

Placental Thickness – “A Sonographic Indicator of Gestational Age”

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Summary

This study was undertaken on 550 normal antenatal cases referred for sonographic examination to the department of Radiodiagnosis, M.L.B. Medical college, Jhansi (U.P.) from June 1997 to Oct 1998 by using ultramark 4 plus machine with 3Mhz sector probe.

Placental thickness was measured in every case at the level of cord insertion.

It was found that there is an increasing trend in the values of mean placental thickness (in millimeters) with increase in gestational age (in weeks) and the placental thickness (in millimeters) almost matched gestational age (in weeks) from 27 weeks to 33 weeks of gestation.

This information can be of help along with other parameters in assessment of gestational age especially in early part of third trimester.

Introduction

Placenta is a most interesting organ but unfortunately often ignored & misunderstood organ. Until recently, the feto-placental unit could only be assessed clinically & biochemically. Now sonography has provided a safe & non-invasive means not only to evaluate fetus but also placenta. It is a fetal organ whose normal & abnormal appearances can have significant antenatal implications.

The present study was conducted to assess the relationship of placental thickness with gestational age since accurate assessment of gestational age is an important part of any obstetric examination.

Material and Methods

A total of 550 normal antenatal cases (≥ 10 weeks of gestation) attending the OPD and admitted to indoor wards of department of Obs & Gynae were referred for sonographic examination for various obstetric indications to the department of Radiodiagnosis, M.L.B. Medical College, Jhansi during the period from June 1997

to Oct 1998.

This study was done on Ultra mark 4plus machine with 3MHz sector probe

Scanning technique

The patient was scanned with a full but not overdistended bladder in a supine position. The lower abdominal wall was liberally smeared with coupling gel agent to secure absence of air gap between transducer & skin surface.

The gestational age was determined by measuring CRL upto eleventh week & thereafter by measuring biparietal diameter (BPD), head circumference (HC), abdominal circumference (AC) & femur length (FL)

The placental thickness was measured at the level of cord insertion. Mean value of placental thickness was obtained for all cases in particular gestational age.

Results

The mean values of placental thickness along

with respective standard deviation was calculated for different gestational ages from 10 weeks to 39 weeks. It was observed that mean placental thickness increased from approximately 15mm at 10 weeks of gestation to 36mm at 39 weeks.

Upto the gestational ages of 25 weeks the mean placental thickness was slightly higher than gestational age (1-5mm), these matched almost equally from 27 to 33 weeks which were slightly lower after 33 weeks (1-3 mm)(Table I)

Table I
Placental thickness at various gestational ages

Gestational age (in weeks)	No. of cases	Placental thickness (mm) Mean \pm S.D
10	14	15.0 \pm 2.9
11	13	15.2 \pm 3.0
12	12	15.4 \pm 3.1
13	8	16.6 \pm 2.9
14	13	16.9 \pm 3.6
15	13	17.7 \pm 3.2
16	18	20.1 \pm 2.3
17	16	20.5 \pm 2.9
18	15	22.2 \pm 4.0
19	9	22.4 \pm 2.8
20	12	22.6 \pm 2.7
21	7	23.5 \pm 3.8
22	12	23.8 \pm 3.2
23	12	24.2 \pm 3.2
24	7	25.0 \pm 3.5
25	8	26.8 \pm 3.5
26	13	27.6 \pm 2.9
27	16	27.8 \pm 1.8
28	18	28.5 \pm 4.6
29	19	29.8 \pm 4.0
30	37	30.1 \pm 2.2
31	37	32.0 \pm 3.1
32	46	32.5 \pm 3.0
33	31	32.6 \pm 2.5
34	41	33.0 \pm 3.1
35	23	33.0 \pm 2.9
36	21	33.2 \pm 2.6
37	28	34.8 \pm 3.2
38	21	36.1 \pm 2.5
39	10	36.3 \pm 2.3

Total = 550

Graph I

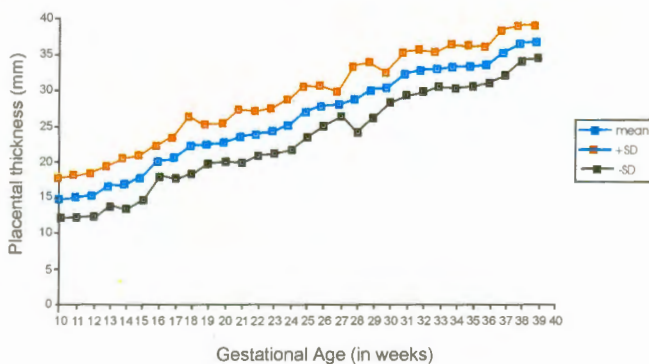


Fig 1. Placental thickness measured at the level of cord insertion. Placental thickness - 33mm. Average Gestational Age - 32 weeks 4 days.-

The values of mean placental thickness increases with advancing gestational age almost matching from 27 to 33 weeks as shown in Graph I (graph I)

Discussion

The present study assessed the relationship of placental thickness (in millimeters) to sonographic gestational age (in weeks). Grannum and Hobbins (1982) reported that placental thickness can be determined sonographically, definition will vary as a function of sonographic age. Hoddick et al (1985) also found average placental thickness (in mm) to be roughly equivalent to gestational age (in weeks). Nyberg and Finberg (1990) also reported that as a rule of thumb, placental thickness (in millimeters) parallels gestational age (in weeks). Our findings are also consistent with those in the above studies as we observed an increasing trend in the values of mean placental thickness with an increase in gestational age which almost matched between 27 to 33 wks.

To conclude, we can say that placental thickness is also an important parameter for assessment of gestational age and can be of help along with other parameters like BPD, HC, AC, FL in assessing gestational age, in instances, when duration of pregnancy is not known or uncertain. Especially as seen in the present study, this can be very helpful in early part of third trimester from 27 to 33 weeks when placental thickness (in millimeters) almost matches gestational age (in weeks).

References

1. Grannum PAT, Hobbins JC, Radiol Clin North Am; 20: 353; 1982.
2. Hoddick WK, Mahoney BS, Callen PW, Filly RA., J. ultrasound Med, 4: 479; 1985.
3. Nyberg DA, Finberg H.J. The placenta, placental membranes and umbilical cord. In: Newburgh DA, Mahony BS, Pretorius DH, eds. Diagnostic ultrasound of fetal anomalies. St. Louis: Mosby year Book 1990: 623-675.