there being no reservoir for containing the fluid which it secretes, and, consequently, there has always been a difficulty in obtaining a sufficiency of the pancreatic juice for a thorough analysis.

Bernard, whose keen sense of the true nature of experimental research never deserts him, has pointed out another cause for the various opinions which have existed relative to its composition, viz: that the pancreatic fluid varies greatly in its characters according as it is collected during the inflammatory process which follows the wound necessarily made in the abdomen of the animal submitted to experiment, or after the parts have regained their healthy condition. In the former case, the liquid is in an abnormal state, and not suitable for an analysis on which to form an opinion in regard to its physiological properties; in the latter, it is normal, and, consequently, capable of performing its *rôle* in the system.

It is not strange, therefore, that from the time of François de la Boe, and Degraaf and Schuyl, his disciples—who contended for the acid character of this secretion—to Tiedemann and Gmelin—who sometimes found it acid and sometimes alkaline—and Bernard—who invariably obtained it with the latter reaction—there should have existed the most discordant testimony relative to its physical and chemical properties.

But if the earlier physiologists differed as to the chemical nature of the pancreatic juice, they were still more at variance in regard to its use. Some considered it as serving to separate the chyle from the feces; others, as contributing to modify the acidity of the bile; others, as dissolving those sub-