



## ESTIMATION OF GESTATIONAL AGE BY ULTRASONOGRAPHIC AGE OF PLACENTAL THICKNESS AND ITS CORRELATION WITH LMP GESTATIONAL AGE IN SECOND TRIMESTER – CENTRAL INDIAN POPULATION.

### Anatomy

**Naresh Thaduri** Phd Scholar, Department of Anatomy, RKDF Medical College Hospital & Research Center, Bhopal (M.P).

**Dr. Vivekanand Murlidhar Gajbhiye\*** Professor & Head, Department of Anatomy, RKDF Medical College Hospital & Research Center, Bhopal (M.P). \*Corresponding Author

### ABSTRACT

**BACKGROUND:** The thickness of the placenta when used together with other parameters can improve the accuracy of the assessment of the gestational age of the fetus. The present study was determining gestational age by USG GA of placental thickness and its correlated with LMP gestational age in central Indian population.

**METHODS:** This was an observational cross sectional study conducted in the Department of Radiology in collaboration with Department of Anatomy at L.N. Medical College and Research Centre, Bhopal. A total of 100 central Indian women in the second trimester of pregnancies were selected for the study. The placental thickness was measure using Toshiba ultrasound equipment with a 3.75 MHz curvilinear transducer

**RESULTS:** The correlation between 2nd trimester LMP & placental thickness gestational age, which is found to be highly correlated (Pearson Correlation value .971) and it is statically significant (P value - 0.01)

**CONCLUSION:** It can be concluded from the result that the thickness of the placenta was a less accurate parameter for assessing the gestational age in 2nd trimesters compared to other parameters

### KEYWORDS

Placental thickness, Second trimester, USG gestational age, LMP gestational age, Central Indian population.

### INTRODUCTION:

The determination of gestational age is important in obstetrics for managing pregnancy and assessing pregnancy in fetal development. Among the various clinical criteria, it is known that the last menstrual period, preceded by a normal cycle, correlates well with gestational age, but this is unreliable when a woman is not sure of her LMP<sup>1</sup>.

Even if obstetric ultrasound has been utilized in clinical practice to count and date fetal development since the late 1970s, there is still discussion about whether the last method for the menstrual period or the ultrasound method is increasingly exact for evaluating the gestational age<sup>2</sup>.

The thickness of the placenta can be used as a predictor of gestational age in women in whom the last menstrual period is unreliable or unknown. The thickness of the placenta using ultrasound is a relatively simple and useful parameter, and it can be used to calculate the duration of pregnancy. The thickness of the placenta when used together with other parameters can improve the accuracy of the assessment of the gestational age of the fetus<sup>3</sup>.

The measurement of placental thickness at the level of umbilical cord insertion and found that the thickness gradually increased from 15 cm at the 11th week of gestation to 37.5 mm at the 39th week of gestation. From 22 to 36 weeks of gestation, thickness coincided with gestational age in weeks<sup>4</sup>.

As far as we could possibly know, this is the first research that has assessed the presentation of LMP GA (days) correlation with the ultrasound placental thickness GA (days) to evaluate gestational age in second trimester pregnant patients.

### MATERIALS AND METHODS:

This was an observational cross sectional study conducted in the Department of Radiology in collaboration with Department of Anatomy at L.N. Medical College and Research Centre, Bhopal. A total of 100 central Indian women in the second trimester of pregnancies were selected for the study. The pregnant women who will visit all socio-economic sectors of society.

### EXCLUSION CRITERIA:

- Patients who are not sure of dates or with a history of irregular cycles.
- Chronic medical diseases like diabetes, hypertension, chronic renal disease
- Difference >4 weeks between the period of amenorrhea and fundal height

- Pregnant women who did not satisfy the inclusion criteria.

Sonography was carried out on each patient included in the study using Toshiba ultrasound equipment with a 3.75 MHz curvilinear transducer. The thickness of the placenta will be measured at the level of the umbilical cord in the longitudinal direction from the lateral chorionic plate to the cord, excluding the retro area of the placenta, with an accuracy of 1 mm an umbilical artery color doppler will be used to confirm where the umbilical cord is inserted<sup>5</sup>.

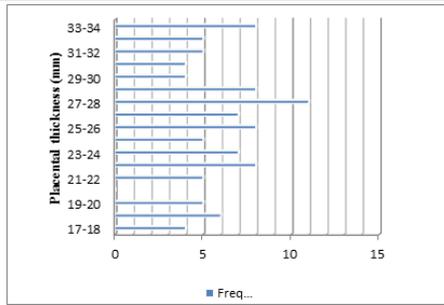
Appropriate statistical methods will be applied to research. The data was analyzed on a computer using the SPSS / PC statistical package (Statistical Package for Social Science Inc. Chicago, Illinois, USA, Version 20). Ethical approval was granted by the Institutional Ethics Committee (IEC).

### RESULTS:

The result of our study shows that the out of 100 patients the table no :1 shows that maximum numbers of patients were in placental thickness range between 27-28 mm and minimum patients belong to placental thickness range between 17-18 mm, 29-30 mm, 30-31 mm.

**Table No: 1 showing distribution of study subjects based on Placental thickness in 2<sup>nd</sup> trimester (n=100)**

Placental thickness (mm)	Frequency	Percentage
17-18	4	4%
18-19	6	6%
19-20	5	5%
20-21	00	00%
21-22	5	5%
22-23	8	8%
23-24	7	7%
24-25	5	5%
25-26	8	8%
26-27	7	7%
27-28	11	11%
28-29	8	8%
29-30	4	4%
30-31	4	4%
31-32	5	5%
32-33	5	5%
33-34	8	8%
Total	100	100 %



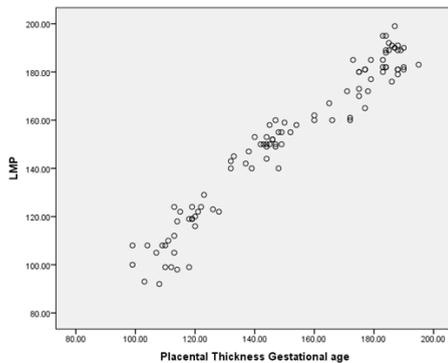
**Figure 1 showing distribution of study subjects based on placental thickness in 2nd trimester**

Table No:2 (Fig No:2) showing correlation between 2<sup>nd</sup> trimester LMP & placental thickness gestational age, which is found to be highly correlated (Pearson Correlation value .971) and it is statically significant (P value - 0.01).

**Table No: 2 showing correlation between 2<sup>nd</sup> trimester LMP & Placental Thickness Gestational age (n=100)**

Variables	Mean	Std. deviation	Pearson Correlation	P value
LMP	152.3	30.3	0.971	0.01**
Placental Thickness Gestational age	151.4	29.3		

\*\*Correlation is significant at the 0.01 level (2-tailed).



**Fig No: 2 showing correlation between 2<sup>nd</sup> trimester LMP & Placental Thickness Gestational age (n=100)**

**DISCUSSION:**

This study, conducted on 100 healthy pregnant women, probably on their LMP, had a regular menstrual cycle and a normal fetus to describe the accuracy of ultrasound in assessing gestational age. Proper assessment of gestational age is one of the most important events in the management of the obstetric case.

In our study 2<sup>nd</sup> trimester placental thickness USG GA and LMP GA found to be highly correlated (Pearson value 0.971), Our findings are similar to the observations made by **Anu Kapoor et al**<sup>6</sup> shows an almost linear increase in the placental thickness with expanding gestational age. Pearson's correlation coefficient (r) for the above data is 0.948 with a P value < 0.01.

In this study placental thickness, USG GA correlated with other parameters like (BPD, HC, AC, FL, HL) is less correlated with LMP gestational age. **Arafa Ahmed**<sup>7</sup> result demonstrates that there was no significant difference between the placenta thickness and GA with P-0.985 which was no significance. **Appiah P.K**<sup>8</sup> watched no huge relationship between the placental thickness and the gestational age (r = 0.09, p>0.05). In this way, an expansion in gestational age did not impact the thickness of the placenta significantly.

**Maya Menon et al**<sup>9</sup> placental thickness had a direct association with gestational age. As gestational age increases placental thickness increases. The relationship was huge relapse condition was determined for estimation of gestational age with the placental thickness as Gestational Age (GA) =1.061\*Placental Thickness - 1.749. Maya Menon finding similar like our results.

**C.c. Ohagwu et al (2008)**<sup>10</sup> result showed that placental thickness increased with gestational age in a fairly linear manner. This relationship suggests that placental thickness can be utilized as a marker of gestational age.

**CONCLUSION:**

We concluded that there was positive significant correlation between placenta thickness USG GA and LMP GA in the 2<sup>nd</sup> trimester. The thickness of the placenta was a less accurate parameter for assessing the gestational age in 2<sup>nd</sup> trimesters compared to other parameters. Using several parameters for GA estimation is better than one parameter.

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