CHAPTER VI

DISCUSSION

In the early years of this century, apprehension with respect to post term pregnancy was related to the difficulty of delivery in cases of an excessively large fetus. Recently, this concern has been replaced by concern for a growth- retarded, undernourished fetus at risk of morbidity or mortality from hypoxia; this has led to an emphasis on close surveillance of postterm gestations for fetal size and well-being. However, there is a lack of convincing evidence that the postterm fetus is at increased risk of distress or nutritional deprivation. It has been the purpose of this study to determine how frequently either macrosomia or intrauterine growth retardation develops in infants who remain in utero after term, when the "postterm" status has been determined by last normal menstrual period (L.N.M.P.).

With assumptions that the placental dysfunction syndrome is rare disease and the sample of study can be representative for the whole population. The odds ratio can be used to estimate the relative risk.

The criteria to calculate the gestational age

Gestational age is usually expressed as time elapsed since the first day of the mother's last normal menstrual period and it has been customarily calculated. The potential sources of error in this method are known, although the magnitude and direction of these errors have only more recently been described (Kramer, M.S., 1988; Boyce, A., 1976). 1988, Kramer reported the probability that an infant born at term, as determined by the LNMP, was actually a term infant was 95 percent. The probability that a baby born post term, based on the mother's LNMP, was actually postterm plummeted to 12 percent (Kramer, M.S., 1988). L.N.M.P., although weakened in accuracy by the variation of the preovulatory phase, is ***the best single clinical estimate of fetal maturity*** available. Menstrual age is generally accepted as the standard of reference for other methods. One of the best indicators of the duration of pregnancy is accurate dating of the day of the onset of the last normal menstrual period. When this is combined with early examination that substantiate the information provided by the menstrual history, there should be little confusion about the date of delivery (Willson, J.R., 1987). In addition, the time of onset of the last menstrual period has assumed clinical importance for determining fetal age only because it is usually known rather precisely, and, when spontaneous and previously

regular, it is most often followed by ovulation and fertilization about two weeks later (Prichard, J.A., 1985).

One researcher stated that it is possible that the high risk previously attributed to postterm birth is related not to those who are truly postterm, but to those whose menstrual histories are misleading. It means the truly postterm pregnancies may not have any greater risks of unfavorable fetal outcomes The incidence of postterm birth in most of the original studies was 10% to 12% for 42-week births and 3% to 4% at 43 or more weeks of all pregnancies (Netsbitt, N., 1955).

So far, L.N.M.P. has been still used as main criteria to calculate the gestational age in Vietnam It is different from the criteria, which have been used in developed countries where they have used the date of onset of last normal menstrual period with confirmation of the early ultrasound before the 20th week. In addition, all published intrauterine fetal growth curves are all based on menstrual history alone. Hence, we used the date of onset of LNMP as the selection criteria in order to improve they generalizability and feasibility.

The criteria to diagnose the postterm pregnancy

There is also an inconsistency in the definition of "postterm". Different authors consider a postterm

infant to be one delivered at or after 41 weeks (Chevenak, J.L., 1989; Browne, J.C.M., 1963) or, more frequently, at 42 weeks (Lucas, W.E., 1965; Schneider, J.M., 1978; Boyd, M.E., 1988) or even at 43 weeks (2,4,7). This issue is further confused by varying interpretations of terminology. Actually, all of them only mean the infant to be delivered after 294 days of gestation. Deliveries assigned to a certain week may have occurred during that week or after that week has been completed, or they may be of uncertain date. **Gestational age in completed weeks in the present study is unambiguously by stating the days included.**

The risk of fetal growth retardation

The present study shows that the prevalence of fetal growth retardation in postterm pregnancy and term pregnancy are 9.6 per cent and 8.2 per cent, respectively. Similar, the prevalence of FGR in mild postterm and in severe postterm gravidas is 6.9 per cent and 17.7 per cent.

There is no evidence that the gravidas at 42 weeks of gestation have greater risk of fetal growth retardation (FGR) than term pregnancy. It is reasonable that majority of the gravidas at 42 weeks of gestation is unreal postterm pregnancy. Only the gravidas from 43 weeks on have greater risk of FGR. Especially, the primiparous woman is at greater risk than in multiparous women. The result of this study is in contrast with the result of Frances H. McLean

in 1991 that shows that the postterm gravida is at risk of macrosomia instead of FGR. But two studies are different in criteria to calculate the gestational age and study population.

The risk of placental dysfunction syndrome

The publication that led to the concept that infants may become undernourished if they remain in utero after term was Clifford's description (Clifford, S.H., 1954) of the "postmaturity syndrome", which is based on 37 infants selected by clinical features who were delivered from 3 to 44 days after term. The relative risk to develop of these features after term was not studied, nor was a comparison of birth weights made with controls.

After that study, Sjosted et al. (Sjostedt, S., 1858) classified 1171 infants as normal or abnormal on the basis of clinical inspection of the infant according to Clifford's classification but without prior knowledge of the duration of pregnancy. The mean weight of infants born between 39 and 44 weeks with signs of "postmaturity syndrome" was 200 gm less than the mean weight of "normal" infants of the same gestational age. Since the syndrome appeared to be present in some infants delivered before term, Sjostedt et al. renamed it "dysmaturity". Infants with and without signs of dysmaturity showed a similar weekly increase in birth weight from 39 to 43 weeks, but

dysmature infants weighed less than the normal infants did at each week. It was concluded that although dysmaturity may be diagnosed after term, it is not caused uniquely by postterm delivery, since it also can be found before term. During the intervening 30 years since the publication by Clifford and Sjostedt et al., no published evidence was found that infants remaining in utero after term tend to become undernourished, although this concept has continued to receive wide acceptance.

In this study, the percentage of placental dysfunction syndrome in postterm pregnancy and term pregnancy are 19.6 percent and 11.5 percent, respectively. The prevalence in mild and severe postterm pregnancy is 18.1 per cent and 22.8 per cent, respectively.

There is no evidence that the gravidas at 42 weeks of gestation are at greater risk of placental dysfunction syndrome than term pregnancy. But from 43 weeks on, the fetus has greater risk of placental dysfunction syndrome compared to term pregnancy and the risk is approximately twofold increase in postterm pregnancy. Some authors also published that the incidence of fetal postmaturity was found to be 3 per cent at term and 20 per cent at postterm gravidas (Strand, A., 1956) and fivefold increase of fetal postmaturity in postterm gravidas (Sjostedt, S., 1958). The incidence that published is much higher than ours and also include the mild postterm gestation even that these

study have the same criteria of selection, the onset of LNMP, with our study but still different study population.

The incidence of dysmaturity increases along with the gestational age. In other words, the longer gestational age is the greater risk of dysmaturity. There is no evidence that the primiparous women have greater risk of dysmaturity than multiparous gravidas.

The risk of large for date

Recently, reports of macrosomia in postterm pregnancies continue to appear (Ballantyne, J.W., 1902; Tucker, B.E.; 1957; Lucas, W.E., 1965; Zwerdling, M.,A., 1967; Arias, F., 1987; Chenevak, J.L., 1989). The results of these studies are different from those found in the study cited here. There is no evidence that the birth after term has greater risk of large for date than at term. Although, the data analysis of present study was separated between early postterm and late postterm and the definition of large for date, birth weight above 90th percentile is much easier to obtain than that of macrosomia, birth weight above 4,000 Gm.. It may be due to the differences of study population and selection criteria.

The risk of meconium staining of amniotic fluid

This study shows that the meconium release develop more commonly postterm than at term, a twofold increase in meconium release. In other words, the postterm fetuses are at greater risk of meconium release. This result is similar to some reports that also demonstrated the risk of meconium release in postterm fetuses (Usher, R.H., 1988;Eden, R.D., 1987; Green, J.N., 1978; Klapholz, H., 1977). On the other hand, the meconium aspiration syndrome is highly correlated with the meconium staining. Meconium aspiration syndrome is a problem to which the postterm infant is particularly predisposed (Usher, R.H., 1988; Gregory, G.A., 1974). That is to say that not only is meconium present more often in amniotic fluid postterm, but when present, is more often aspirated.

The risk of intervention due to fetal distress

Although, the fetal distress has not been measured directly in this study, but the term of intervention due to fetal distress also means an unfavorable outcome on the fetal heart rate. The present study shows a greater risk of intervention due to fetal distress. In other words, the postterm gravidas are intervened due to fetal distress more frequently than term gravidas. But it was demonstrated that the fetal distress has been less clearly recognized as

a risk (Klapholz, H., 1977). It can be explained that in this study the diagnosis of the fetal distress has been mainly based on the fetal heart rate that have been mainly diagnosed by use of fetal stethoscopy. It may be biased and varied from person to person. Therefore, the rate of fetal distress may be elevated unnaturally.

The risk of birth asphyxia (low Apgar score)

Although, the meconium release and fetal distress occur very frequently in gravidas at 42 weeks or more as mentioned above but the greater risk of low Apgar score in postterm infants have not been clearly demonstrated. There was no concomitant increase in frequency of birth asphyxia that is manifested by low Apgar score. Only infants at 43 weeks or more have greater risk of birth asphyxia.

One explanation might be that fetal distress and meconium release may have less of a predictive value for birth asphyxia. A hypothesis can be developed to explain these findings. It should be designed further research, longitudinal study with the comparison of low Apgar infants to normal Apgar about meconium release and fetal distress. The more mature postterm fetus may be more responsive and react more readily to levels of asphyxia stimuli that may not initiate a response at term. These reactions are manifested by fetal heart abnormalities, meconium release,

and gasping movements. The less responsive term fetus may be sufficiently asphyxiated to be depressed at birth without affecting the heart rate during labor or causing the release of meconium. The fetus at term also may pass meconium in utero and yet not be responsive enough to gasp and aspirate it. These interpretations would account for why fetal distress, meconium release, and meconium aspiration occur more often postterm and yet apparently do not indicate that the postterm infant is more often asphyxiated (as evidenced by depression at birth) than those delivered at term. Furthermore, little serious morbidity is associated with perinatal asphyxia postterm. None of the infants with meconium aspiration required ventilatory assistance, and none of the depressed infants demonstrated postasphyxic neurologic sequelae on follow-up examination.

The mean birth weight

In 1991, Kramer reported that the mean birth weight of all infants delivered after term according to a LNMP was 3490 gm, which is very close to that of term infants in the study, because a majority of post term dates are inaccurate (Kramer, M.S., 1991).

From the result of present study, the mean birth weight of infants in postterm pregnancy is very close to that of term pregnancy. Even the mean birth weight of

severe postterm is also not different from the term pregnancy. It may be explained by extremity of the birth weight in postterm pregnancy. The postterm population includes both types of infants (some large and others small). Therefore, population distribution by birth weight cannot be determined from mean values.

The study also shows that the birth weight is mainly predicted by gestational age. In other words, gestational age is linearly correlated with the birth weight. The parity and living place also is valuable to predict the birth weight but not as much as the gestational age.

Birth weight distribution

This study showed that within a fetal weight range of 3,500 Gm. - 4,000 Gm., a slight difference existed in term (9 per cent) and postterm (14.8 per cent) gravidas. Around one percent of the fetuses of above 4,000 Gm. were born to term gravidas and postterm gravidas. These results are similar to the published reports. In those studies, they demonstrated the higher percentage of birth weight within 3,500 - 4,000 Gm. and above 4,000 Gm. in term and postterm gravidas (Lucas, W.E., 1965; Holtorff, J., 1986; Beischer, N.A., 1969; Perlin, I.A., 1960) but it is different from the result of Daichman and Gold.

From the 43 weeks on, the result shows a difference between 2 birth weight distribution. Within a range of 3,500 Gm. to 4,000 Gm., a considerable difference existed in term (9 per cent) and postterm (20 per cent) gravidas. In contrast, the percentage of birth weight within 2,500 Gm. to 3,000 Gm. in term gravidas (44 per cent) is greater than in postterm gravidas (29 per cent).

In summary, the data in this study indicates that the risk of getting the unfavorable fetal outcomes may confront the obstetrician dealing with a prolonged pregnancy as follow

<u>At 42 weeks of gestation</u>

(i) Meconium release into amniotic fluid.

(ii) Intervention due to fetal distress.

<u>At 43 weeks or more</u>

(i) Fetal growth retardation.

(ii) Placental dysfunction syndrome.

(iii) combination of fetal growth retardation and placental dysfunction syndrome.

(iv) intervention due to fetal distress.

(v) meconium release.

When erroneous menstrual dates are not eliminated with the use of early ultrasonography, mothers who are delivered of their infants after term produce small (not

large) babies. There is no evidence that infants experience growth success or increase in weight when pregnancy continues after term with any greater frequency than do infants delivered at term. Intrauterine growth retardation, not large for date, appears to be the valid concern in postterm pregnancy.