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Original Article

Effect of Parity, Maternal Body Mass Index, Maternal Weight Gain during Pregnancy, Stage of Labor, and Amniotic Fluid Volume on Ultrasonographic Estimation of Fetal Weight

Hasene Özçam[1], Gönül Çimen[1], Nil Atakul[1], Cihangir Uzunçakmak[2], Ahmet Güldaş[1], Özgü Kesmezacar[3]

Abstract

Objective: In this study, we investigate the effects of maternal body mass index (BMI), weight gain during pregnancy, delivery stage, amount of amniotic fluid, and amniotic membrane status on the calculation of estimated fetal weight.

Methods: Between January 2012 and January 2013, 100 pregnant women who gave birth in our hospital were reviewed. From records, demographic data of patients, maternal BMI (kg/m^2), weight gain during pregnancy, delivery stage, amniotic fluid volume and amniotic membrane status, mode of delivery, ultrasound-estimated fetal weight, and the actual birth weight of the newborn have been reviewed.

Results: Birth weight of fetuses estimated by sonography was in the range of 2680–4345 g with an average of 3467.33±417.30 g. The actual birth weight of the newborns was 3468±383.99 g with an average of 2600–4550 g. With ultrasound-estimated fetal weight and the actual birth weight with error range of ±10%, 76% correct prediction rate (n=76) found. When considering maternal parity, stage of labor (latent phase–active phase), sex of the fetus, preconceptional BMI, and maternal weight gain during pregnancy, there is no statistically significant effect ($p<0.05$) of these factors on the accuracy of the estimated fetal weight. Decreased amniotic fluid and/or rupture of amniotic membranes in pregnant women ultrasound-estimated fetal weight was closer correlation to the actual birth.

Conclusion: The correct prediction of fetal weight is of great importance because of the potential risk estimation for the mother and newborn and in deciding the mode of delivery. Therefore, variables that affect the probability of errors in ultrasonographic measurements should be considered in advance, and if necessary, measures should be planned again

Keywords: Estimated fetal weight, actual birth weight, maternal BMI, amniotic fluid

Introduction

Currently, the accurate estimation of fetal weight in modern obstetrics is becoming increasingly important in determining macrosomia, intrauterine growth retardation, and prematurity; deciding the type of delivery; and predicting the newborn mortality and morbidity. Various graphics related to the normal fetal weight gain were developed using anthropometric data obtained from newborns. Fetuses whose body weight is between 10th and 90th percentile curves are considered as normally developed (1). Formulas consisting of various combinations of fetal biometric measurement parameters are used in the calculation of the estimated fetal weight by ultrasound. Therefore, the abdominal circumference (AC) and measurements of the fetal head were most commonly used (2, 3). Some formulas also use femur length (4). It was reported by several studies that maternal obesity has a negative effect on the prenatal ultrasonographic diagnosis of fetal anomalies (5, 6).

In this study, we aimed to particularly investigate the effects of pre-pregnancy body mass index (BMI) and weight gain during pregnancy, parity, stage of labor, status of amniotic membranes, and the amount of amniotic fluid to ultrasonographic estimation of fetal weight.

Methods

The files of pregnant women applying to our clinic and giving birth between January 2012 and January 2013 were screened. One hundred pregnant women for whom estimated fetal weight measurement was performed using obstetric ultrasonography (USG) and who were 37–42 weeks according to the last menstrual period, singular, alive, and at head presentation were included in the study. Cases with fetal anomalies, multiple pregnancies, dead fetuses, and cases in which detailed fetal biometric measurements cannot be performed because of obstetric emergencies were excluded. In addition, 100 pregnant women were included in the study by adhering to the principle that USG was performed by specialist doctors or physician assistants with at least 3 years of experience. At the time of hospitalization, a clarified written informed consent was collected from all the patients. Because our study was retrospective, an additional consent was not received

[1]Clinic of Gynecology and Obstetrics, İstanbul Training and Research Hospital, İstanbul, Türkiye
[2]Clinic of Gynecology and Obstetrics, Fatih Sultan Mehmet Training and Research Hospital, İstanbul, Türkiye
[3]İstanbul Directorate of Public Health Statistic and Data Processing, İstanbul, Türkiye

Address for Correspondence:
Hasene Özçam
Phone: +90 505 496 84 49
E-mail: haseneozcam@gmail.com

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In routine clinical practice, ultrasonographic measurements are performed with Voluson E8 (GE Medical Systems) brand device using the transabdominal route. Hadlock formula [Log10 BW=1.326–0.00326 (AC) (FL)+0.0107 (HC)+0.438 (AC)+0.158 (FL)] is used in fetal weight measurement (4). Biparietal diameter (BPD) of the fetal head, head circumference (HC), abdominal circumference (AC), and femur length (FL) are used for this measurement. BPD measurement is performed at midline falx cerebra in the image where the thalamus is seen as symmetrical; it is performed from outside the front parietal bone towards the interior edge of the posterior parietal bone. Abdominal circumference measurement is performed from the outer edge of the section in the view where the stomach is seen, and the femur length is measured by excluding the femoral head and distal epiphysis in the view where bone diaphysis is seen. In addition, while obstetric USG is performed, the amniotic fluid is measured in four quadrants and is evaluated and written as normal, oligo, and polyhydramniosis. The amniotic fluid readings of 5–25 cm were considered as normal, <5 cm as oligohydramnios, and >25 cm as polyhydramnios. Age, gravida, parity, last menstrual period, pre-pregnancy weight, height, weight gain during pregnancy, estimated fetal weight, type of delivery, newborn gender and actual birth weight, birth stage at admission (latent phase; cervical dilatation <4 cm, active phase; cervical dilatation >4 cm), and status of the amniotic membranes were obtained from file records. Doctors performed ultrasonographic fetal weight calculation disregarding the phase of the travay.

Pregnant women were divided into four groups according to their preconceptional BMI. BMI from 18.5 to 24.9 kg/m^2 was considered as normal, from 25 to 29.9 kg/m^2 as overweight, from 30 to 34.9 kg/m^2 as obese, and BMI higher than 35 kg/m^2 was considered to be over obese. According to the recommendation of weight gain during pregnancy (for women of normal weight, 11.5–16 kg; for overweight women, 7–11.5 kg; and for obese women, 6.8 kg, weight gain were considered to be normal), three groups were determined as much, little, and normal weight gain. The differences between sonographically estimated fetal weight and the actual birth weight were compared with respect to the status of parity, fetal sex, maternal BMI, weight gain during pregnancy, amniotic fluid quantity, and the stage of birth and amniotic membrane at an estimate range of ±10%.

Statistical analysis

Epi Info (Atlanta, USA) program 7.1.3 was used for statistical analysis. While analyzing the study data, in addition to descriptive statistical methods (mean and standard deviation), Student's t-test was used to evaluate the average between the two groups. For the comparison of qualitative data, chi-square test and Fisher's exact test were used. The results were evaluated at a confidence interval of 95%, and the significance was set at $p<0.05$.

Results

The age range of cases was from 15 to 40 years; the average age was 26.8±5 years. Of the pregnant women, 58% (n=58) were multiparous and 42% (n=42) were primiparous. Considering the gestation period, 13% (n=13) had a gestation period of 37 weeks, 19% (n=19) 38, 26% (n=26) had a gestation period of 39, and 42% (n=42) had a gestation period of ≥40 weeks. Patients were divided into two groups according to the birth stage during admission to the clinic. According to this division, 38% (n=38) were in the active phase of birth and 62% (n=62) were in the latent phase. Considering the situation of the amniotic membrane, it was recorded that 80% (n=80) of them were intact and 20% (n=20) were perforated. According to the amount of the amniotic fluid, as part of the sonographic evaluation, it was observed that the amniotic fluid was normal in 82% (n=82) of pregnant women, oligohydramnios in 14% (n=14), and polyhydramniosis in 4% (n=4). According to the type of delivery; 36% (n=36) of them underwent a cesarean section; eight of them were operated with large infant indication. Of the pregnant women, 64% (n=64) had a normal delivery. Of the newborns, 50% (n=50) were male and 50% (n=50) were female (Table 1). When the pre-pregnancy BMIs were considered, 64% (n=64) of pregnant women had a BMI of 18–24.9 kg/m^2 (normal), 28% (n=28) had a BMI of 25–29.9 kg/m^2 (overweight), 4% (n=4) had a BMI of 30–34.9 kg/m^2 (obese), and 4% (n=4) had a BMI of >35 kg/m^2 (over obese) (Table 2). The weight gain during pregnancy ranged from 4 to 34 kg. With the classification considering weight gain recommendations made by the World Health Organization with respect to pre-pregnancy maternal weight, it was observed that 34% of cases (n=34) gained normal, 48% (n=48) much, and 18% (n=18) little weight (Table 3). The sonographic estimation of fetal birth weight was 2680–4345 g; the average was 3467.33±417.30 g. The actual birth weight obtained after birth was 2600–4550 g; the average was 3468±383.99 g (Table 4). When the estimated fetal weight calculated by USG and actual birth weight of the newborn in all pregnant women were compared at an error of margin of ±10%, the accurate prediction rate was 76% (n=76). It was calculated lower than the actual birth weight in 12 (12%) pregnant women and higher in 12 (12%) (Table 5). The estimated fetal

Table 1. Demographic and obstetric features of the parturient

		Min–max	Mean±SD
Age (years)		15-40	26.8±5
		n	%
Parity	Multiparity	58	58.0
	Primiparity	42	42.0
Gestational week	≥37	13	13.0
	38	19	19.0
	39	26	26.0
	≥40	42	42.0
Stage of labor	Active	38	38.0
	Latent	62	62.0
Amniotic membranes	Intact	80	80.0
	Perforated	20	20.0
Amniotic fluid	Normal	82	82.0
	Oligohydramniosis	14	14.0
	Polyhydramniosis	4	4.0
Fetus sex	Male	50	50.0
	Female	50	50.0
Method of labor	Vaginal	64	64.0
	Caesarean	36	36.0

SD: standard deviation

Table 2. Distribution of cases according to their BMI values before pregnancy

	n	%
18-24.9 kg/m²	64	64.0
25-29.9 kg/m²	28	28.0
30-34.9 kg/m²	4	4.0
>35 kg/m²	4	4.0

BMI: body mass index

Table 3. Weight gains of cases during pregnancy in accordance with the recommendations of the World Health Organization

	n	%
Normal	34	34.0
High	48	48.0
Low	18	18.0

Table 4. Estimated and actual fetal birth weights

	Min-max	Mean±SD
Estimated fetal birth weight	2.680–4.345 g	3467.33±417.30
Actual fetal birth weight	2.600–4.550 g	3468.00±383.99

SD: standard deviation

Table 5. Estimation of the newborn's actual birth weight at an error margin of ±10% in ultrasonography

	n	%
Correct estimation	76	76.0
Wrong estimation	24	24.0

Table 6. Estimation rates of ultrasonography for the newborn's actual birth weight in terms of parity, stage of labor, and newborn's gender

		State of estimation		
		Correct (%)	Wrong (%)	p
Parity	Multiparity	47 (81.0)	11 (19.0)	0.166*
	Primiparity	29 (69.0)	13 (31.0)	
Stage of labor	Active	26 (68.4)	12 (31.6)	0.165*
	Latent	50 (80.6)	12 (19.4)	
Sex of newborn	Male	39 (78.0)	11 (22.0)	0.640*
	Female	37 (74.0)	13 (26.0)	

*Chi-square test

weight and real birth weight were compared at an error margin of ±10% according to the situation of parity, stage of birth, maternal preconception BMI, weight gain during pregnancy, the amount of the amniotic fluid, and the condition of the amniotic membrane. The accurate estimation of fetal weight based on maternal parity in multiparous women was 81% (n=47) and 69% (n=29) in primiparous women. Although the correct prediction rate in the active phase of labor was 68.4% (n=26), it was 80.6% (n=50) in the latent

Table 7. According to BMI values before pregnancy, the rates of the estimation of the newborn's actual birth weight by ultrasonography

	State of estimation		
Maternal BMI	Correct (%)	Wrong (%)	Total
18–24.9 kg/m²	51 (79.7)	13 (20.3)	64
25–29.9 kg/m²	21 (75.0)	7 (25.0)	28
30–34.9 kg/m²	2 (50.0)	2 (50.0)	4
>35 kg/m²	2 (50.0)	2 (50.0)	4

Fisher's exact test, p=0.218
BMI: body mass index

Table 8. According to BMI values before pregnancy, the rates of the estimation of the newborn's actual birth weight by ultrasonography

	State of estimation		
Maternal BMI	Correct (%)	Wrong (%)	Total
<25 kg/m²	51 (79.7)	13 (20.3)	64
>25 kg/m²	25 (69.4)	11 (30.6)	36

Chi-square test, p=0.250
BMI: body mass index

Table 9. According to weight gain during pregnancy, the rates of the estimation of the newborn's actual birth weight by ultrasonography

	State of estimation		
Maternal weight gain	Correct (%)	Wrong (%)	Total
Normal	24 (70.6)	10 (29.4)	34
High	36 (75.0)	12 (25.0)	48
Low	16 (88.9)	2 (11.1)	18

Chi-square test, p=0.331

Table 10. According to the amount of amniotic fluid, the rates of the estimation of the newborn's actual birth weight by ultrasonography

	State of estimation		
Amniotic fluid	Correct (%)	Wrong (%)	Total
Normal	60 (73.2)	22 (26.8)	82
Polyhydramniosis	2 (50.0)	2 (50.0)	4
Oligohydramniosis	14 (100.0)	0 (0.0)	14

Fisher's exact test, p=0.017

Table 11. According to amniotic membranes, the rates of the estimation of the newborn's actual birth weight by ultrasonography

	State of estimation		
Amniotic membranes	Correct (%)	Wrong (%)	Total
Intact	57 (71.3)	23 (8.8)	34
Perforated	19 (95.0)	1 (5.0)	20

Chi-square test, p=0.026

phase. According to the sex of the newborn, although the accurate estimate ratio in male fetuses was 78% (n=39), it was 74% (n=37) in female fetuses (Table 6). There was no statistically significant difference between the groups in terms of parity, stage of labor, and sex of the newborn ($p>0.05$). When evaluated according to their pre-pregnancy BMIs, the accurate estimate of fetal weight in pregnant women with a BMI of 18–24.9 kg/m^2 was 79.7% (n=51), that in group with a BMI of 25–29.9 kg/m^2 was 75% (n=21), that in the group with a BMI of 30–34.9 kg/m^2 was 50% (n=2), and that in the group with a BMI of >35 kg/m^2 was 50% (n=2). There was no statistically significant difference between the groups ($p>0.05$) (Table 7). Because the number of cases in the group with a BMI of ≥30 kg/m^2 was insufficient, pregnant women were compared in two groups (BMI of <25 kg/m^2 and ≥25 kg/m^2). The accurate estimate ratio in the group with a BMI of <25 kg/m^2 was 79.7% (n=51) and that in the group with a BMI of ≥25 kg/m^2 was 69.4% (n=25) ($p> 0.05$) (Table 8). Preconceptional BMI has no statistically significant effect on fetal weight estimation.

According to the advices of weight gain during pregnancy, accurate fetal weight calculations were observed at a rate of 70.6% (n=24) in those with a normal weight gain, 75% (n=36) in those with much weight gain, and 88.9% (n=16) in those with low weight gain. There is no statistically significant difference between the groups according to weight gain in pregnancy ($p>0.05$) (Table 9).

When a comparison was made according to amniotic fluid's being normal, little, or much and amniotic membrane's being intact or perforated, the accurate prediction rate of fetal weight was statistically significantly high in pregnant women whose amniotic membrane is perforated and/or oligohydramnios. In pregnant women with decreased amniotic fluid, the rate of accurate estimation was 100% (n=14), 73.2% with normal amniotic fluid (n=60), and 50% with increased amniotic fluid (n=2) ($p<0.05$) (Table 10). The actual birth weight in USG could be correctly estimated at a rate of 95% (n=19) in those with perforated amniotic membranes and 71.3% (n=57) in those with intact amniotic membranes. There was a statistically significant difference between the two groups ($p<0.05$) (Table 11). According to these results, little amniotic fluid provides a more accurate estimate of fetal weight.

Discussion

The estimation of fetal weight is a part of routine antenatal screening. The accurate estimation of fetal weight is important for macrosomia, prematurity, intrauterine growth retardation, for the decision of the type of delivery, and for the prediction of neonatal morbidity and mortality. While macrosomia, maternal morbidity, dystocia, asphyxia, and neonatal trauma can make delivery complicated, low birth weight or prematurity is closely associated with neonatal mortality.

In infants of diabetic mothers, the accurate estimation of fetal weight is particularly gaining importance with respect to vaginal delivery of the fetus previously having caesarean and breech presentation (7). For the prediction of birth weight, clinical measurement, which is based on abdominal palpation and fundus height measurement, and sonographic measurement and calculating some parts of the fetal skeleton by various formulas are two basic methods (8). To date, a number of studies evaluating the accuracy of fetal weight measurement through clinical examination and USG have been conducted (9, 10). It is reported that clinical and sonographic fetal weight estimates give approximately similar results with the same margin of error, but USG gives more accurate results in fetuses with low birth weight or in macrosomic fetuses (10, 11).

Shamley et al. (12) in their study conducted among 223 pregnant women using four different measurement formulas stated that they could predict the actual birth weight with an error margin of ±10% of fetal weight at a ratio of 70%–79%.

Benacerraf et al. (13) reported that the actual birth weight could be detected at a rate of 74% with an error margin of ±10% by means of sonographic examination. In our study as well, similar to the literature, the actual birth weight could be estimated in 76% of pregnant women with an error margin of ±10%.

Fetal and maternal factors that affect the accurate fetal weight estimation were also examined in many studies. Some of them are fetal sex, amniotic fluid index, fetal presentation, gestational age, and maternal BMI (14).

The increasing prevalence of obesity is becoming a major health problem worldwide. According to the classification of the World Health Organization, a BMI of ≤18.5 kg/m^2 is considered to be weak, 18.5–24.9 kg/m^2 is normal, and 25–29.9 kg/m^2 is overweight. Obese individuals with a BMI of ≥30 kg/m^2 were also divided into three subclasses: 30–34.9 kg/m^2 is class 1, 35–39.9 kg/m^2 is class 2, and >40 kg/m^2 is class 3 (15).

Many physiological, psychological, and behavioral factors affect weight gain during pregnancy (16). Obesity during pregnancy leads to antenatal, intrapartum, and postpartum complications. Congenital anomalies, preeclampsia, gestational diabetes, thromboembolism, macrosomia, hypertension, and preterm birth are a few examples of the complications (17, 18).

Suggestions for weight gain during pregnancy were made to prevent possible complications according to the preconceptional BMI. Accordingly, the recommended total weight gain during pregnancy is 12.5–18 kg for weak women, 11.5–16 kg for women of normal weight, 7–11.5 kg for overweight women, and 6.8 kg for obese women. It is thought that that the risk of pregnancy complications due to obesity should remain minimal for the fetus and mother, provided the suggestions are followed (19).

Another risk for the fetus associated with obesity is inadequate antenatal sonographic screening. It is reported that fetal anatomic structures cannot be fully monitored in pregnant women with a BMI of >30 kg/m^2 (20). In a similar study, it was stressed that as the BMI increases, the difficulty of the evaluation of fetal anatomy increases. While in pregnant women with a BMI of <25 kg/m^2, 72% of all the fetal anatomic structures could be displayed, in those with a BMI >40 kg/m^2, only 30% could be displayed (21).

In a study where the effect of BMI was evaluated for the calculation of the expected birth date by ultrasonographic examination in early pregnancy, Simic et al. (22) expressed that as the BMI increases, the probability of accurate prediction decreases. In this study, 842.083 pregnant women were evaluated; 56.9% of them were determined as normal weight, 11.3% were weak, 23% were overweight, and 8.8% were obese. In determining the birth date based on the last men-

strual period and sonographic screening, while a 7-day maximum variation was found in 25.2% of all pregnant women, ≥14-day variation was found in those with a BMI of >30 kg/m^2.

Although the negative effect of maternal obesity on the sonographic detection of fetal anomalies was determined in many studies, its effect on the measurement of estimated fetal weight is not very clear.

Farrell et al. (23) divided 96 term pregnant women into two groups: those with a BMI of >32 kg/m^2 and those with a BMI of <32 kg/m^2. They investigated the effect of maternal weight on fetal weight prediction. In this study, three different methods were used as the mother's estimation of the baby weight, clinical fetal weight estimation, and ultrasonographic fetal weight estimation. It was found that when all the pregnant women were considered, clinical examination could estimate the actual birth weight at a rate of at 61%, maternal estimation at a rate of 63%, and sonographic estimation at a rate of 72%, with an error margin of ±10%. When the two groups were assessed separately according to their BMI, it was reported that there is no statistically significant difference between the rates of the accurate estimation of fetal weight.

Field et al. (24) obtained a similar result in a study where they evaluated maternal BMI's clinical and sonographic fetal weight prediction in 998 pregnant women of 26–43 weeks. Patients were divided into four groups as weak (BMI <19.8 kg/m^2), normal weight (BMI 19.8–26 kg/m^2), overweight (BMI 26.1–29 kg/m^2), and obese (BMI >29 kg/m^2). In approximately half of the cases regardless of maternal weight, the estimated fetal weight reached the actual birth weight with an error margin of ±5%. Therefore, it was stated that the increase in maternal BMI did not have a negative effect on accurately predicting the clinical or sonographic fetal weight.

In another study, it was reported that maternal obesity had a negative effect on clinical fetal weight estimation at term. In this study, 400 pregnant women who were 37–42 weeks, singleton, and in head presentation were assessed, and they were divided into four groups according to their BMIs as normal, overweight, obese, and morbid obese. While in pregnant women with a BMI of <25 kg/m^2, the ratio of the accurate estimation of fetal weight was 82.5%, in those with a BMI of >30 kg/m^2, it was found to be 66.4%. As the BMI increases, the rate of actual birth weight detection through fetal weight estimation reduced, with an error margin of 10%–20% (25). In our study, the estimation of birth weight with an error margin of ±10% in subjects with a BMI of 18–24.9 kg/m^2 was 79.7%, that in the group with a BMI of 25–29.9 kg/m^2 was 75%, and that in the group with a BMI of ≥30 kg/m^2 was 50%. There was no statistically significant difference between the groups.

Gandhi et al. (26) in their study among 194 twin pregnancies reported an increase in the error margin of estimated fetal weight as maternal BMI increases. In this study, pregnant women were divided into three groups: BMI <25 kg/m^2, 25–29.9 kg/m^2, and >30 kg/m^2. Fetuses were divided into two as A and B according to their weights. As a result, it was reported that while fetal weight could be estimated in those with a BMI of <25 kg/m^2 with an error margin of 6%–6.7%, the rate of error margin increased to 9%–11.7% in those with a BMI of >30 kg/m^2. Heer et al. (27) examined nine variables that can affect the ultrasonographic measurement of fetal weight in 22–42-week singleton pregnancies (n=820). In this study, the time of measurement and the number of days up to birth, sonographic experience, fetal gender, gestational age, fetal weight (<2000–>2001 g), maternal BMI, amniotic fluid index, fetal presentation, and placental localization were investigated in terms of the effect on fetal weight estimation. It was stated that the variables except for the number of days up to birth did not have a statistically significant effect on fetal weight estimation. It was reported that the increase in maternal BMI and oligohydramnios made fetal imaging more difficult, but it had no negative effect on fetal weight estimation. In this study, six different weight calculation formulas (Hadlock I-II-III, Warsof, Merz, Shepard) were also used, and it was expressed that different formulas could calculate the actual birth weight at a rate of 55%–63%, with an error margin of ±10%. In our study, fetal weight estimation was not affected by parity and fetus gender.

Fox et al. (25) compared the differences between estimated fetal weights in 138 pregnant women according to the phases of birth. In this study, the estimated fetal weight was measured in a clinical examination twice at the beginning of the travay and when the pregnant woman was fully open, and this was compared with the actual weight of the newborn. A significant difference between the initial and subsequent measurements was obtained in 65% of pregnant women. It was found that while the estimated fetal weight increased between the first and the second measurements in 30% of this group, it reduced in 35% of them. In addition, it is stated that the measurement made in the last stage of birth reflects the actual weight of the newborn more accurately than the first measurement. In our study, a comparison was made according to the active and latent phases of birth, but no statistically significant difference was observed. However, in our study, fetal weight was measured by USG. In addition, we have been thinking that not being in full cervical dilatation of active phase patients may have influenced our findings.

Blann et al. (28) compared fetal weight estimation before and after amniotomy in both clinical and sonographic methods. It was reported that the estimated measurement made by clinical examinations showed a closer correlation with the actual newborn weight after amniotomy. It was stated that the abdominal circumference, which is one of the sonographic parameters found before amniotomy, was considered to be the most accurate parameter to determine the actual birth weight. In our study, in pregnant women whose amniotic membranes were perforated, the estimated fetal weight showed a closer correlation with the actual birth weight.

In a study evaluating the effect of the amniotic fluid on fetal weight, pregnant women with normal amniotic fluid and with an amniotic index of ≤5 cm were compared. In this study, it was concluded that oligohydramnios did not affect the estimated fetal weight measurement (29).

Pregnant women in whom oligohydramnios developed because of preterm premature early rupture of membranes and those with normal amniotic fluid were compared, and no statistically significant difference was found between the two groups with respect to fetal weight estimation (30).

Conclusion

Accurate fetal weight estimation is very important to predict and take precautions for conditions such as macrosomia, intrauterine

growth retardation, and low birth weight that may seriously affect neonatal health. It is also a very important parameter in deciding the type of delivery. Therefore, the variables affecting ultrasonographic fetal weight measurements should be known beforehand, and if necessary, repeated measurements should be planned. In our study, it was concluded that in pregnant women whose amniotic membranes are open and amniotic fluid decreased, measurements showing more correlation with the actual birth weight were made. However, because of the small number of patients, there is a need for new studies with a greater number of patients.

Ethics Committee Approval: Ethics committee approval was received for this study.

Informed Consent: Written informed consent was not obtained from patients due to the retrospective nature of this study.

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