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AN

IMPROVED METHOD OF MANAGING THE
THIRD STAGE OF LABOUR;

WITH A

*Criticism of the Theory that the Placenta is then
Separated by the Uterine Pains.*

BY

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THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

BY

JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON

1704

IMPROVED METHOD OF MANAGING THE THIRD STAGE OF LABOUR.

IN the present communication I wish to describe a method of managing the Third Stage of Labour which I have practised for some time. It is based on a new view as to the separation of the placenta, which I brought before the Edinburgh Obstetrical Society in a brief note, and more fully afterwards before the Royal Society of Edinburgh. As I am at present preparing this paper for publication in the Proceedings of the latter Society, I shall only give a brief summary of my views before going on to the practical question of management. I wish also to criticise the hitherto accepted, but in my opinion erroneous view, that the placenta is separated by diminution in area of the placental site. My only reason for doing so, however, is that my views have been criticised by my friend Dr Freeland Barbour, to whom I wish to reply. I should otherwise have contented myself with a mere statement of what I believe to be the correct opinion on this much debated point.

SUMMARY OF THE CAUSE OF THE SEPARATION OF THE PLACENTA DURING THE THIRD STAGE OF LABOUR.

1. At the beginning of labour the placenta and uterus are together to be considered as made up of the following parts, so far as the question of separation is concerned:—

(a.) *The part to be separated*, comprising—

Amnion,
Chorion,
Chorionic villi,
Intervillous spaces,
Large-celled layer of serotina.

(b.) *The line of separation*, lying between the large-celled and small-celled layers of the placenta, and termed the trabecular layer. It is formed chiefly by the persistent fundi of the uterine glands.

(c.) *The part left behind* after the placenta is separated, and con-

sisting of the small-celled layer with remains of uterine glands, smaller in lumen, set on the uterine muscle.

2. The chorionic villi get their blood supply from the umbilical arteries of the foetus. The intervillous spaces have blood poured into them from the maternal circulation, the blood passing by the curling arteries into the spaces, and from these into the uterine sinuses by the slanting veins. The venous supply of the uterus is much more abundant than the arterial.

3. At the trabecular layer we may regard the placental area (*i.e.*, uterine surface of separated placenta) and placental site as coinciding during pregnancy, with trabecular layer joining them.

4. Separation of the placenta can only take place when there is disproportion between placental area and placental site.

5. The placenta does not separate during the First and Second stages of labour, because all changes in the placental site (diminution during pains and expansion when pain dies off) are accurately responded to by the placenta, owing to the activity of the foetal and maternal blood supplies.

6. During the Third Stage of Labour the foetal circulation is cut off and the villi are closely pressed together, showing obliteration of intervillous spaces. The increase in placental site following a third stage pain is not followed up by the placental area, as the placenta is now practically a bloodless structure.

7. The placenta does not separate on diminution of placental site to 4" x 4".

8. Any diminution of site below this introduces no relative change at plane of separation. The area of the placental site and the placenta still correspond.

9. A disproportion in area between the placental site and placenta brings about tension on the trabeculae of the trabecular layer, *i.e.*, tears them.

10. This disproportion happens during the Third Stage in the relaxation following a pain, and therefore separation occurs after the pain. During the relaxation the placental site increases slightly, but the placenta, now bloodless or nearly so, does not respond: hence disproportion of area.

11. The placenta, when separated, is expelled by the pains either as Duncan or Schultze has figured.

12. All separations of placenta or membranes follow one mechanism—*"Placenta and membranes separate when there is a disproportion at the plane of separation between their area and their site of attachment. This disproportion is only slight, as the trabeculae are microscopic."*

The gist of the view advocated is that the placenta separates in the Third Stage after the pains, and is expelled, when separated, by the pains. The important practical point is that manipulation cannot separate the placenta, but can only aid expulsion.

The Management of the Third Stage deducible from the view expressed.

At the beginning of my practice I adopted Credé's method of expression of the placenta. The Credé method is intended to separate and expel the placenta. I had not tried it long when I found it most unsatisfactory. Not only did it cause bleeding by forcing blood into the lacerated tissues below the placental site, but on two occasions I expelled the placenta *minus* the entire membranes, and had to chloroform my patient and remove these manually. The error of this lay in the Credé method, which I consider the most dangerous plan possible for separation of the placenta.

I came to the conclusion, therefore, that the uterus would manage the separation of the placenta better than I could, and, accordingly, for some years I merely kept my hand on the uterus, employed manipulation of it if bleeding came on, and limited the Credé method to helping the expulsion, never employing it to separate the placenta. My guide to the period of separation was the marked decrease in the size of the uterus.

This method gave good results; why, I did not know, and I fell back for comfort on the fact, unfortunately not well enough known, that non-interference with a natural process gives better results than ignorant, though well-meant, meddling. I do not at all depreciate thorough manipulation of the uterus when hæmorrhage is taking place. I hold this to be imperative. What I condemn is quite another matter, viz., forcible compression of the uterus to expel the unseparated placenta.

The method I have now adopted gives me excellent results, and is based entirely on the view I have summarized. For convenience I shall arrange my description in the form of brief rules.

1. When the child is born, note that the fundus uteri stands at or below the level of the umbilicus, and that the uterus does not contain a second child. Give an ergotine injection in a multipara, at any rate, if labour has been slow.

2. Do not tie the cord until the child has cried freely, and then tie only one ligature.

3. Cut the cord on the placental side of the ligature, and let the placental part of the cord drain thoroughly into any small dish; then tie it, to prevent any staining of the bed linen. Tie a second ligature at once, however, if a second child be present.

4. Before applying the first ligature it should be thoroughly ascertained by abdominal palpation that the uterus is not so relaxed as to bleed.

5. Continue with the hand on the uterus; do nothing when a good contraction comes on, and allow the uterus its normal relaxation after the pain is over.

6. Should bleeding from the uterus come on, or should the

pains be feeble, then grasp the uterus so as to bring on a contraction to arrest hæmorrhage.

7. Do nothing further in a normal case until the lessening of the bulk of the uterus shows that the placenta is separated and being expelled; the expulsion may then be aided by "expression."

8. One can tell when the placenta is separated and not driven down by noting that gentle expression drives it down.

The reasons for the above treatment are as follows:—Ergotine and manipulation are used to insure good marked retraction and to empty the intervillous spaces well. The foetal circulation is aspirated thoroughly by allowing the child to cry well, and by draining the cord. These two measures give the necessary disproportion sooner, as the placenta cannot now follow up the increase in placental area during relaxation, is made as small in area as possible, and relaxation thus sooner tears the trabeculæ.

Since practising this procedure I have had no difficulty in the normal Third Stage of Labour. Interference is reduced to a minimum, and the membranes expelled intact.

I now wish, in conclusion, to answer Dr Barbour's objections to my view, and to criticise his.

"*Berry Hart* in his paper¹ brings forward a very novel theory of the mode of separation of the placenta. He makes several statements which are open to criticism. He says that we know that diminution in the placental site does not separate the placenta—a fact which (he says) my preparations demonstrate; but we cannot let this pass without qualification. These preparations show only that diminution up to a certain point (4 in. by $4\frac{1}{2}$ in.) takes place without separation. It is quite evident that there must be a theoretical limit beyond which diminution cannot go without separation; and it is quite possible, though not yet proved, that 4 in. by $4\frac{1}{2}$ in. comes near this limit. We might go a step further and say that diminution up to 4 in. by $4\frac{1}{2}$ in. may prepare the way for separation, but of this in another paper."

I still adhere to this opinion, for the following additional reasons: When the placental area is diminished to 4 in. by $4\frac{1}{2}$ in. it does not separate, and will not separate at any less area, because this smaller area introduces no further change in the relations of uterus to placenta. At the 4 in. by $4\frac{1}{2}$ in. area the placenta is firmly grasped all round, and at a less area it is only more firmly grasped, and the other relations are unaltered. When Dr Barbour says that "there must be a theoretical limit beyond which diminution cannot go without separation," he begs the whole question. This, indeed, is the fatal error in Dr Barbour's view—his predetermined idea that diminution of area causes separation. My reason for writing the short note on placental separation already alluded to was simply to protest against this assumption which is made by all investigators.

"2. If this theory were correct, the placenta should be separated by the relaxations after the contractions of the First and Second Stages. To this objec-

¹ "Note on the Mechanism of the Separation of the Placenta, etc.," *Ed. Med. Jour.*, July 1887.

tion he answers, that in these stages the foetal circulation allows the placenta to re-expand, but that during the Third the cessation of this changes the conditions. To this I reply—

"3. That the placenta remains attached where the foetus has died before labour, and where consequently the foetal circulation has ceased, as is seen in the frozen sections by Schroeder and myself."

The answer to this is evident—the maternal circulation in the intervillous spaces is quite sufficient to make the placenta respond to all changes in its site.

"1. *The question of separation of the placenta must be kept quite distinct from its expulsion.*

"2. *Evidence is accumulating that, at the commencement of the third stage, the placenta is still as a whole or in great part attached.*

"3. *Diminution in area of its site to 4 in. by $4\frac{1}{2}$ in. does not mean separation of the placenta.*

"4. *Diminution in area beyond that + the action of the uterus as a whole on the placental mass, I regard as the formal cause; the pains of the third stage as the efficient cause of separation. Blood effusion is an accident, i.e., not essential.*

"5. *During the contractions of the third stage the surface of the placenta is thrown into heights and hollows; the heights do not necessarily mean effusion below.*

"6. *The placenta descends usually with its edge or a point near its edge first, as Duncan described; sometimes foetal surface first, as Baudelocque and Schultze described.*

"*The third stage I regard as a second labour in miniature. After the pain that expels the child comes a pause, during which the placenta is still as a whole or in great part attached; then labour comes on again, and the placenta is first detached and then expelled. This second labour is not always marked off by a distinct interval from the first, sometimes one long pain expels the child and then detaches and expels the placenta.*"

Conclusion 4 is the one on which Dr Barbour's view stands or falls. It is very remarkable that he should have come to this conclusion, as it does not follow from his paper, and he gives neither proof nor mechanism for it. He says that the placenta separates when the placental site is below 4 in. by $4\frac{1}{2}$ in., but of this there is not a tittle of evidence. No section demonstrates this, and no clinical observations can, as these are evidently misleading. Why Dr Barbour, who believes that a diminution of placental area below 4 in. by $4\frac{1}{2}$ in. is necessary to separate the placenta, should have attempted to ascertain the mechanism of separation by passing his hand into the uterus is to me incomprehensible. It would lead me too far on this subject to point out the error of such a method, but its untrustworthiness and disturbance of natural mechanism are apparent.

In addition, Dr Barbour has attempted to solve the question of separation without taking the minute anatomy of the trabecular layer into account, and omitting all consideration of the blood supply of the placenta. He regards the placenta as "spongy," and thinks that this physical property allows expansion and diminution of the placenta when necessary. This is too vague an explanation, and gives us no definite ground. The terms contraction and retraction are not yet well defined nor understood.

By Contraction I understand that the uterine muscle diminishes in bulk, that the uterine area the muscle subtends diminishes, and that the muscle and area resume their condition prior to contraction when the contraction ceases. In Retraction the greater part of the diminution in bulk and area is retained, but not all. Dr Barbour's definition does not coincide with clinical evidence, and would make labour "tonic," which it is not. Consequently I hold that a certain amount of relaxation after retraction takes place normally.

Dr Barbour's papers have seemed to me most valuable in many respects, but his conclusions only demonstrate the futility of the attempt to explain separation as the result of diminution of placental site. As to the Third Stage being a "labour in miniature," I see no advantage in the comparison, more especially as in the Third Stage we have separation and expulsion, whereas in the First and Second stages it is merely a question of expulsion if we leave out of account the separation of the membranes over the lower uterine segment.

The view I advocate is a consistent one, explains all separations by one law, and gives clear indications for management. The management based on Dr Barbour's view should be to get the uterus to retract as much and as quickly as possible, so as to diminish the placental site and separate the placenta. Such a method would be in every way dangerous, would tend to partial expulsion of placenta and membranes, with all the dangers attendant on such a course. On this ground alone I would strongly condemn his view.

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