

Psychological Aspects of Determining the Expected Date of Delivery

M. Klimek

Jagiellonian University, Chair of Gynaecology and Obstetrics, Cracow, Poland

Abstract

The purpose of this paper is to provide a demonstration to both physicians and the public, of the potential iatrogenic nature of theretofore methods used in determining the expected date of delivery only in the first and second trimester, whereas qualifying the growth and development of the fetus as fast, regular or slow is now possible in the third trimester. As a consequence the expected date of delivery may be designated with an accuracy of days, instead of the weeks. It may take place on any single given day throughout the six week's range of birth occurrence in man. This obvious fact stands in terrifying opposition to the everyday practice of physicians, as well as public reception designating the expected date of delivery just as the most frequent, yet with a probability of occurrence only up to ... 5 %.

Additionally, through the proper commercialization of their own pharmaceutical and sanitary products, industry simultaneously consolidated the erroneous interpretation of virtual data on human birth occurrence, in the form of what is called the "pregnancy calendars". Practically no one of them underline that only 4 % of births occur at a mean length of human pregnancy, 66 % take place within ± 14 days (i.e. $38\frac{1}{7} - 42\frac{1}{7}$ weeks) and 95 % within $37\frac{0}{7}$ and $43\frac{2}{7}$ weeks.

All results given by ultrasound machines encompass not only mean values, with an accuracy in days (e.g. 38 weeks 2 days), but also their standard deviations or ranges in weeks (e.g. 38 weeks 2 days ± 2 weeks), what is too often overlooked not only by doctors. For example, what $38\frac{2}{7} \pm 2$ weeks signifies is that there is a 95 % chance the birth date is between $36\frac{2}{7}$ to $40\frac{2}{7}$ weeks and that only the most likely (but only less than 5 % !) date is $38\frac{2}{7}$ weeks. So, such ultrasound information in fact is correctly related with 4 weeks period of expected

delivery date. This is particularly important in the late gestation and may have psychological as well as legal implications.

Labor initiated at the inappropriate moment for any individual pregnancy and artificially resolved, is foremost a consequence of erroneous psychological assumptions by the parturient woman as well as those accompanying her. Only from 5 – 10 % of pregnant woman develop complications requiring skilled obstetric emergency care, but in Canada, Australia, Greece and the U.S. approximately one out of every three births are operative births while in Czech republic, Slovenija and The Netherlands only one out of ten birth (!!).

Zusammenfassung

Die Absicht dieses Artikels ist, den Ärzten und der Öffentlichkeit zu demonstrieren, daß die heute üblichen Methoden zur Bestimmung des erwarteten Termins im ersten und zweiten Schwangerschaftsdrittel Gefahren iatrogenen Schädigung bergen, was bei einer Einschätzung des Termins auf Grund der Größe und der langsameren oder schnelleren Entwicklung des Fötus, wie sie jetzt im dritten Schwangerschaftsdrittel möglich ist, vermieden werden kann. Mit dieser neuen Methode kann der Entbindungstag mit einer Genauigkeit von Tagen vorhergesagt werden, anstatt früher von Wochen. Die heute üblichen Vorhersagemethoden können nur aussagen, daß die Geburt an einem Tag innerhalb eines Zeitraumes von sechs Wochen stattfinden wird. Diese gesicherte Tatsache steht in erschreckendem Gegensatz zu der täglichen Praxis von Ärzten und dem allgemeinen Verständnis, der erwartete Entbindungstermin sei auch der Wahrscheinlichste, während in Wirklichkeit nur eine Wahrscheinlichkeit von weniger als 5 % für eine Entbindung am vorausberechneten Termin besteht.

Zusätzlich fördert die Industrie wegen ihrer eigenen geschäftlichen Interessen mit pharmazeutischen und medizinischen Produkten die irrtümliche Interpretation der Berechnungsdaten für den erwarteten Termin, wie dies in den sogenannten „Schwangerschaftskalendern“ geschieht. Praktisch keiner dieser Kalender unterstreicht, daß nur ungefähr 4 % der Geburten auch am berechneten Termin stattfinden. 66 % finden in dem Zeitraum von 14 Tagen vor und 14 Tagen nach dem errechneten Termin statt, (also zwischen der 38. und 42. Woche und 95 % zwischen der 37. und 43. Woche).

Alle Meßergebnisse mit Ultraschallgeräten geben nicht nur den Mittelwert mit einer Genauigkeit von Tagen an, sondern auch ihre Standardabweichungen in Größenordnungen von Wochen, was nur allzu oft nicht nur von den Ärzten übersehen wird. So bedeutet die Angabe einer Wahrscheinlichkeit von 95 % für eine Entbindung nach 38 Wochen mit einer Standardabweichung von 2 Wochen, daß die Geburt mit dieser Wahrscheinlichkeit zwischen der 36. und 40.

Woche stattfindet. Daß aber nach genau 38 Wochen weniger als 5 % der Geburten stattfinden. So ist also die Information vom Ultraschallgerät tatsächlich nur genau in bezug auf diesen Zeitraum von vier Wochen. Das hat besondere Bedeutung im Endstadium der Schwangerschaft und kann psychologische wie auch juristische Implikationen haben.

Die Geburtseinleitung zur unrechten Zeit mit der Folge einer instrumentellen Geburt ist zumeist die Konsequenz irrtümlicher Annahmen der Frau selbst und derer, die sie begleiten. Nur 5–10 % schwangerer Frauen entwickeln bei der Geburt Schwierigkeiten, die fachärztliche Hilfe erfordern, aber in Kanada, Australien, Griechenland und den Vereinigten Staaten wird ungefähr jede dritte Geburt instrumentell durchgeführt, während dies in der Tschechischen Republik, Slowenien und den Niederlanden nur bei jeder 10. Geburt der Fall ist.

Introduction

The expected date of delivery having universal implication as one's date of birth, exerts an enormous, and at times unconscious, influence on the appreciation of the birth process itself in the lives of all individuals. Meanwhile, it is only a turning point, setting apart the period of maturation in utero toward independent existence, from the period of physical separation from the mother. What is completely omitted is the fact that only the moment of conception, i.e. the origin of a new human being can be precisely defined as the stochastically dependant joining of two gametes. All other remaining critical moments throughout the continuum of life, including death, are extended considerably over time.

Just as the life spans of humans differ, it is that some fetuses mature faster, other slower, towards an independent existence. Indeed, birth does conclude the pregnancy within the span of the single day, but in the context of a calendar dating. It may take place on any single day throughout the six week's range of birth occurrence in man. Yet, the most frequently appearing mean date of this norm encompasses less than 5 % of all births. This obvious fact, supported by thousands of clinically documented pregnancies, including their gestational lengths, stands in terrifying opposition to the everyday practice of physicians, as well as public reception designating the expected date of delivery just as the most frequent, theoretically only the most probable birth date, yet with a probability of occurrence only up to . . . 5 %. Certainly, one half of women will deliver before, the other after, whereas one third will do so up to two weeks before or after this "designated term of date". This data has been confirmed all over the world owing to the general use of sonography in the monitoring of intrauterine growth and development of the fetus, including lastly developed a computerized method of designating the expected date of delivery¹⁻³.

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whereas qualifying the growth and development of the fetus as fast, regular or slow is now possible in the third trimester. As a consequence the expected date of delivery may be designated with an accuracy of days, instead of the weeks.

Natural or Instrumental Birth

Every woman should have access to health facilities capable of providing at least obstetrical intervention. The alternation in the psychological sphere of understanding and accepting the probabilistic character of the birth date as specific for each and every to be born child, has as its goal to restore the humanistic meaning to resolving a pregnancy, as the natural process of birth rather than an artificial obstetric intervention.

It is estimated that actually less than 10 % of laboring women require active medical intervention. Particularly perilous, from an ethico-moral point of view, is the more or less conscious propagation by the pharmaceutical industry of the thus far used methods of designating the expected date of delivery, which have been associated with an excessive number of induced labors and assisted or instrumental deliveries. This places a particular burden on all those who are responsible for health care of the public.

It is high time, first of all, that gynecologists understand, it is not the duration of the pregnancy, measured in weeks and days, but the length of labour in hours counted from its spontaneous onset to natural resolution, accounts for perinatal mortality and morbidity of child and mother⁴. *Labor initiated at the inappropriate moment for any individual pregnancy and artificially resolved, is foremost a consequence of erroneous psychological assumptions by the parturient woman as well as those accompanying her.* Although prenatal care can help to identify those women most likely to need skilled care during delivery, all gynecologists bear a responsibility for creating a medico-social climate in which too much instrumental deliveries take place.

In 1992 the Regional Office for Europe of the World Health Organization presented data from 12 countries (Australia (State of Victoria); Canada (Quebec province); the Czech Republic; Denmark; Finland; Greece; Hungary; Israel; The Netherlands; Slovenija; the United Kingdom (Scotland); and the United States (Washington state) showing the rapid expansion of obstetrical interventions and obstetrical technology in the most recent years (1983–1988) and the urgent need to evaluate more carefully these interventions⁵. The countries with the highest instrumental vaginal delivery rates (11.0–15.2 %) generally had high caesarean section rates as well (30.1–33.9 %). Results show that caesarean section rates varied 3-fold and instrumental vaginal delivery rates as much as 10-fold among the compared countries. Nevertheless much attention has been given to the problem of rising caesarean section rates, but little to the overuse of instrumental vaginal deliveries. In Canada, Australia, Greece and the U.S. approximately one out of every three births were operative births while in Czech Republic, Slovenija and The Netherlands only one out of ten births (!!).

Since birth is a natural phenomenon, one can at least infer that a significant proportion of obstetrical interventions are unnecessary or only marginally ben-

eficial. What is more, continued increases in the rates of obstetrical intervention are unlikely to result in improvements in birth outcome and may even result in a higher incidence of adverse outcome for mothers and their offspring. Instrumental delivery has become a much too common form of birth in too many places. Only from 5 – 10 % of pregnant women develop complications requiring skilled obstetric emergency care. So, it is time not only to reevaluate current obstetrical practice, but first of all the ethico-moral attitude towards it.

Natural Period of Birth Occurrence

The goal of pregnancy is the delivery of the child mature enough for independent existence beyond the womb, and the term date is a result of the simultaneously occurring processes of gestation taking place in the mother, fetus and placenta. Under physiological conditions, initiating of labor takes place during several, particularly the last three days, prior to spontaneous onset of uterine contractions.

The spontaneous birth of an immature neonate may occur much earlier than it should from $37\frac{0}{7}$ until $43\frac{2}{7}$ weeks after the first day of the last menstrual period (LMP), if the conditions of the maternal-placental unit offer the developing fetus an environment that is considerably less favorable to further development than the environment beyond the womb. On the other hand, equally detrimental is the absence of labor observed within the same calendar duration of gestation as mentioned above, e.g. at 38, 40 or 42 weeks, despite the achievement of fetal maturity.

Both of these situations of pregnancy mentioned above should and can be recognized by all obstetricians. This may not be quite so simple from a psychological point of view, when one realizes they may occur at any point along the period of birth occurrence in a man, that is according to the calendar scale between $37\frac{0}{7}$ and $43\frac{2}{7}$ weeks.

From the medical point of view, beginning with the 37th week of gestation, all pregnancies must be considered as having the same procedure of diagnosing in each an appropriate delivery as well as truly predated or postdated outcomes. Paradoxically, gynecologist have adapted into their practice, principles compiled by pediatricians such as Lubchenko, Dubowitz, Dunn and Ballard. They introduced cross-sectional average data for gestational calendar age which are so different before and after mean length of human pregnancy (281 days after LMP). Their erroneous assumptions were consequently adapted by the creators of ultrasonographic scales and ultimately consolidated by industry with the production of technically faultless, yet from a psychological viewpoint, wrongly worked-out sonographic apparatus.

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Nowadays by completing an individual fetal growth profile (regular, fast and slow) rather than obtaining cross-sectional ultrasonographic data alone, the obstetrician may monitor the outcomes of eventual therapeutic interventions and predict the optimal date of childbirth, estimate the intra-uterine fetal weight and predict birth-weight by use of ultrasound and biochemical measurements, even without taking into account calendar gestational age at the time of examination¹.

In the group of 181 gravid women (average age 29.7 ± 4.5 years) with clinically documented last menstrual period at their 35.3 ± 2.3 gestation weeks the second computerized measurement was performed. Without taking into consideration LMP the length of observed pregnancies was estimated as 35.8 ± 2.6 weeks, what is not statistically different from documented calendar gestational age ($r = 1.3$, $t = 1.3$). The pregnant woman in this study gave birth after 3.1 ± 2.1 weeks, which also does not differ statistically from predicted biological age (weeks to labor): 3.5 ± 2.2 weeks ($r = 1.1$, $t = 1.76$). The average newborn body weight was 3225 ± 475 g, length – 53.4 ± 2.8 cm and Apgare score – 9.7 ± 0.7 . A high level of correlation was shown between true and calculated calendar gestational age ($r = 0.93$, $t = 29$, $p < 0.001$) as well as between true and predicted birth-date ($r = 0.66$, $t = 10$, $p < 0.001$).

The presented method seems now to obligate clinicians to change their evaluations of the relative duration of human pregnancy, especially to treat with equal responsibility the born-to-be infants before and after the mean length of the gestation period. Hopefully it may contribute to lowering the mortality rates at both limits of normal birth occurrence as well as the incidence of premature deliveries.

Conclusions

The fundamental mistake is to treat all pregnancies in each individual week of the consecutive calendar weeks after the 37th week as equivalent. Instead, the pregnancy that will resolve in its respective week with the delivery of a mature neonate should be differentiated from those, in which there is continued maturation of the fetus and adaptation of the mother to upcoming delivery. Cross-sectional analysis of these pregnancies shows that in accordance with increasing calendar weeks of gestation, there is an actual increase in values of all clinically detectable parameters, up to the 42–43 week, when only the influence of the still maturing fetus declines which lately we observe less and less.

If within these individual weeks, beginning with the 37th week, one averages exclusively the values of these pregnancies that resolved by onset of spontaneous labor, than these averages, with exception of the 37th week, do not differ significantly from any other consecutive remaining weeks. That is why to the pediatric and ultrasonographic scales, one should also apply, introduced already into practice in 1963 by R. Klimek⁶, the axiom of relative duration of pregnancy, to adapt, as the final values for all pregnancies resolving after 37 weeks, those that characterize all neonates after spontaneous birth, in a given population. This simple principle, confirmed also by my own works¹⁻², still encounters psychological resistance, unfortunately also from leaders among the gynecological community, despite a decisive dissenting voice of the younger generation of peers as well as the general public. Under these circumstances, only psychomedicine may yet save the day, before the legal system begins to arbitrate cases of unsuccessful perinatal outcome; had the physician, together with assistant medical personnel and manufacturers of medical apparatus, done everything to resolve that particular pregnancy at its most appropriate time. However, this is only possible if there is sufficient understanding and interpretation of relative duration of pregnancy, amongst the public as well, such that preparation for birth within the family becomes a conscious and properly controlled period of anticipation of the child to be born. Thus is the most important psychological aspect of determining expected date of delivery.

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