



CORRELATION BETWEEN EDD AND SPONTANEOUS ONSET OF LABOUR IN NORMAL PREGNANCY.

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ABSTRACT **Introduction:** The duration of human pregnancy is 280 days or 40 weeks. Expected date of delivery (EDD) is important to know the foetal maturity. It is calculated by Naegele's rule and first trimester ultrasound (T-1 scan).

Materials and methods: 200 eligible patients were studied to find out the day of spontaneous labour in relation to the EDD calculated by both Naegele's rule and by T-1 scan for each patient.

Results: By Naegele's rule, the average period of gestation was 273 days, where 5.5% cases developed labour on EDD, 20.5% cases at 37 weeks, 23% cases at 38 weeks, 34.5% cases at 39 weeks, 20% cases at 40 weeks and 02% cases at 41 weeks of gestation. In EDD by T1 scan average duration of pregnancy was 272.3 days, where 4.5% cases had labour on EDD, 16.5% cases at 37 weeks, 26% cases at 38 weeks, 38.5% cases at 39 weeks, 18% cases at 40 weeks and 01% case at 41 weeks of gestation.

Conclusion: This study shows that EDD gives a rough idea about the day of spontaneous labour.

KEYWORDS : EDD, onset of labour.

INTRODUCTION:

The aim of every pregnancy is to deliver a healthy baby from a healthy mother at term. For this, not only the antenatal care, but also the timing of delivery is very important. The doctor and the family members are always keen to know the Expected date of delivery (EDD) in order to decide the place of delivery, availability of obstetrician, economical work up, personnel help, arrangement to receive the new born and many more. EDD is useful for the obstetrician to categorise the labour into preterm, term or postterm as the two extremes are under high risk category and need special care.

The method of calculation of EDD as advocated by American college of obstetricians and gynaecologists is as per Naegele's rule and first trimester ultrasound¹. Naegele's rule is named after the German obstetrician Franz Karl Naegele who devised the formula and published in 1830. By this 7 days is added to the first day of the last normal menstrual period (LMP) and then either 09 calendar month is added or 3 months is subtracted after adding 12 months. Consideration is given to long and short menstrual cycles to make the total normal intra uterine period calculated from LMP to EDD. Extra days beyond 28 days of the menstrual cycle is added to the calculated EDD and less days of the cycle than 28 days is subtracted from the EDD calculated by Naegele's rule. The other reliable method of calculating the EDD is by first trimester obstetric ultrasound. Duration of human normal pregnancy is 280 days or 40 weeks calculated from the first day of the last normal menstrual period (LMP)². But it varies with ethnicity and geographical location. Fetal maturity decides the time of delivery and it is attained earlier in South Asian mothers as compared to European mothers^{3, 4}. The median duration was found to be 39 weeks in Afro Asian races and 40 weeks in European races^{4, 5}. Factors like maternal age, diet, anthropometric features, smoking and medical as well as obstetric complications affect the duration of pregnancy. First trimester USG is superior to LMP in predicting the EDD⁶. When performed with quality and precision, ultrasound alone is more accurate than a certain menstrual date in determining the gestational age in first and second trimester (<= 23 weeks) in spontaneous conception and is the best method for estimating the date of delivery^{7, 8}.

Hence, this study was conducted to find the relation between the spontaneous onset of labour in normal pregnancy at term and EDD by certain LMP and by first trimester USG among the regional population in the state of Telangana.

MATERIALS AND METHODS

This retrospective observational study was carried out in the department of Obstetrics and Gynaecology of Mamata General Hospital attached to Mamata Medical College, Khammam, Telangana State. The study was conducted over a period of 3 years from January 2017 to December 2019. Being a tertiary care centre, majority of obstetrics cases were complicated ones. However, 222 cases of normal pregnancy with spontaneous onset of labour at term (37-42 weeks) were selected for the study. Exclusion criteria were preterm labour, unsure LMP, conceived in lactational amenorrhoea, irregular menstrual history before conception, history of taking combine oral contraceptive pills in last three months before conception, medical or obstetric complications and/or conditions affecting duration of pregnancy like hypertension, diabetes, autoimmune disease, heart disease, infection, poly or oligohydramnios, multiple gestations, placental abnormality or fetal congenital anomalies and non availability T-1 scan report. 22 cases were excluded from the study for not fulfilling the selection criteria making total study population of 200. In addition to biostatistics, their detail history was noted. Duration of gestation was expressed in completed weeks. EDD for each patient by Naegele's rule and from T-1 scan and date of onset of spontaneous labour pain was noted from patients' case record. Labour was diagnosed by regular painful uterine contraction with progressive dilatation and effacement of cervix. All the data were compiled and statistical analysis of onset of spontaneous labour in relation to EDD by LMP and by T-1 scan was done.

RESULTS:

200 eligible cases were included in the study as per inclusion and exclusion criteria. Almost all cases were in early reproductive age group, belonging to rural background and low socio economic status. All the new born babies were mature with normal Apgar score on delivery. In the group with EDD calculated by Naegele's rule, spontaneous labour developed in 41 cases (20.5%) at 37 weeks, 46 cases (23%) at 38 weeks, 69 cases (34.5%) at 39 weeks, 40 cases at (20%) 40 weeks and 04 cases (02%) at 41 completed weeks. Average duration of pregnancy was 273 days (39 weeks). Only 11 cases (05.5%) cases developed spontaneous labour on the day of EDD. Overall 113 cases (56.5%) developed spontaneous labour over the period of one week before and one week after EDD.

Table – 1: Onset of spontaneous labour related to EDD.

Completed weeks of gestation	No. of Spontaneous labour by LMP (n=200)		No. of spontaneous labour by T-1 scan (n=200)	
	No. of cases	% of cases	No. of cases	% of cases

37	41	20.5	33	16.5
38	46	23.0	52	26
39	69	34.5	77	38.5
40	40	20.0	36	18
41	04	02.0	02	01

EDD by T-1 scan showed 33 cases (16.5%) at 37 weeks, 52 cases (26%) at 38 weeks, 77 cases (38.5%) at 39 weeks, 36 cases (18%) at 40 weeks and 02 cases (01%) at 41 weeks developed spontaneous labour. Average duration of pregnancy was 272.3 days (38.90 weeks). Only 09 cases (4.5%) had spontaneous labour on the day of EDD. Overall 115 cases (57.5%) developed spontaneous labour over the period of one week before and one week after the EDD. The details of these observations have been depicted in table-1.

DISCUSSION:

Correlation between calculated EDD and day of spontaneous onset of labour in normal pregnancy is variable. Though exact factor is not known; factors like genetic, ethnic group, geographical variation, diet and BMI play an important role in it. With the knowledge of mechanism of onset of normal labour it is well proved that fetal maturity decides the time of normal delivery and many studies have shown that gestational age for attainment of fetal maturity is affected by the factors like race, diet, geographical location etc.

Similar Study by Munjal J. Pandya et.al in Ahmedabad on 500 cases shows the average duration of pregnancy to be 275 days and onset of spontaneous labour to be 11.0% at 37 week, 23.20% at 38 weeks, 35.8% at 39 weeks, 24% at 40 and 6% at 41 weeks. 5.5% of the cases had spontaneous labour on the date of EDD in this series. In this study EDD was calculated by Naegele's rule⁹.

A study in Australia, by Khambalia et.al. on spontaneous labour, shows EDD by reliable LMP is a better predictor of spontaneous labour. In their study, 05% women went into labour on the day of EDD, while 66% did so over a period of one week before and one week after EDD¹⁰.

Mungelli et.al. found ultrasound to be superior to certain menstrual date in prediction of the actual date of delivery in 34249 singleton pregnancies. In this study, 04% women had labour on EDD. Delivery occurred within 7 days of EDD in 49.5% cases, when menstrual dates were taken into consideration and in 55.5% cases, when USG was considered¹¹.

In the present study, the spontaneous onset of labour was observed in 56.5% cases in EDD by LMP and 57.5% by USG within 1 week of EDD, whereas on day of EDD, the corresponding figures are 5.5% and 4.5% respectively.

CONCLUSION:

Human pregnancy, like any other biological parameters, varies over a period around 280 days or 40 weeks. EDD is a rough guide for date of delivery. Spontaneous onset of labour is noted over the period +/- 01 week of EDD calculated by either method in majority of cases. Both the methods of calculating the EDD by Naegele's rule and USG are useful if effectively utilized.

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