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ON

THE DURATION OF PREGNANCY,

AND THE

CALCULATION OF THE DATE OF CONFINEMENT.

IS DR WM. HARVEY OR DR WM. MONTGOMERY IN THE RIGHT?

By J. MATTHEWS DUNCAN, M.D., F.R.C.P.E.,

LECTURER ON MIDWIFERY, ETC.

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On January 13, 1854, I read before the Royal Medical Socitey a paper entitled "Reflections on the Duration of Pregnancy, with Remarks on the Calculation of the Date of Confinement."[1] I there shewed, *inter alia*,

1. That the interval between conception and parturition (the real duration of pregnancy) has not been exactly ascertained in any case.

2. That the average interval between insemination and parturition (commonly called the duration of pregnancy) is 275 days.

3. That the average interval between the end of menstruation and parturition is 278 days.

In the *British and Foreign Medico-Chirurgical Review*, for July 1854, there appeared an abstract of a paper, by Dr Gustav Veit, Professor of Midwifery at Rostock, on the duration of pregnancy and other subjects. I have had no opportunity of seeing more of this essay than is contained in the midwifery report of the above journal. Dr Veit has tabulated forty-five cases from Reid, Montgomery, Girdwood, Rigby, Lockwood, Lee, Desormeaux, Dewees,

[1] See *Monthly Journal of Medical Science*, March 1854.

Beatty, Skey, M'Ilwain, Ashwell, Cederschjöld, and others, in which the date of impregnation appeared to be fixed by a single coitus. From this table it is found that the average interval between insemination and parturition (commonly called the duration of pregnancy) is 276·93 days.

Dr Veit also collected a mass of observations in regard to the interval between the end of menstruation and parturition. From this collection, he ascertained that the average extent of this period is 278·5 days.

These conclusions, although widely published in this and other countries, have been subjected to nothing that could be called adverse criticism, till the recent republication of Dr Montgomery's great work on the signs and symptoms of pregnancy. This contains an essay on the period of Human Gestation, in which it is assumed, we shall see on what authority, that the natural period of gestation is forty weeks or 280 days; and in which the following statement of the immortal Harvey is pronounced to be erroneous. We quote from Montgomery.

"The words of this illustrious man are these—'*Unquestionably, the ordinary term of utero-gestation is that, which we believe was kept, in the womb of his mother, by our Saviour Christ, of men the most perfect; counting, viz., from the festival of the Annunciation, in the month of March, to the day of the blessed Nativity, which we celebrate in December.*' This is a period of 275 days only: he then goes on to state, what does not appear to have any very obvious connexion with the fact referred to, but is indeed rather at variance with it."

"'*Prudent matrons,*' he says, '*calculating after this rule, as long as they note the day of the month in which the catamenia usually appear, are rarely out of their reckoning; but, after ten lunar months have elapsed, fall into labour, and reap the fruit of their womb, the very day on which the catamenia would have appeared had impregnation not taken place.*'"

My object in the present article is, briefly, to defend the opinion of Harvey, to re-affirm my conclusions of 1854, on the ground of the data afforded by Dr Montgomery, and to show that his assumption of 280 days, as the natural period of human gestation is, to say the least, unfounded.

The Duration of Pregnancy.

The period generally recognized under this name, and discussed by Dr Montgomery, does not measure the real duration, which extends from conception to parturition, but that other period extending from fruitful connexion to parturition. It is this latter of which we now discourse.

Dr Montgomery describes the natural period of human gestation as 280 days. Now, there is no such thing known to obstetricians to exist in nature, as a natural period of pregnancy, measuring a certain number of days. This interval between fruitful coitus and

parturition, is known to us only as a variable period, of uncertain length, in different individuals, and in the same individual on different occasions. So far is Dr Montgomery from having any authority for fixing 280 days as the natural period, that, in his own laborious collection of fifty-six cases, in which, he says, the day of fruitful intercourse was known, there are only four in which parturition certainly occurred on the 280th day. Obstetricians can only speak with propriety of an average duration. This is attainable by striking it from the largest collection of well ascertained cases. This average is the nearest approximation that can be made to what may be called the natural period of gestation. The data afforded by Dr Montgomery for arriving at this mean or average, or nearest accurate general statement of the interval between fruitful connexion and parturition, the duration of pregnancy, are of different degrees of value.

The most trustworthy and valuable are undoubtedly those cases of pregnancy which date from a single coitus. They number twenty-five, and the duration of each is as follows:—263, 264, 265, 265, 267, 270, 271, 272, 273, 274, 274, 274, 274, 274, 275, 275, 276, 276, 275 or 277, 277, 278, 280, 280, 287, 291 to 293. Of these twenty-five cases the mean is 274 days. The best data accessible to Dr Montgomery, then, give 274 days as the duration of pregnancy, not 280.

It appears to me, that the next most valuable data for settling this point are to be found in the table of thirteen cases dating from the day of marriage. The interval between marriage and parturition in each of these cases was as follows:—261, 265, 268, 269, 270, 271, 271, 271, 272, 273, 274, 279, 291. In regard to these, Dr Montgomery himself says:—"The average interval between the day of marriage and that of labour was 272 days q. p., or thirty-nine weeks, minus one day; or, if we deduct the last case, which went to 291 days, the average interval would be 270⅓ days." Where, then, one naturally exclaims, are the grounds for saying that the natural duration of pregnancy is 280 days?

Dr Montgomery's work presents us with another table of data. It consists of fifty-six cases, in which, he says, the day of fruitful intercourse was known. Now, to us, this table, at first sight, and before estimating the results of it, appeared to be of less value than either of the two former. Every case, almost, is invalidated because we do not know the authority or grounds upon which it is said that the day of fruitful intercourse was known. We do not know even the observers' names. Dr Montgomery has laboriously collected cases of protracted pregnancy, all of which, so far as available for this table, find place in it. The whole weight and importance of it is contributed by the distinguished obstetrician's name that publishes it. That authority is, undoubtedly, of the very highest, but can scarcely be communicable to cases derived from a promiscuous set of observers, whose reasons for decidedly fixing on a single

day are not given. In an exact investigation like this, all cases should be rejected except those dating from a single coitus or coitus on a single day. But let us examine and see what this table affords towards the solution of our question. Omitting six cases where a single day is not given, we have fifty where the interval between fruitful intercourse and parturition is said to be as follows:—242, 258, 258, 263, 265, 267, 267, 267, 267, 268, 269, 269, 272, 273, 273, 274, 274, 275, 275, 276, 277, 277, 278, 278, 279, 279, 279, 279, 279, 280, 280, 280, 280, 281, 283, 283, 284, 285, 286, 287, 287, 287, 288, 290, 291, 291, 292, 293, 293, 297. Of these fifty cases, all those satisfactorily known to Dr Montgomery, the mean duration is 277 days. This table, framed under the conditions above described, yields a result opposed to the dogma of its author. Where, then, is the authority for stating 280 days as the natural period of gestation? It is nowhere.

We agree with Dr Montgomery in his opinion that there is no other satisfactory method of arriving at the solution of this question, but the one we have just followed, viz., the collection of well ascertained facts and their analysis. "Independently (says he) of the very few cases in which we have satisfactory evidence of conception following casual intercourse, or perhaps a single coitus, we have no certain means of knowing exactly the commencement of gestation, and are obliged to form our calculation on one or other of three very fallacious grounds;" which he then proceeds to consider.

The Calculation of the Day of Confinement.

In the vast majority of cases, this must be made from the termination of the last menstruation, for reasons which are well known. The average time to which a woman goes, after the last appearance of the menses is 278 days (a period shorter than Dr Montgomery's duration of pregnancy!). This average is obtained by the collection of single observations and their subsequent analysis. If, then, we wish to ascertain the most probable day of a woman's confinement, we add 278 days to the last day of the last menstruation. The method of doing this, without a periodoscope, I have shown in the *Monthly Journal* for March 1854.

Dr Montgomery gives no specific directions for making this important calculation. But, it appears, from some passages occurring incidentally in his essay, that he adopts the following plan. Some day is selected after last menstruation, as the most probable day of fruitful intercourse, and 280 days are added thereto. As the selection of this day must be, in almost every case, made on the most worthless and insufficient grounds, the resulting calculation must be similarly characterized. Besides, if there be any truth in the statistical data of Dr Montgomery, and their analysis given above, which is partly his own, then this plan of his must lead to a putting off of the probable day of confinement to far too distant a time. For nstance, we have in the table of observations dated from the day of

marriage, thirteen cases on Dr Montgomery's own authority. Now, in these, as already stated, the women went on an average only 272 days from the day of the nuptials. If a probable day of fruitful intercourse, after marriage, had been selected, and 280 days added thereto, in these cases, such a plan would have evidently led to a mass of errors in the way of putting off the predicted day of confinement far too long.

I may here mention that, with the subject of this important calculation or prediction, Dr Montgomery has confounded the question of the interval between insemination and conception. If such an interval existed, he says, "we should have no means of calculating the period of gestation, with anything like an approximation to accuracy, in any case." Now, if there be an interval in nature between insemination and conception, we must adopt it, whatever results it may lead to. If it truly exist, it can lead only to true and good results. It is not considered probable by Dr Montgomery, that any interval or an interval of any importance does exist. The highest authorities, however, on such a point, are unquestionably very strongly in favour of the belief in its existence and its being of considerable extent, say several days. But, in truth, this question of a possible interval between insemination and conception has nought to do with the calculation of the date of confinement. Its truth or untruth does not affect such calculations, and no author but Dr Montgomery, has, so far as I know, discussed the two points as connected with one another in any way tending to modify practical precepts.

Harvey's Opinions.

Great men often seem to arrive at the truth, even in circumstances of complication and difficulty, by some process so simple that it appears like an operation of instinct. The immortal Harvey's expressed opinions in regard to the duration of pregnancy, and the calculation of the day of confinement, bear this character, for we cannot discover the grounds on which he arrived at results so nearly identical with those of modern science.

The interval between the festival of the Annunciation and the day of the Blessed Nativity is that adopted by Harvey, as unquestionably the ordinary term of utero-gestation. This is a period of 275 days, lady-day or the festival of the Annunciation being on the 25th of March, or 80th day of the year, while the day of the Nativity is the 25th December or 360th day of the year. It is remarkable, that the largest recent collection of cases, made on certain or on the best grounds, gave also an average result of 275 days. (*See my collection of forty-six cases, loc. cit.*) Harvey, it will be observed, does not speak of any natural term, but only of the ordinary term, his correct appreciation of which is clearly indicated.

Harvey guards, also, his rule for calculating the day of confinement, from being considered exact, by saying that those prudent

matrons who follow it "are rarely out of their reckoning." His statement is, that after ten lunar months have elapsed from the commencement or appearance of last menstruation, they fall in labour the very day the catamenia would have appeared, had impregnation not taken place. If the usual or average computation of the menstrual periods and intervals is adopted, the period of Harvey is 280 days, including the number of days of the last period. Ten times the usual interval and period of discharge, that is, ten times 28, gives 280 days; but as this includes the last period, of course the three, four, or five days of that period have to be taken from the 280 days, if we wish to find the interval he allowed between the end of last menses and parturition. Thus, Harvey gives prudent matrons only an approximative calculation. The interval between last menstruation and parturition, according to him, is something a few days less than 280. The average time found by modern calculations, as stated in an early part of this paper, is 278 days, with which Harvey's rules are as nearly in accordance as can be expected in a subject altogether incapable of any exact statement.

Dr Montgomery's objections to Harvey's opinions are founded on the assumed accuracy of his own natural period of pregnancy, namely, 280 days after conception. We have already shown that this period is assumed on insufficient grounds, and that as the day of conception is never known, we must seek some other method of calculating the day of confinement than any founded on the supposed day of such an occurrence. Without seeking to disparage the very high value and authority of Dr Montgomery's writings, we have thought it necessary to publish these comments, believing, as we do, that they demand from that eminent obstetrician some modification of the views enunciated in his essay on the period of human gestation.

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