



To Study The Role Of Placental Thickness On Ultrasound In The Prediction Of Fetal Outcome

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Abstract

Background: A healthy baby at term is the product of three important factors: a healthy mother, normal genes, and good placental implantation and growth. A normally functioning placenta is required for normal fetal growth and development. Change in maternal metabolism affects the placental function and its morphology which ultimately affects birth weight at delivery. With the invention of ultrasonography and its newer advancements, it is now possible to do Doppler imaging of the placenta and study its appearance, uteroplacental circulation, and its variability in complicated pregnancies [5]. Placental thickness has been noted to increase as pregnancy advances. Its thickness at the cord insertion site was found to have a linear relation with the gestational age.

Aim: The aim of this study to determine the role of placental thickness on ultrasound in the prediction of fetal outcome.

Objective: To correlate ultrasonographic placental thickness between 32 to 36 weeks of pregnancy with neonatal outcome and to propose placental thickness as a simple test for prediction of neonatal outcome.

Methods A Prospective observational study was conducted among Pregnant women who will attend the ANC clinic at MGM hospital Kalamboli a tertiary care teaching hospital in Navi Mumbai. The study was conducted over a period of 2 years (2021 to 2022). Subject included pregnant women of gestational age between 32 and 36 weeks single, uncomplicated pregnancy. These patients were subjected to a ultrasonographic examination at 32 weeks -36 weeks. Placental thickness at 32 and 36 weeks was correlated with birth weight and neonatal outcome.

Results Mean age of the study group was 23.84 years with 40.7% cases between age of 21 to 25 years and 4.9% above 30 years of age. Out of the total 425 females, 47.1% were primigravida while 52.9% were multigravida. In present study, a significant difference was observed in birth weight as per placental thickness.

Conclusion Study concluded that placental thickness at 32 and 36 weeks corresponds well with birth weight and is a good prognostic factor in assessing neonatal outcome. Study thus concludes that thickness of the placenta by ultrasound can be used beside other biometric parameters in predicting neonatal outcome and measurement of placental parameters should be involved in all routine antenatal ultrasounds.

Keywords: Placental thickness, fetal outcome, ultrasonography

Introduction

A healthy baby at term is the product of three important factors: a healthy mother, normal genes, and good placental implantation and growth. The placenta is the most important but unfortunately often

an ignored organ. Change in maternal metabolism affects the placental function and its morphology which ultimately affects birth weight at delivery. Maternal weight gain during pregnancy directly

affects the growing fetus and indirectly the adult health outcome [3,4]. With the invention of ultrasonography and its newer advancements, it is now possible to do Doppler imaging of the placenta and study its appearance, uteroplacental circulation, and its variability in complicated pregnancies [5]. Placental thickness has been noted to increase as pregnancy advances. Its thickness at the cord insertion site was found to have a linear relation with the gestational age. Also, it was found that variations in placental thickness were associated with increased perinatal morbidity and mortality [6]. Low birth weight (LBW) is an extensively established risk factor for long-term effects, especially metabolic and cardiovascular disorders [6]. Recently, researchers have identified many determinants of abnormal (both low and high) neonatal birth weight [7-9]. Thick placenta is observed in Rh-ve pregnancy, intrauterine

infections, gestational diabetes, and fetal hydrops, whereas thin placenta is observed in preeclampsia, chorioamnionitis, and intrauterine growth restriction (IUGR) [7]. Few studies have demonstrated the role of placental thickness in predicting the fetal outcome and fewer studies have established an association between placental thickness at different gestational ages and birth weights [3,4]. A study conducted in Iran reported a weak positive correlation between placental thickness and fetal weight and birth weight [10]. However, the role of normal, thin, and thick placenta in determining the fetal outcome is still inconclusive. Hence, there is a dearth of studies to establish an association between placental thickness and neonatal outcome. In present study, we aimed to determine the role of placental thickness on ultrasound in the prediction of fetal outcome.

Ultrasonographic (US) Image of Normal Placenta [12]



Figure 2. Normal placenta at 10 weeks gestation. Transverse gray-scale US image shows the chorion laeve (right arrow) and chorion frondosum (left arrows) of the placenta.



Figure 3. Normal placenta at 12 weeks gestation. Transverse colour Doppler image shows intervillous flow (arrow). M = myometrium, P = placenta.

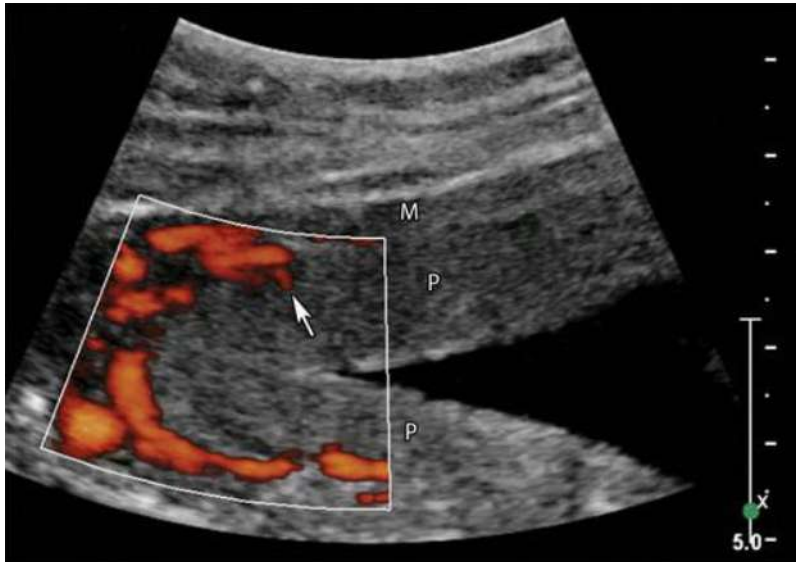


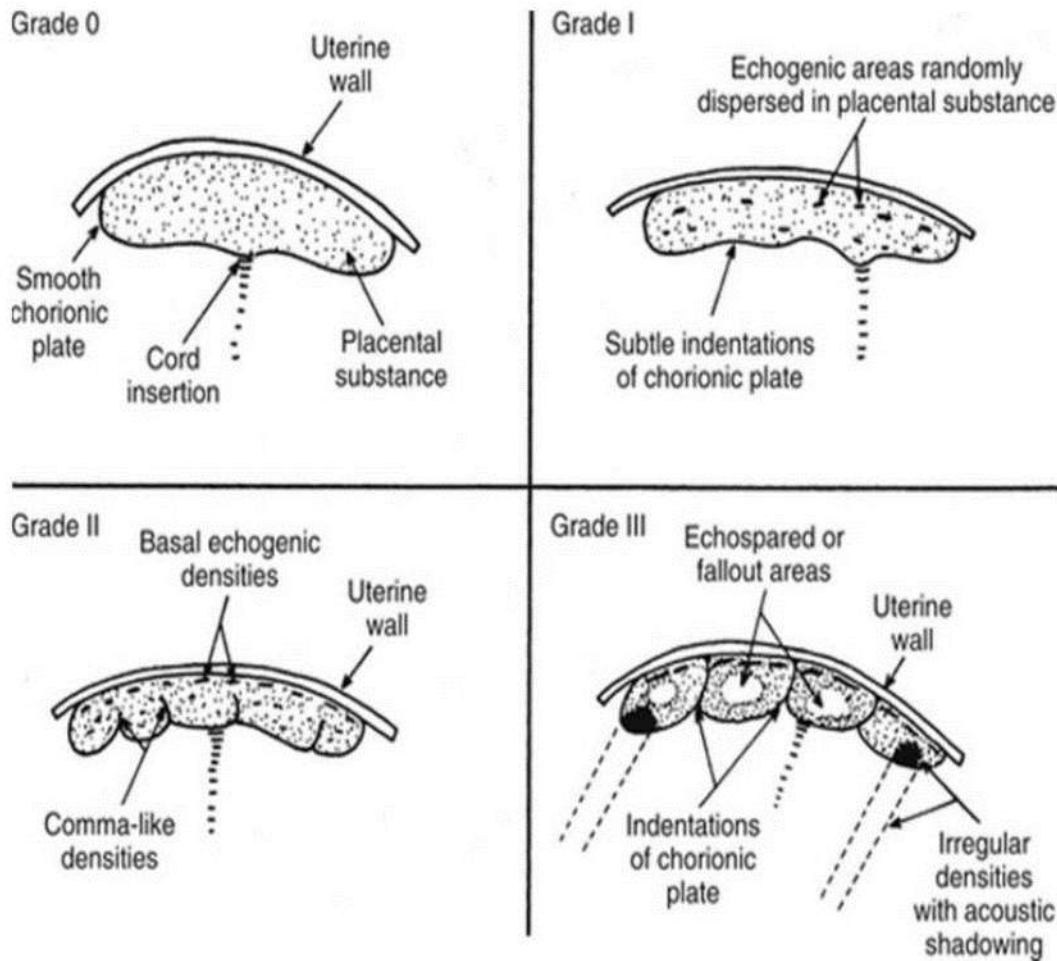
Figure 4. Normal placenta at 18 weeks gestation. Longitudinal gray-scale US image shows a homogeneous placenta (P) with central placental cord insertion (CI) and the hypoechoic retroplacental complex (arrows) behind the placenta



Sonographic gradings of placenta [21]

Sonographic gradings are used for identifying the maturation of the placenta (Figure 5).

Figure 5: Grading of placenta



Positions of placenta [21]

FUNDUS - placenta located in fundus and extending anterior or posterior walls minimally

ANTERIOR: placenta located anteriorly and extends into fundus or lateral walls minimally

POSTERIOR: placenta located posteriorly and extends into fundus or lateral walls minimally

LATERAL: placenta located laterally and extends anterior and posterior walls Equally

Placental Thickness

Placental thickness linearly increases with gestational age throughout a normal pregnancy [30,31], with the thickness in millimeters usually correlating with the gestational age in weeks. The average thickness of a normal placenta ranges from 2 to 4 cm. Accurate measurements should be done in the midportion of

the placenta near the umbilical cord insertion in cases of central or near-central cord insertion, and must be measured perpendicular to the uterine wall from the subplacental veins to the amniotic fluid, while excluding the myometrium (Fig 5a). The placental position should be considered when determining placental thickness. Anterior placentas are approximately 0.7 cm thinner than posterior or fundal placentas. An anterior placenta of greater than 3.3 cm and a posterior placenta of greater than 4cm should be considered thickened.

Placental thickness less than 2.5 cm at term is called as thin placenta. Thin placenta is associated with small for gestational age, pre-maturity, preeclampsia, neonatal high haemoglobin, fetal malformations, intra uterine growth restriction. Other causes are 13 chromosomal abnormalities, gestational hypertension, maternal diabetes, intra

uterine infections like CMV, HSV and chronic infections [13]. The placental thickness more than 4 cm is called large thick placenta. A thickened placenta has been described in association with TORCH infections (toxoplasmosis, other infections, rubella, cytomegalovirus, herpes simplex), gestational diabetes, and fetal hydrops. A thickened placenta with cysts can be seen in partial molar pregnancy, triploidy, and very rarely in placental mesenchymal dysplasia (PMD), which is a rare placental vascular anomaly described in association with Beckwith-Wiedemann syndrome. Placental abruption can be falsely interpreted as a thick placenta when a retroplacental hematoma is isoechoic to the placenta at US. Occasionally, uterine contractions or fibroids may mimic a thick placenta [12].

Methods And Materials:

Study Design: A prospective observational study design.

Study Population: This study was conducted among Pregnant women who will attend the ANC clinic at MGM hospital Kalamboli

Study Duration: The study was conducted over a period of 2 years (2021-2022).

Inclusion Criteria: Pregnant women of gestational age between 32 and 36 weeks with single, uncomplicated pregnancy.

Exclusion Criteria:

1. Multiple pregnancies
2. Pregnancies with known or suspected fetal anomalies
3. Pregnancies with complications
4. Patient not sure of their dates
5. Patient refusing to give consent

Methodology

Study was commenced after approval from institutional ethical committee.

Written informed consent was taken from all patients in language best understood by them.

Study included 425 pregnant women, between 32 to 36 weeks of gestation fulfilling the inclusion and exclusion criteria from our antenatal clinic.

These patients were subjected to an ultrasonographic examination at 32 weeks -36 weeks.

On ultrasound, we noted the fetal parameters such as the viability and gross anatomical defects, gestational age using various growth parameters: biparietal diameter, femur length, abdominal circumference, head circumference .

The placental thickness was measured at the level of umbilical cord insertion in longitudinal direction from the lateral chorionic plate to the cord insertion.

The percentile of placental thickness was calculated from overall data.

These women were then divided into three groups, as per the percentile of placental thickness:

1. Group 1 (normal) - Placental thickness between 10th and 95th percentile
2. Group 2 (thin placenta) - Placental thickness below 10th percentile
3. Group 3 (thick placenta) - Placental thickness above the 95th percentile

These patients were followed up till delivery.

Following parameters were noted after delivery:

1. Birth weight of the baby
2. Placental weight
3. Apgar score
4. Maturity of baby
5. NICU Admission

Placental thickness at 32 and 36 weeks was correlated with birth weight and neonatal outcome.

Sample Size: The sample size was calculated by considering a 95% confidence level, The sample size was calculated using the following formulae:

$n = (Z_{\alpha/2})^2 * (P*Q) / L^2$. By taking attrition error of 10%, final sample size was 425.

Statistical Analysis: All the data was noted down in a pre-designed study proforma. Qualitative data was represented in the form of frequency and percentage. Association between qualitative variables was assessed by Chi-Square test. Quantitative data was represented using Mean \pm SD. Analysis of Quantitative data between the groups was done using ANOVA test with post-hoc Tukey's. Correlation analysis was done using Pearson's correlation coefficient. A p-value < 0.05 was taken as level of

significance. Results were graphically represented where deemed necessary. SPSS Version 26.0 was

used for most analysis and Microsoft Excel 2021 for graphical representation.

Results:

Table 1 Distribution of study groups as per age group

Age (years)	N	%
<=20 years	89	20.9%
21-25 years	173	40.7%
26-30 years	142	33.4%
>30 years	21	4.9%
Total	425	100%
Mean ± SD	23.84+/- 3.73 years	

Mean age of the study group was 23.84 years with 40.7% cases between age of 21 to 25 years and 4.9% above 30 years of age.

Table 2. Distribution of study groups as per Obstetric History

Parity	N	%
Primigravida	200	47.1%
Multigravida	225	52.9%
Total	425	100.0%

Out of the total 425 females, 47.1% were primigravida while 52.9% were multigravida

Table 3. Distribution of study groups as per placental thickness

Placental thickness	N	%
10th-95th percentile	361	84.9%
<10th percentile	42	9.9%
>95th percentile	22	5.2%
Total	425	100.0%

On the basis of placental thickness, we divided the pregnant mothers in three groups as per percentiles:

Group 1 (normal) - Placental thickness between 10th and 95th percentile (84.9% cases),

Group 2 (thin placenta) - Placental thickness below 10th percentile (9.9%) and

Group3 (thick placenta) - Placental thickness above the 95th percentile (5.2%).

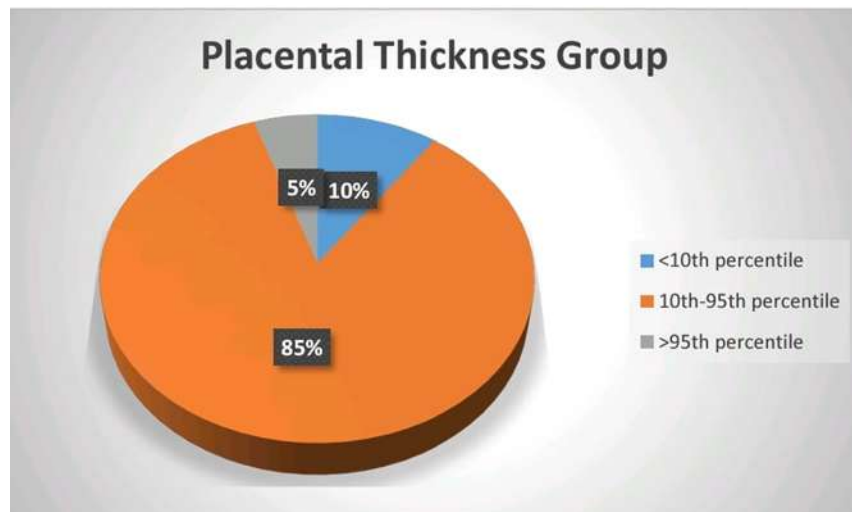


Table 4. Mean Placental Thickness In Placental Thickness Study Groups

Placental Thickness group	N	Mean Placental Thickness	SD
10 th -95 th percentile	42	31.20%	1.23
<10 th percentile	361	35.84%	1.19
>95 th percentile	22	39.86%	1.49

Mean placental thickness in normal group was 35.84 mm while mean thickness in thin and thick group was 31.2 mm and 39.86 mm respectively.

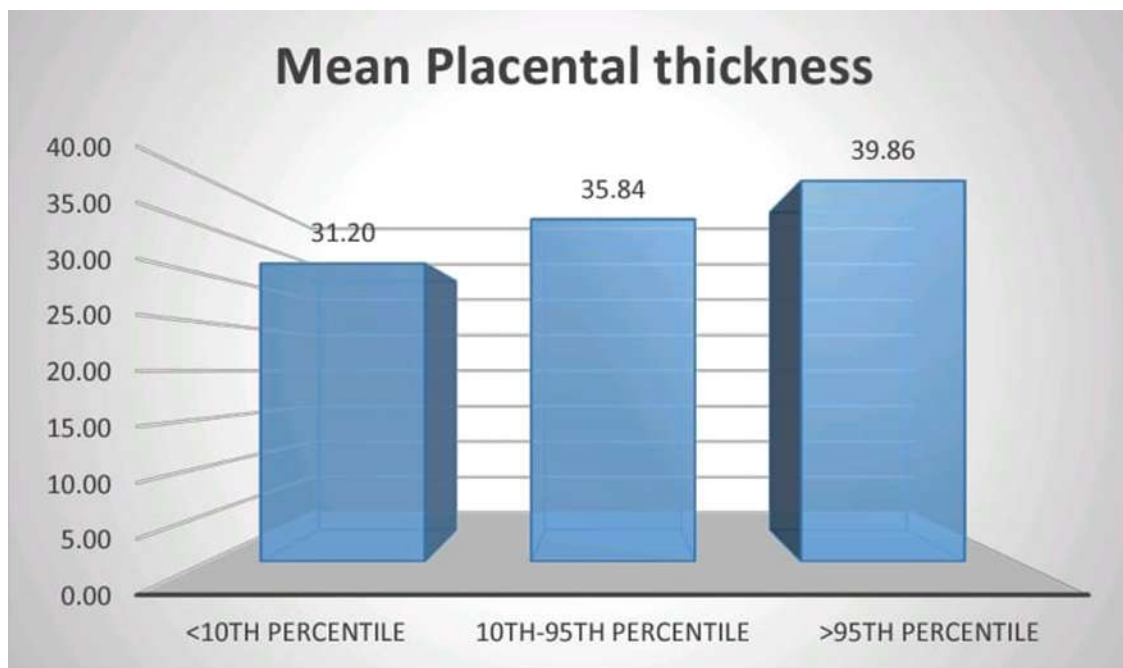


Table 5. Mean Age, Bmi And Placental Weight Comparison Among Study Groups

Variables	Group	N	Mean	SD	p- value
Age (yrs)	<10th percentile	42	23.40	3.01	0.24
	10th-95th percentile	361	23.93	3.77	
	>95th percentile	22	22.47	3.68	
	Total	425	23.84	3.73	
BMI (Kg/m ²)	<10th percentile	42	21.78	1.99	0.156
	10th-95th percentile	361	20.86	2.66	
	>95th percentile	22	20.35	1.73	
	Total	425	20.89	2.60	
Placental weight (gm)	<10th percentile	42	304.00	50.08	<0.01
	10th-95th percentile	361	485.17	53.19	
	>95th percentile	22	602.94	8.49	
	Total	425	479.22	71.76	

Mean Placental weight was significantly higher in cases with thick placenta as compared to normal placenta thickness group (602.22 vs 485 gm; $p < 0.01$) and it was significantly lower in thin placenta group (304.0 vs 485.17 gm; $p < 0.01$). No association was observed between placental thickness and maternal age and BMI ($p > 0.05$).

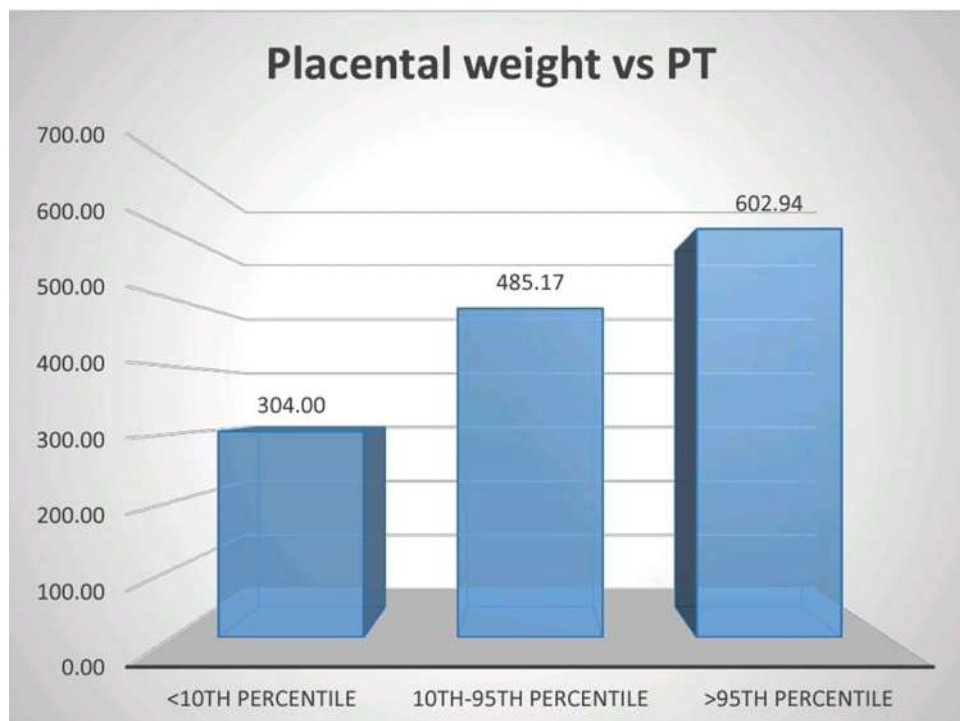


Table 6. Mean Birth Weight Comparison Among Study Groups

Variables	Group	N	Mean	SD	p- value
Birth weight (kg)	<10th percentile	42	2.24	0.49	<0.01
	10th-95th percentile	361	2.67	0.41	
	>95th percentile	22	2.92	0.54	
	Total	425	2.71	0.44	

Significant difference was observed in birth weight as per placental thickness. Mean birth weight in thin, normal and thick placenta group was 2.24gm, 2.67 gm and 2.92 gm respectively (p<0.01).

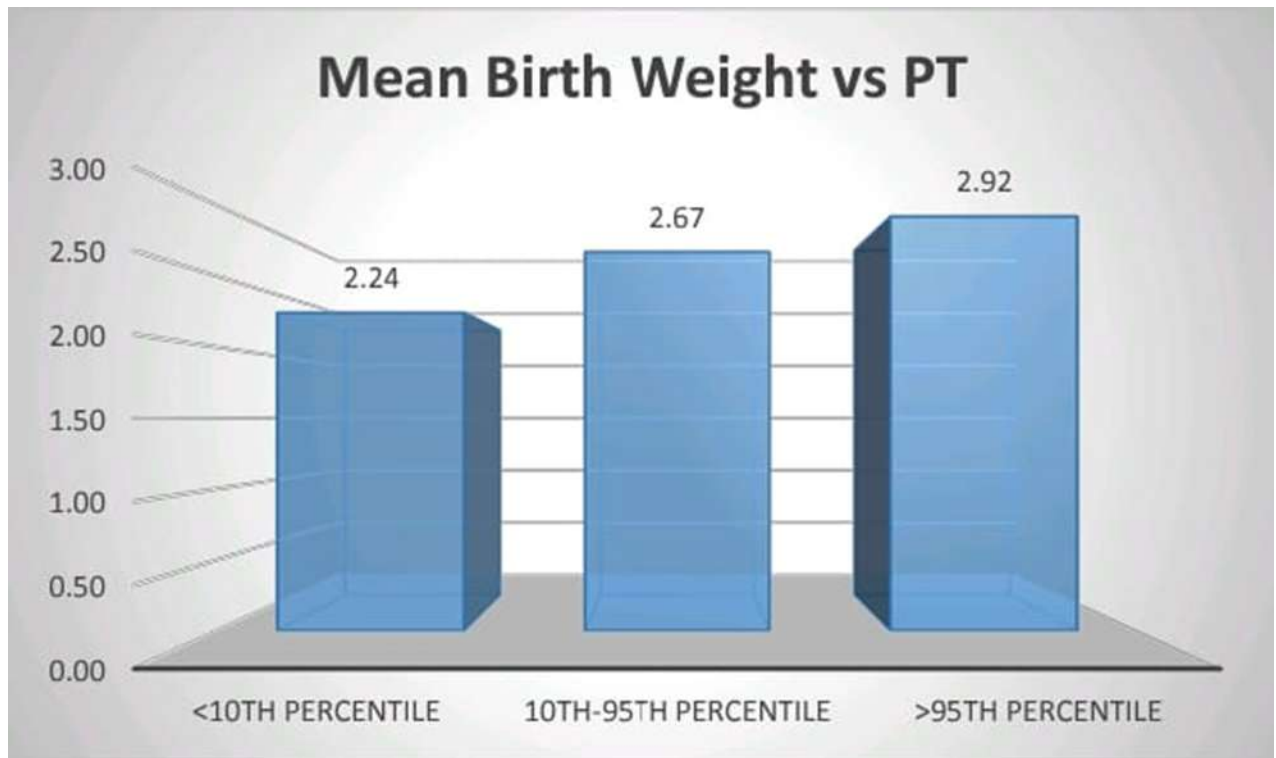


Table 7. Correlation Analysis Between Placental Thickness And Maternal And Fetal Characteristics

Pearson co-relation		
Placental thickness	r- value	p- value
Age	0.05	0.3
BMI	-0.06	0.2
Placental weight	0.595	<0.01
Birth weight	0.524	<0.01

Placental thickness showed significant positive correlation with placental weight (r-0.595; p<0.01) and birth weight (r-0.524; p<0.01).

Table 8. Association Of Maturity Of Fetus With Placental Thickness

Maturity of the fetus	Placental thickness			Total
	<10th	10-95th	>95th	
LGA	0	3	1	4
	0.0%	0.8%	4.5%	0.9%
AGA	33	345	21	399
	78.6%	95.6%	95.5%	93.9%
SGA	9	13	0	22
	21.4%	3.6%	0.0%	5.2%
Total	42	361	22	425
	100.0%	100.0%	100.0%	100.0%

p-value <0.01

Incidence of small for gestation age fetus in thin and normal placenta group was 21.4% and 3.6% respectively with no SGA case in thick placenta group (p<0.01). Large for gestation age babies were 4.5% and 0.8% in thick and normal placenta with no LGA case in thin placenta group (p<0.01).

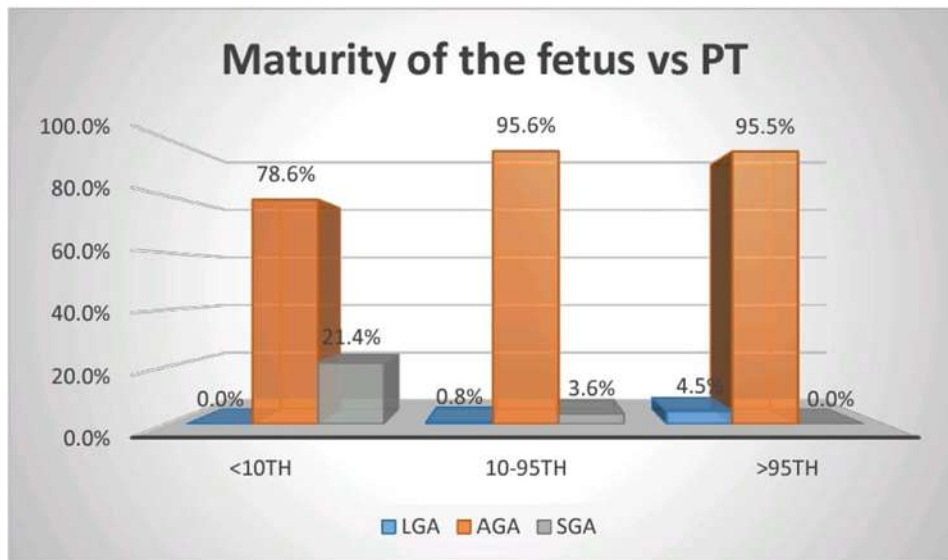


Table 9. Association Of Mean Apgar With Placental Thickness

Variables	Group	N	Mean	SD	p- value
APGAR at 1	<10th percentile	42	8.19	0.78	<0.01
	10th-95th percentile	361	8.95	0.61	
	>95th percentile	22	8.59	1.09	
	Total	425	8.50	0.65	
APGAR at 5	<10th percentile	42	8.72	0.49	<0.01
	10th-95th percentile	361	9.34	0.41	
	>95th percentile	22	8.91	0.54	
	Total	425	9.12	0.44	

A significant difference was observed in APGAR score of fetus as per placental thickness. Mean APGAR score at 1 and 5 mins was significantly more in normal placenta thickness group as compared to thick and thin placenta thickness group (p<0.01).

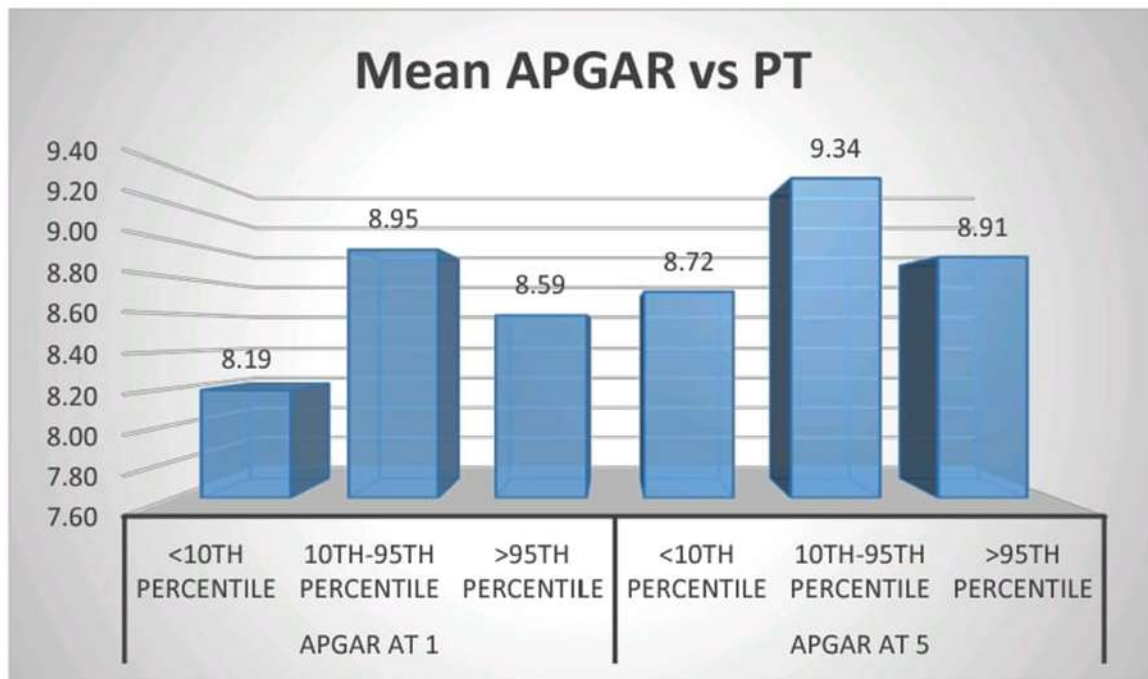


Table 10. Association Of Nicu Admission With Placental Thickness

NICU Admission	Placental thickness			Total
	<10th	10-95th	>95th	
No	36	330	15	381
	85.7%	91.4%	68.2%	89.6%
Yes	6	31	7	44
	14.3%	8.6%	31.8%	10.4%
Total	42	361	22	425
	100.0%	100.0%	100.0%	100.0%

p-value <0.01

Incidence of NICU admission in thin, thick and normal placenta group was 14.3%, 31.8% and 8.6% respectively (p<0.01). The prevalence was significantly more in thick followed by thin and normal placenta thickness group (p<0.01).

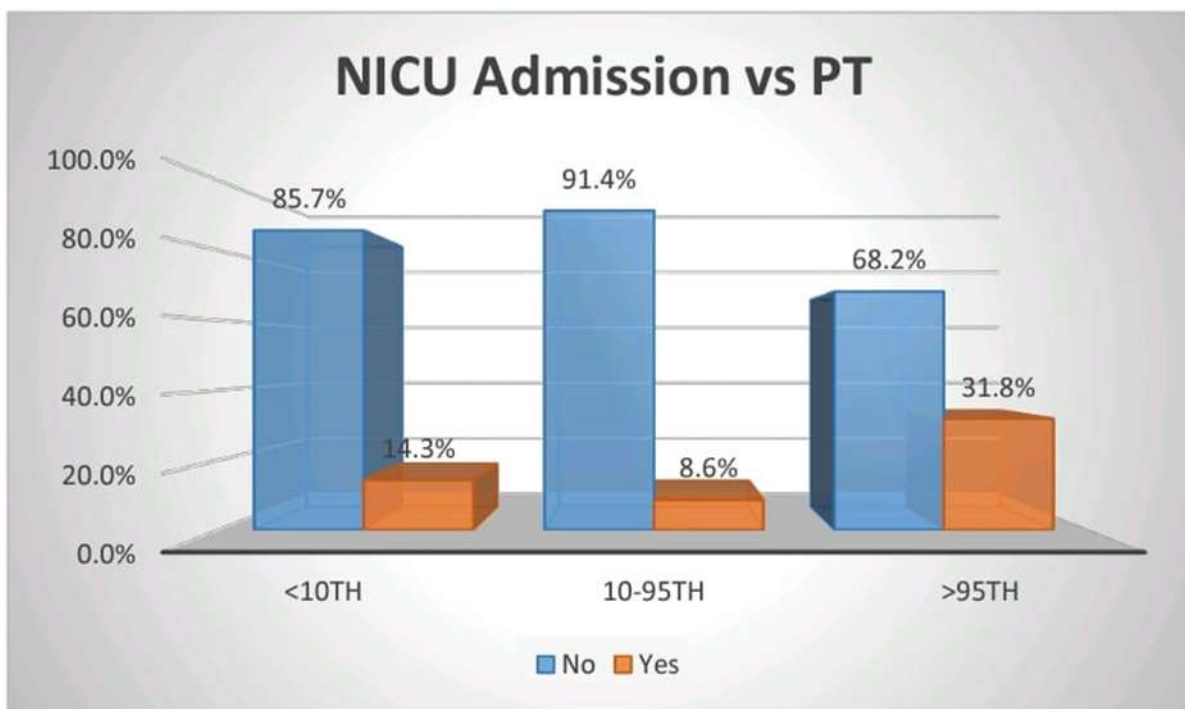
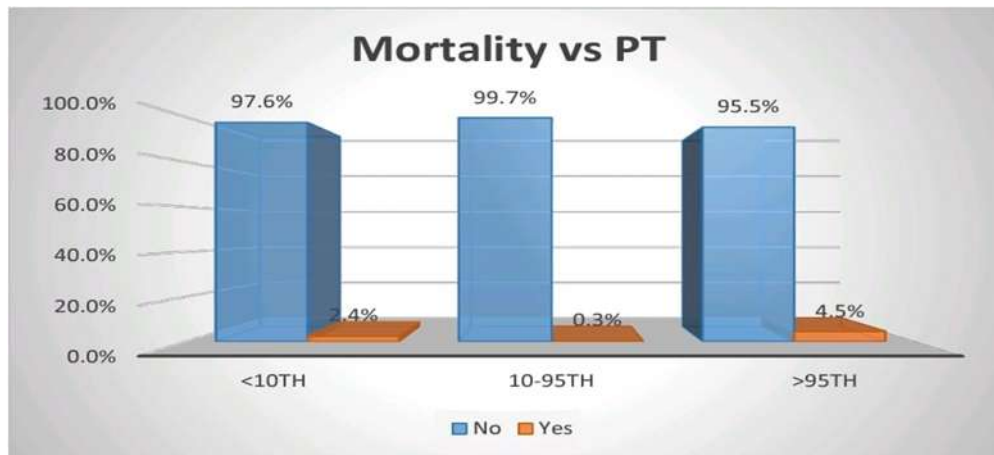


Table 11. Association Of Neonatal Death With Placental Thickness

Mortality	Placental thickness			Total
	<10th	10-95th	>95th	
No	41	360	21	422
	97.6%	99.7%	95.5%	99.3%
Yes	1	1	1	3
	2.4%	0.3%	4.5%	0.7%
Total	42	361	22	425
	100.0%	100.0%	100.0%	100.0%

p-value <0.01

Prevalence of neonatal mortality in thin, thick and normal placenta group was 2.4%, 4.5% and 0.3% respectively (p<0.01). The prevalence was significantly more in thick and thin placenta group as compared to normal placenta thickness group (p<0.01).



Discussion:

Normal placental structure and function are required for normal fetal growth and development. Change in maternal metabolism affects the placental function and its morphology which ultimately affects birth weight at delivery. Placental thickness (PT) has been noted to increase as pregnancy advances. Its

thickness at the cord insertion site was found to have a linear relation with the gestational age (GA) [5]. Also, it was found that variations in placental thickness were associated with birth weight, increased perinatal morbidity and mortality [6]. Few studies have demonstrated the role of placental thickness in predicting the fetal outcome and fewer studies have established an association between

placental thickness at different gestational ages and birth weights [3,4]. However, the role of normal, thin, and thick placenta in determining the fetal outcome is still inconclusive. In present study, we thus aimed to correlate ultrasonographic placental thickness between 32 to 36 weeks of pregnancy with birth weight and neonatal outcome. Study included 425 pregnant women of gestational age between 32 and 36 weeks single, uncomplicated pregnancy. Placental thickness was calculated via USG in all cases. Cases were followed up till delivery to note the birth weight, APGAR, maturity of the baby, neonatal outcome in terms of NICU admission rate and mortality. The results were correlated with placental thickness.

Mean age of the study group was 23.84 years with 40.7% cases between age of 21 to 25 years and 4.9% above 30 years of age. Out of the total 425 females, 47.1% were primigravida while 52.9% were multigravida. Mean age in the study by A.V.N. Suseela *et al.* [66] was 24.5 years with 76% of cases were of age group between 20-30 years. A total of 52% of cases in this study were primigravida. Shinde GR *et al.* [72] study observed the mean age of the mothers as 25.1 years with 55 out of 116 (47.4%) mothers being primigravida and 61 (52.6%) were multigravida. Placenta thickness or thinness is generally a sonographic term. The cut-off value to define thick or thin placenta varies with gestational age (GA), measurement approaches, and conditions of the mother and the fetus. Several studies have evaluated the applicability of sonographic screening of PT in different trimesters and shown a positive linear relationship between GA and PT [32]. Regarding published cut-off values of abnormal PT, Hoddick *et al.*, La Torre *et al.*, and Dombrowski *et al.* all state that PT should not exceed 40 mm at any stage of gestation [33-35]. In the study of Elchalal *et al.* [33], thick placenta (above 90th percentile) was defined as a placenta thicker than 35 mm at 20 to 22 gestational weeks and thicker than 51 mm at 32 to 34 gestational weeks.

In present study, we used the percentile method to differentiate between thick and thin placenta. The placental thickness was measured at the level of umbilical cord insertion in longitudinal direction from the lateral chorionic plate to the cord insertion. On the basis of placental thickness, we divided the pregnant mothers in three groups: Group 1 (normal) -

Placental thickness between 10th and 95th percentile (84.9% cases), Group 2 (thin placenta) - Placental thickness below 10th percentile (9.9%) and Group 3 (thick placenta) - Placental thickness above the 95th percentile (5.2%). Mean placental thickness in normal group was 35.84 mm while mean thickness in thin and thick group was 31.2 mm and 39.86 mm respectively. Shinde GR *et al.* [72] used a similar methodology in their study. In the 2nd and 3rd trimesters, most cases had normal placental thickness (Group A; 93.1% and 92.7%), followed by thin placenta (Group B; 5.2% and 7.3%) and thick placenta (Group C; 1.7% and 0), respectively. Bedi M *et al.* [67] observed mean placental thickness in normal group as 3.33 ± 0.92 cm and in thick group as 3.38 ± 0.68 cm. KK Agwuna *et al.* [64] observed that placental thickness has a linear relationship with gestational age in second and third trimester. The mean placental thickness in second trimester is 23.3 mm and in third trimester is 36.1 mm. Karthikeyan *et al.* [55] observed maximum mean placental thickness in the first, second, and third trimester as 16.5 mm, 23.78 mm, 35.81 mm respectively.

In present study, a significant difference was observed in birth weight as per placental thickness. Mean birth weight in thin, normal and thick placenta group was 2.24 gm, 2.67 gm and 2.92 gm respectively ($p < 0.01$). Placental thickness showed significant positive correlation with birth weight ($r = 0.524$; $p < 0.01$) and placental weight ($r = 0.595$; $p < 0.01$). Similarly mean APGAR score at 1 and 5 mins was significantly more in normal placenta thickness group as compared to thick and thin placenta thickness group ($p < 0.01$). Incidence of small for gestation age fetus in thin and normal placenta group was 21.4% and 3.6% respectively with no SGA case in thick placenta group ($p < 0.01$). Large for gestation age babies were 4.5% and 0.8% in thick and normal placenta with no LGA case in thin placenta group ($p < 0.01$). Incidence of NICU admission in thin, thick and normal placenta group was 14.3%, 31.8% and 8.6% respectively ($p < 0.01$). The prevalence was significantly more in thick followed by thin and normal placenta thickness group ($p < 0.01$). Prevalence of neonatal mortality in thin, thick and normal placenta group was 2.4%, 4.5% and 0.3% respectively ($p < 0.01$). The prevalence was significantly more in thick and thin placenta

group as compared to normal placental thickness group ($p < 0.01$).

A.V.N. Suseela *et al.* [66] aimed to correlate the relationship between placental thickness with estimated fetal weight. Study observed that neonatal outcome was good in women with normal placental thickness (10th - 95th percentile) at 36 weeks. Placental thickness correlates positively with birth weight. Miwa I *et al.* [69] aimed to evaluate the efficacy of an ultrasonographic measurement of placental thickness and the correlation of a thick placenta with adverse perinatal outcome. Perinatal morbidity and neonatal conditions were worse in cases with thick placenta rather than without thick placenta. Study concluded that thick placenta may be a useful predictor of adverse pregnancy outcomes. Gouda A *et al.* [70] study observed a positive relation between thickness of the placenta at the 2nd trimester and 3rd trimester with fetal birth weight, placental weight and APGAR score. The fetal outcome was better with normal placental thickness (10th - 90th) in comparison to that with thin and thick placenta. The incidence of NICU admission increased in thick placenta and thin placenta. Nagpal K *et al.* [71] in a similar study observed that neonatal outcome was good in women with normal placental thickness (10th - 95th percentile) at 32 and 36 weeks and was compromised in women with thin (<10th percentile) and thick (>95th percentile) placentae. Shinde GR *et al.* [72] correlated placental thickness in 2nd and 3rd trimesters with neonatal outcome, maternal weight gain, and body mass index (BMI). Two patients with thin placenta had neonatal death. A significant positive correlation was found between birth weight and placental thickness (at 24 weeks; $r = 0.516$, $p < 0.01$), and at 36 weeks; $r = 0.669$, $p < 0.01$). Thus, to summarize, placental thickness correlates well with birth weight and is a good prognostic factor in assessing neonatal outcome. Neonatal outcome was poor in both cases with thin and thick placenta as compared to normal placenta. However, perinatal morbidity is worse in cases with thick placenta rather than with thin placenta. Study thus concludes that ultrasonographic measurement of placental thickness should be done in all routine antenatal ultrasounds as a prognostic marker.

Summary:

A hospital based observational study was conducted at Department of Obstetrics and Gynaecology, MGM Women's and Children Hospital, Kalamboli, Navi Mumbai. Study aimed to correlate ultrasonographic placental thickness between 32 to 36 weeks of pregnancy with birth weight and neonatal outcome. Study included 425 pregnant women of gestational age between 32 and 36 weeks single, uncomplicated pregnancy. The placental thickness was measured at the level of umbilical cord insertion in longitudinal direction from the lateral chorionic plate to the cord insertion. On the basis of placental thickness, we divided the pregnant mothers in three groups as per percentiles: Group 1 (normal) - Placental thickness between 10th and 95th percentile (84.9% cases), Group 2 (thin placenta) - Placental thickness below 10th percentile (9.9%) and Group 3 (thick placenta) - Placental thickness above the 95th percentile (5.2%). Cases were followed up till delivery to note the birth weight, APGAR, maturity of the baby, neonatal outcome in terms of NICU admission rate and mortality. The study parameters were correlated with placental thickness. Following observations were made during the study: 1. Mean age of the study group was 23.84 years with 40.7% cases between age of 21 to 25 years and 4.9% above 30 years of age. 2. Out of the total 425 females, 47.1% were primigravida while 52.9% were multigravida. 3. Mean placental thickness in normal group was 35.84 mm while mean thickness in thin and thick group was 31.2 mm and 39.86 mm respectively. 4. Mean Placental weight was significantly higher in cases with thick placenta as compared to normal placenta thickness group (602.22 vs 485 gm; $p < 0.01$) and it was significantly lower in thin placenta group (304.0 vs 485.17 gm; $p < 0.01$). No association was observed between placental thickness and maternal age and BMI ($p > 0.05$). 5. Significant difference was observed in birth weight as per placental thickness. Mean birth weight in thin, normal and thick placenta group was 2.24 gm, 2.67 gm and 2.92 gm respectively ($p < 0.01$). 6. Placental thickness showed significant positive correlation with placental weight ($r = 0.595$; $p < 0.01$) and birth weight ($r = 0.524$; $p < 0.01$). 7. Incidence of small for gestation age fetus in thin and normal placenta group was 21.4% and 3.6% respectively with no SGA case in thick placenta group ($p < 0.01$). Large for gestation age babies were 4.5% and 0.8% in thick and normal placenta with no

LGA case in thin placenta group ($p < 0.01$). 8. A significant difference was observed in APGAR score of fetus as per placental thickness. Mean APGAR score at 1 and 5 mins was significantly more in normal placenta thickness group as compared to thick and thin placenta thickness group ($p < 0.01$). 9. Incidence of NICU admission in thin, thick and normal placenta group was 14.3%, 31.8% and 8.6% respectively ($p < 0.01$). The prevalence was significantly more in thick followed by thin and normal placenta thickness group ($p < 0.01$). 10. Prevalence of neonatal mortality in thin, thick and normal placenta group was 2.4%, 4.5% and 0.3% respectively ($p < 0.01$). The prevalence was significantly more in thick and thin placenta group as compared to normal placenta thickness group ($p < 0.01$).

Conclusion:

Study concluded that placental thickness at 32 and 36 weeks corresponds well with birth weight and is a good prognostic factor in assessing neonatal outcome. Neonatal outcome was poor in both cases with thin and thick placenta as compared to normal placenta. However, perinatal morbidity is worse in cases with thick placenta rather than with thin placenta. Study thus concludes that thickness of the placenta by ultrasound can be used beside other biometric parameters in predicting neonatal outcome and measurement of placental parameters should be involved in all routine antenatal ultrasounds.

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