

# Association between Length of Femur and Transverse Cerebellar Diameter for Estimating Gestation age by Ultrasonography in Pregnancy

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## ABSTRACT

**Aim:** To find out whether transverse cerebellar diameter (TCD) or femur length is more valid method for estimating the gestation age by using ultrasonography in pregnancy.

**Methodology:** This study was carried out in the Obs. and Gynae ward of Ibne-Siena Hospital Multan. The study was conducted from June 2018 to November 2018. 50 pregnant ladies in the third trimester of pregnancy from 25-37 weeks were recruited. Transcerebellar diameter (TCD) and femur length (FL) were measured by using ultrasonographic technique. All relevant data was taken, analyzed and interpreted.

**Results:** Transcerebellar diameter (TCD) and femur length both having positive association but Transcerebellar diameter (TCD) was found to be a more valid ( $p$  value =00001) than fetal length ( $p$  value=00004) in third trimester of pregnancy for correct estimation corresponding to the gestational age.

**Conclusions:** From the study it has been revealed that Transcerebellar diameter (TCD) is valid method by ultrasonography for estimation of gestational period.

**Keywords:** TCD-Transcerebellar diameter, FL- Femur length,

## INTRODUCTION

Many Ultrasonography techniques including the transcerebellar diameter- TCD, fetus length and LMP etc. are being widely used now days for estimating the age of fetus<sup>1,2,3</sup>. Transcerebellar Diameter, when abnormally shaped (banana) or absent is generally associated with either a chromosome or/and spina bifida. TCD measurement can be numerically equivalent to the number of weeks in the trimester<sup>4,5</sup>.

Measurement of the length of human embryos and fetuses from the top of the head (crown) to the bottom of the buttocks (rump) is called Fetus length -Crown-rump length (CRL)<sup>6,7</sup>. For estimation of gestational age, it can be employed.

Gestational age	Length (US)	Length (cm)
37 weeks	19.13 inches	48.6 cm
38 weeks	19.61 inches	49.8 cm
39 weeks	19.96 inches	50.7 cm
40 weeks	20.16 inches	51.2 cm

Biparietal diameter (BPD) in expressed moulding of head is not easy or unworkable, Transverse cerebellar diameter (TCD) can be used effortlessly. In normal fetuses and in restricted growth fetuses (IUGR), Transverse cerebellar diameter is employ to establish the gestational age due to cerebellum does not correlates well with gestational age and biparietal diameter as its change form and also its size<sup>8,9</sup>. TCD could be used for diagnosing congenitally abnormal fetuses<sup>10</sup>. TCD is also precious method for identification of asymmetrical intrauterine growth restriction of babies<sup>11,12</sup>.

The objective of the study was to find out whether transverse cerebellar diameter (TCD) or femur length is more valid method for estimating the gestation age by using ultrasonography in pregnancy.

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## METHODOLOGY

This study was carried out in the Obs. and Gynae ward of Ibne-Siena Hospital Multan. The study was conducted from June 2018 to November 2018. 50 pregnant ladies in the third trimester of pregnancy from 25-37 weeks were recruited. Transcerebellar diameter (TCD) and femur length (FL) were measured by using ultrasonographic technique. All relevant data was taken, analyses and interpreted.

## RESULTS

Fifty pregnant women were included in the study. The age was less than 25 years in 4 woman (2%), 25-30 years in 17 woman (9%), 30-35 years in 23 woman (23%), and more than 35 years in 6 woman (3%) (Table 1). Four woman were primigravida (2%), 20 woman were gravid II (10%), 16 woman were gravid III (8%) and 10 woman were gravid IV (5%) (Table 2). In 7 woman, the gestation period value found as 30.70±2.43, in 20 woman the gestation period value found as 38.01±3.26, in 23 woman the gestation period value found as 42.86±2.03 (Table 3). Transcerebellar diameter (TCD) and femur length both having positive association but Transcerebellar diameter (TCD) was found to be a more valid ( $p$  value =00001) than fetal length ( $p$  value=00009) in third trimester of pregnancy for correct estimation corresponding to the gestational age (Table 4)

Table 1: maternal age Distribution (n = 50).

Age (Years)	n	%age
<25	4	2
25-30	17	9
30-35	23	12
>35	6	3

Table 2: Parity Distribution (n = 50)

Parity	n	%age
Primigravida	4	2
Gravida II	20	10
Gravida III	16	8
Gravida IV	10	5

Table 3 Fetal gestation age Mean±SD transverse cerebellar diameter (TCD)

Gestation Period (weeks)	No.	Value
27-30	7	30.70±2.43
31-33	20	38.01±3.26
36-39	23	42.86±2.03

Table 4: Association among transverse cerebellar diameter (TCD), femur length (FL) and gestational age (GA), in pregnancy

Parameters	TCD	FL	A
R*- value	0.986	0.786	0.456
P- value	0.00001	0.00009	0.0007

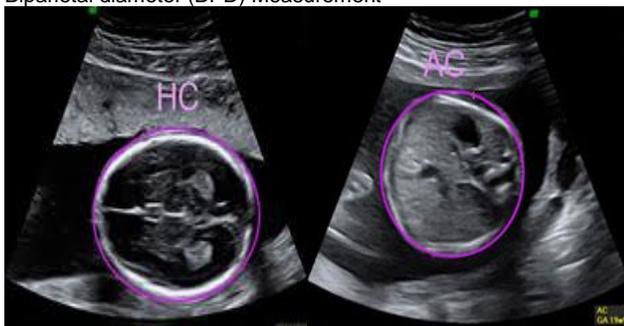
Transverse cerebellar Diameter Measurement



Femur length (FL) Measurement



Biparietal diameter (BPD) Measurement



## DISCUSSION

Fifty pregnant women were included in the study. The age was less than 25 years in 4 woman (2%), 25-30 years in 17 woman (9%), 30-35 years in 23 woman (23%), and more than 35 years in 6 woman (3%). 4 woman were primigravida (2%), 20 woman were gravid II (10%), 16 woman were gravid III (8%) and 10 woman were gravid IV (5%), in 7 woman, the gestation period value found as 30.70±2.43, in 20 woman the gestation period value found as 38.01±3.26, in 23 woman the gestation period value found as 42.86±2.03.

Transcerebellar diameter (TCD) and femur length both having positive association but Transcerebellar diameter (TCD) was found to be a more valid (p value =0.00001) than fetal length (p value=0.00009) in third trimester of pregnancy for correct estimation corresponding to the gestational age.

## CONCLUSION

From the study it has been revealed that Transcerebellar diameter (TCD) is valid method by U/S for estimation of gestational period in third trimester of pregnancy.

**Recommendation:** Obstetricians should be sanitized about using of transcerebellar method by U/S for estimation of gestational period in 3<sup>rd</sup> trimester of pregnancy.

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