

# Correlation of the Weight of the placenta with the Weight of Newborn: A Comparative Study

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**Abstract:** Survival of fetus is essentially dependent on formation, development and functions of placenta. A total of 200 placentae were collected from the labour room of OBGy department, BRIMS Bidar. The umbilical cord was cut and tied and the placenta was washed thoroughly. The placentae were studied and their weight was noted. Newborn parameters viz. APGAR score, weight were also noted. The weight of the placenta and neonatal weight were found comparatively less in hypertensive pregnancy. The Careful examination of the placenta can be useful in the management of complications in mother and the newborn, utilizing the provided information. Thus the careful study of placenta can help us to prevent complications and maternal mortality upto some extent.

**Keywords:** Placentae; Discoid; Hypertensives; Fetal; Maternal; Umbilical cord; Eclampsia

## Introduction:

The human placenta is a discoid choriodecidual organ, which connects the fetus with the uterine wall of mother. The placenta feels spongy and it weighs about 500gms, at term the proportion of weight of baby is roughly 1:6 and occupies about 30% of uterine wall. At term four fifth of the placenta is of fetal origin and one fifth of maternal origin<sup>1</sup>.

Placenta is a mirror which reflects the intrauterine status of fetus. It depicts the most accurate record of prenatal experience of an infant. It undergoes different changes in Weight, Volume, Structure, Shape and and functions continuously throughout the gestation to support the prenatal life.<sup>2</sup> The Careful examination of the placenta can be useful in the management of complications in mother and the newborn, utilizing the provided information. Thus the careful study of placenta can help us to prevent complications and maternal mortality upto some extent.

The hypertensive disorders are responsible for 5-8% of all maternal deaths.<sup>3</sup> Pregnancy complications like hypertension or gestational diabetes are reflected macroscopically and microscopically in the placenta.<sup>4</sup> The present study is a comparative study of the placental weight and the weight of the newborn in normal and hypertensive cases. It is necessary to undertake this study and evaluate the findings so as to prevent complications in mother and the newborn. As there has not been any such study done in this area, the present study is being carried out in the OBGY department of BRIMS, at Bidar.

## Materials and Methods:

The present study was done on 200 placentae. After the delivery, the cord was clamped and cut and the placentae were weighed also the newborn weight was recorded. This study included 100 cases with PIH and 100 normal pregnancies. The present study included women in the age group 18-35 years. The data (gestational age, history of any past illness, investigations) had been collected from the case sheets of the normal and PIH patients, admitted in ObG Department of BRIMS training hospital in Bidar district of North Karnataka during the period from December 2014 to July 2016. Consent of mother was taken priorly for utilizing placenta for research studies. After the delivery, cord was clamped and the placenta was washed, labeled and studied. Fetal and Newborn parameters such as gestational age, APGAR score and weight was collected from the respective clinical case sheets.

Institutionalethical clearance was done before the initiation of study. Permission of HOD anatomy department was taken. Permission of HOD OBGY department was taken through proper channel. Inclusion criteria included Control group of pregnant women with normal blood pressure levels. Hypertensive pregnant women having either, Pre-eclampsia i.e. Bp>140/90, after 20 weeks of gestation with either proteinuria or edema or Eclampsia -defined as condition with the presence of seizure activity in patients of pre-eclampsia. Exclusion criteria excluded Essential hypertension, Renal disorders, Diabetes mellitus, Cardiac disease, Rhesus incompatibility.

The placentae of the cases and controls were the material for the present study. The other materials used were

Gloves, Apron, Infant Weighing machine (manual), Scalpel with blade, Scissor, Dissection trays, Case sheets of the mother and the newborn. The standard deviation was calculated. Statistical analysis was done using "unpaired t - test". Appropriate calculations were done and the p value was determined. The observations were noted.

### Observations and results:

The present study included 100 placentae of control and 100 placentae of study group. The cases were divided into 3 groups. Viz., Eclampsia (group-1), Pre eclampsia (group-2) and control group (group-3). After cutting and tying the umbilical cord, the placentae were weighed.

The placentae from eclampsia weighed <500gms, the least weight recorded being 250 gms where as 94% of the placentae of pre eclampsia weighed <500 where the least recorded weight was 350 gms. 73% of the placentae from the normal pregnancies weighed > 500 gms and the highest recorded weight being 510gms in the present study. The mean placental weight in the control group is 475.56+ 28.73 and that of pre eclampsia and eclampsia is found to be 416.80 + 44.64 and 385 + 20.85 respectively. Thus the values are significant statistically.

The present study also showed that the neonatal weight was reduced in eclampsia and preeclampsia. The weight being more in the newborns of normal mothers which was nearly 3000 gms than in the newborns of pre eclamptic and eclamptic mothers which ranged between 2000 to 2500gms. Thus the values were found significant statistically.

### Discussion:

The present study, "Correlation of the weight of the placenta with the weight of newborn", is carried out prospectively at the Anatomy department of Bidar Institute of Medical Sciences. The study includes a total of 200 placentae. Out of 200 placentae, 100 are from the normotensive mothers and 100 are from the pregnancy induced hypertension (PIH) patients. Out of 100 placentae of the PIH patients, 23 are from eclampsia patients and 77 are from pre-eclampsia patients.

The placenta has been described as the mirror of prenatal outcome. A glance of the literature reveals that eclampsia, pre-eclampsia syndrome exerts its deleterious effect on the placenta. So the present study is undertaken to analyse and to assess the morphological variations of placenta like size, shape, weight, attachment of umbilical cord and number of cotyledons and its co relations with the neonatal weight changes in normal pregnancy, eclampsia and pre-eclampsia.

In the present study the average weight of the placenta in Normotensive Cases is 475.56 gms where as 400.90 in PIH patients. This finding correlates with the studies of Majumdar (2005)<sup>5</sup>, Akhter F (2011)<sup>6</sup>, Saeed I (2011)<sup>7</sup>, Rehman MZ (2013)<sup>8</sup>, Kartha. S (2014)<sup>9</sup>. The lowest recorded weight in PIH patients is found to be 250 gms. Thus the present study shows that the mean placental weight in eclampsia with a p value of <0.001 is significant statistically. Similarly mean placental weight in pre eclampsia (group 2) with a p value of <0.001 is also significant statistically.

The present study also shows that the neonatal weight is found to be nearly 3000 gms in the newborns of normotensive mothers where as it ranged between 2000 to 2500gms in eclamptic and pre eclamptic mothers. The average neonatal weight of eclamptic mothers is 2.43±0.36 kgs and that of the pre eclamptic mothers is 2.59±0.39 kgs where as the average neonatal weight of the neonates of normotensive mothers is 2.98±0.23 kgs. As the p value is <0.001 thus it is significant statistically.

The studies done by Majumdar (2005)<sup>5</sup>, Rehman M Z (2013)<sup>8</sup>, and Kartha S (2014)<sup>9</sup> showed that the neonatal weight was found comparatively less in the neonates of the hypertensive pregnant women than the neonates of the normotensive women. The similar finding is found by the present study.

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