International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Tiwari A et al. Int J Reprod Contracept Obstet Gynecol. 2013 Dec;2(4):503-505
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: 10.5455/2320-1770.ijrcog20131202

Research Article

A study to evaluate gestational age with the help of placental thickness

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Received: 14 August 2013
Accepted: 5 September 2013

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ABSTRACT

Background: To assess relationship of placental thickness with gestational age.
Methods: The study was conducted on 754 normal antenatal patients, of all gestational ages attending the out patient department of Dhiraj hospital from October 2012 to March 2013. USG was done by using Philips HD 7 machine with a 3.75 MHz sector probe. After estimating the fetal age by CRL, BPD, HC, AC, and FL, the placental thickness with standard deviation was calculated for all gestational ages.
Results: It was observed that the placental thickness gradually increased from 15 mm at 11 weeks of gestation to 36.3 mm at 39 weeks. From the 22nd week to the 35th week of gestation the placental thickness coincide almost exactly with the gestational age in weeks.
Conclusion: Placental thickness is a good parameter for estimation of gestational age especially in the late second trimester and early third trimester.

Keywords: Placental thickness, Gestational age

INTRODUCTION

The best possible ante partum care and the successful deliveries of babies always revolve around the accurate knowledge of the gestational age.[4] The gestational age is approximately 280 days, which is calculated from the first day of the last menstrual period and so, the dating of the pregnancy starts even before the fertilization. The determination of the gestational age is a common clinical problem. Ultrasonography is commonly used to estimate the gestational age by measuring the foetal dimensions like the Biparietal Diameter (BPD), the Abdominal Circumference (AC), the Head Circumference (HC) and the Femur Length (FL). An ultrasonograph is prone to observer bias, as it depends on the observers' technical skills. Also, the foetal parameters, the different techniques of measurement and the positional problems may diminish the accuracy of the gestational age estimation.[6] Wolfson et al., showed that the biparietal diameter was not reliable in the foetuses which had a premature rupture of the membranes.[11]

There are some drawbacks in those above said parameters in estimating the gestational age. So, there is a need of another parameter for supplementing the gestational age estimation with minimal error. Nyberg and Finberg reported that the placental thickness parallels the gestational age.[10]

At term, placenta is discoid with a diameter of 15 to 25 cms and approximately 3cms thick and weighs about 500 to 600grams.[10] Placental thickness increases with the age of the foetus.[1,2,3,8]

Therefore the thickness in mm can approximate the gestational age (in weeks) + / - 10 mm. The maximum thickness considered normal at any stage in pregnancy is often taken at 4 cms.[2] The present study was undertaken

to evaluate the relationship between placental thickness and gestational age of the fetus.

METHODS

Present study was conducted in the department of Gynaecology and Obstetrics, Dhiraj Hospital, S.B.K.S.MIRC, Piparia, Vadodara, Gujarat.

754 antenatal cases of all gestational ages (> 10 weeks of gestation) were selected in this study. Patients with gestational hypertension, gestational diabetes mellitus, intra uterine growth restriction, hydrops fetalis, congenital malformation, multiple pregnancy were excluded from the study. The ultrasonography was done in the outpatient department with Philips HD 7 machine with a 3.75 MHz sector probe.

The patients were scanned with a full bladder in a supine position. The fetus was examined for viability, foetal congenital abnormalities and various growth parameters. The gestational age was determined by measuring the CRL up to the 11th week, by BPD and FL in the second trimester and BPD, FL, AC in the third trimester.

The placenta was then localized in the longitudinal section and the placental thickness was measured near the insertion of the umbilical cord.

RESULTS

The mean values of placental thickness along with respective standard deviation (SD) were calculated for different gestational ages from the 11th week to the 39th week.

The results of the study have been shown in table 1.

Table 1: Placental thickness.

Gestational age (in weeks)	Number of cases	Placental thickness(mm) Mean +/- SD
10	19	15+/- 2.9
11	18	15.2 +/- 3.0
12	16	15.4+/-3.1
13	11	16.6+/-2.9
14	18	16.9 +/-3.6
15	18	17.7 +/-3.2
16	25	20.1 +/- 2.3
17	22	20.5 +/- 2.9
18	21	22.2 +/- 4.0
19	12	22.4 +/- 2.8
20	16	22.6 +/- 2.7
21	10	23.5 +/- 3.8
22	17	23.8 +/- 3.2
23	17	24.2 +/- 3.2
24	10	25.0 +/- 3.5
25	11	26.8 +/- 3.5
26	18	27.6 +/- 2.9
27	22	27.8 +/- 1.8
28	25	28.5 +/- 4.6
29	26	29.8 +/- 4.0
30	50	30.1 +/- 2.2
31	50	32.0 +/- 3.1
32	63	32.5 +/- 3.0
33	42	32.6 +/- 2.5
34	56	33.0 +/- 3.1
35	31	33.0 +/- 2.9
36	29	33.2 +/- 2.6
37	38	34.8 +/- 3.2
38	30	36.1 +/- 2.5
39	13	36.3 +/- 2.3

In our study, up to 21 weeks of gestation the mean placental thickness was slightly higher than the gestational age (1-4 mm). From the 22nd week to the 35th week of gestation the placental thickness almost matched the gestational age in weeks, thereafter the placental thickness was lower by (1-2 mm) [Table 1].

Total cases: 754.

DISCUSSION

The result of our study showed that placental thickness increased linearly with the advancing gestational age. This means that placental thickness can be used as an indicator of gestational age.

Kunlmann[5] and Warsoff et al in 1996 reported that placental thickness of less than 2.5 cms is associated with intra-uterine growth restriction, while thick placentas are associated with diabetes mellitus, hydrops fetalis, intra-uterine infections.

Early reports of placental localization by ultrasound examination were published by Donald (1968), Kobayashi (1970) and Gottesfield (1966). Nyberg and

Finberg (1990) also reported that placental thickness in millimeter parallel gestational age in weeks.

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DOI: 10.5455/2320-1770.ijrcog20131202
Cite this article as: Tiwari A, Chandnani K. A study to evaluate gestational age with the help of placental thickness. Int J Reprod Contracept Obstet Gynecol 2013;2:503-5.