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The study of *Apara* (placenta) and its correlation with the *Prakriti* and Weight of newborn

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ABSTRACT

The placenta is the most important and the only organ between mother and foetus serving multiple functions like endocrinal, respiratory and metabolic. Normal development of the placenta is the one of the important requirements for a healthy pregnancy, regulating foetal growth and foetal health so that formation of the healthy progeny. In cotemporary sciences many researches are going in the aim of formation of healthy progeny. *Apara* is the vital feature related to *Garbha Sharira* in Ayurveda, but its description is in a *Sutra* form. Hence this study is an humble attempt to explore the concept of '*Ayurveda Garbha Sharira'* by studying the description of *Apara* trying to establishment of the assessment of correlation between features of placenta with that of *Prakriti* is more instinct for this study. *Prakriti* is the basic concept of *Ayurveda*. It forms in intrauterine life by combination of *Shukra* and *Shonita.* However we do not find direct references of *Apara* relation with the *Prakriti* of newborn in *Ayurveda*. This study intends to fill in the lacunae of both the disciplines by knowledge of integration. If this study establishes some parameters based on the characteristics of *Apara* with weight and *Prakriti* of newborn then it will be the unique contribution for *Ayurveda Garbha Sharira.*

Key words: *Apara, Placenta, Prakriti, Newborn.*

INTRODUCTION

Expert *Chikitsaka* (Physician) needs detail study of body and body parts. *Shastra Adhyana* (textual theoretical study) and practical both are essential for expanding the knowledge. In *Ayurvedic Samhita* (text book) and their commentaries *Sharir* description of some body parts and organs is given in poetic manner, it is variable in different *Samhita* and also deficit its complete anatomical description.[1] In Another side *Prakriti* is the basic concept of *Ayurveda* which is useful for information of the physiological and psychological constitution and well being of the human being. According to *Sushruta* the *Prakriti* is form at the time of union of *Shukra* and *Shonit.* The *Prakriti* constituted at the time of birth remains as it is throughout the life. So it is important to know the *Prakriti* of individual for normal and healthy life.[2]

Acharya Charaka also said the six factors which are responsible for formation of *Prakriti.* These are *Shukraprakriti, Shonitaprakriti, Kalaprakriti, Garbhashayprakriti, Maturahar-viharprakriti* and *Mahabhutavikarprakriti*.[3] These six factors come under the prenatal factors. Some scholars have done research work about embryology according to Ayurvedic classics. Similarly one study "A study of the influence of the mother on the baby with special reference to *Ahara* and *Chesta*" has also been done.[4] As per available information the study of *Apara* (placenta) in relation with *Prakriti* and weight of newborn is not found. The growth and development of foetus depends upon Placenta.[5] Nourishment is important for normal physical and mental growth for

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an individual. Hence this study was initiated for finding some correlation of placenta with *Prakriti* of newborn.

OBJECTIVES

1. To study the relationship of *Apara* (placenta) weight with weight of newborn.
2. To study the correlation of morphological characteristics and weight of *Apara* (placenta) with the *Prakriti* of newborn.

MATERIALS AND METHODS

This is purely based on observation, so it is an observational study. Total 50 cases of full term normal delivery and L.S.C.S assess to placenta and newborns of the same cases were observed and studied.

Materials required for Examination of Placenta

1. Tooth forceps
2. Plane forceps
3. Scalpel with blade
4. Surgical scissor
5. Magnifying glass
6. Thread
7. Cap
8. Mask
9. Gloves
10. Weighing machine
11. Length measuring centimeter scale
12. *Apara.*

The literature regarding the topic studied from relevant compendia of *Ayurveda* references obtained from *Brihtrayee* and other text books related to the study for primary sources of literature. Also related information was gathered from the text books of western medical science, different journals and previous studies conducted on related subject at different universities and information available on internet was incorporated for the study.

Present research has done for study the *Apara* and its correlation with *Prakriti* and weight of newborn by below method;

1. Pregnant lady information taken.
2. Weight, observation and study of placenta were taken after delivery.
3. Weight, circumference and *Prakriti* of newborn by observing and noting their parameters.

Assessement of placental variables

Placental weight

Gross Placenta (including umbilical cord and placental membranes) were weighed in grams in the operation unit.

Placental shape

The foetal surface of placenta was wiped dry and placed on clean surface after which the shape of each placenta was observed and described as either round, oval and irregular.

Colour of Placenta

The colour of the placenta was observed by using magnifying glass.

Prakriti of newborn

The newborns *Prakriti* was carried out by observing their parameters and recoreded in the *Prakriti* chart of CRF.

Statistical Analysis

Statistical analysis was done by using descriptive and inferential statistics using student's unpaired t test, One way ANOVA and Pearson's correlation coefficient and software used in the analysis were SPSS 22.0 version and EPI-INFO 6.0 version and $p<0.05$ is considered as level of significance.

Data collection

The patients as stated above were examined as per CRF (Case Record Form). The information obtained was written in CRF and collected for analysis. This data was processed under statistical methods, interpreted and conclusions were drawn.

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Inclusion criteria

1. All live birth access to *Apara* (placenta) irrespective of socio-economic status.
2. Delivery of baby with normal maternal condition.
3. Delivery of baby under normal gestational event.

Exclusion criteria

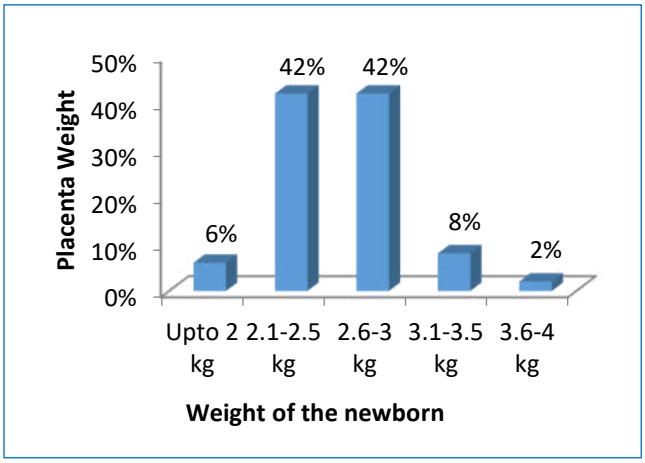
Any history of complication or uneventful gestational period.

1. Still birth
2. Placental abruption
3. Retained placenta
4. Multiple babies.
5. Any history of diabetes, hypertension, cancer, or any other serious contaminated diseases.

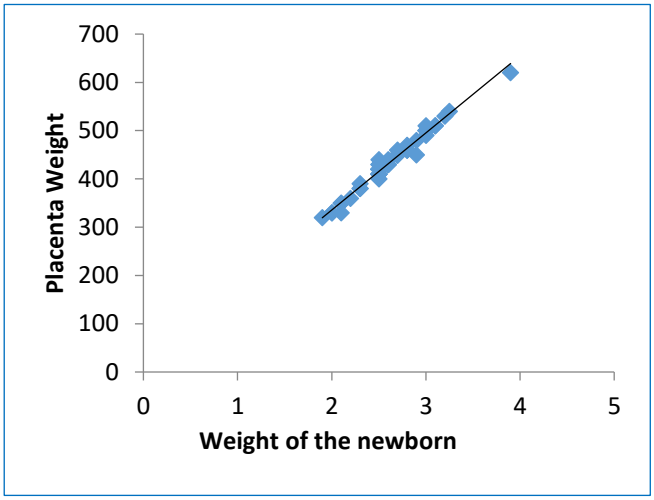
Observational Study

To study the Placenta and its correlation between the weight and *Prakriti* of newborn, 50 samples of placenta after deliverey by L.S.C.S and F.T.N.D. without any complications were taken. To find out correlation between weight of placenta and weight of baby, morphology of placenta and *Prakriti* of baby the data was recorded under the coloumns of weight of placenta, morphology included shape, colour and diameter of placenta, weight and head circumference (H.C.) of baby, and *Prakriti* of baby. Different kind of data of 50 samples presented in view of charts and table as follows:

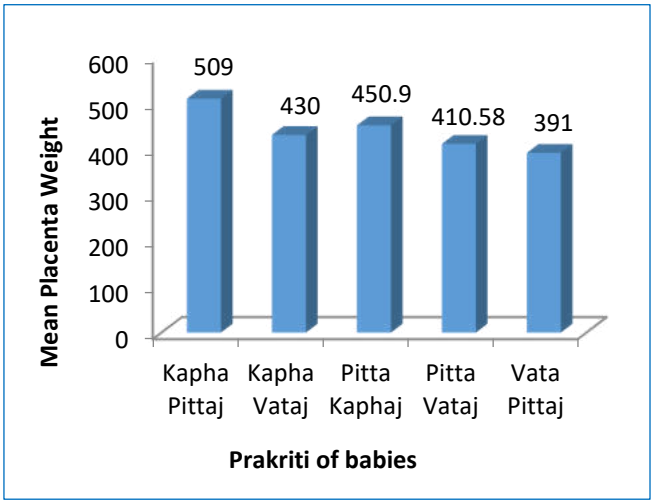
Graph 1: Weight wise distribution of the newborn.



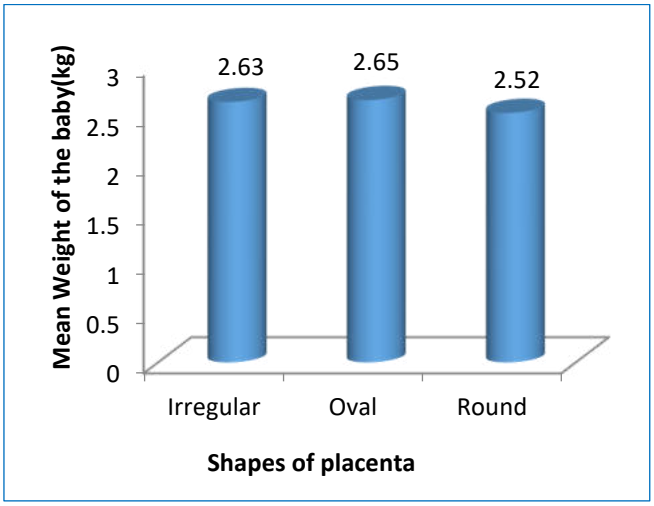
Graph 2: Correlation between weight of the newborn and weight of placenta.



Graph 3: Correlation between weight of placenta and the *Prakriti* of babies.



Graph 4: Correlation between weight of babies and shapes of placenta.



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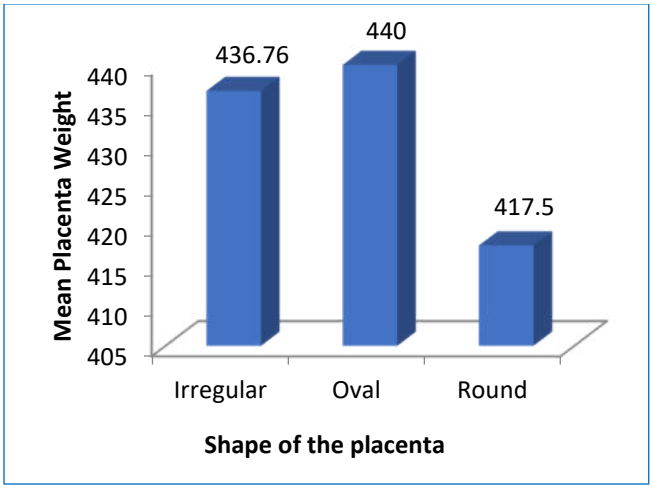
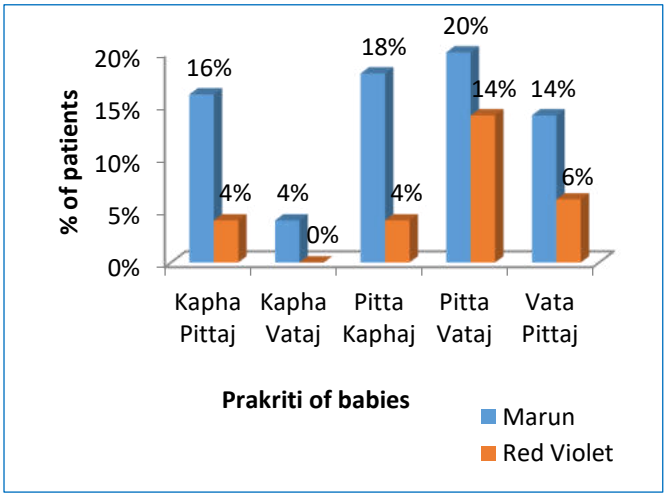
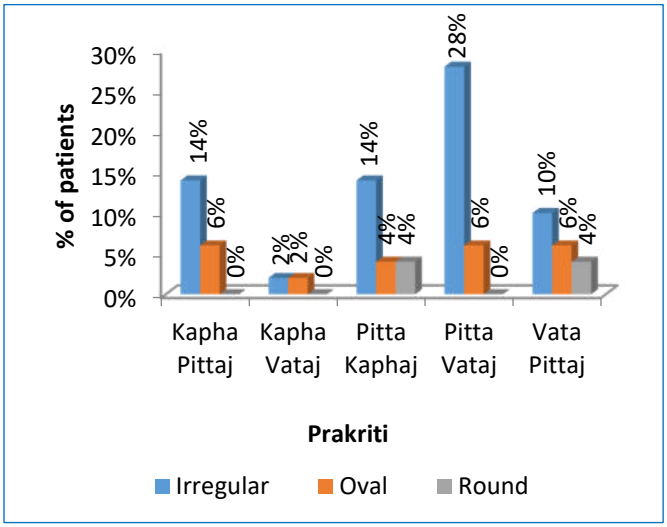
Graph 5: Correlation between weight of placenta and its shape.



Graph 6: Correlation between *Prakriti* of babies and the Colours of Placenta.



Graph 7: Correlation between *Prakrit* of babies shape of placenta.



DISCUSSION

Delivery cases between age group of 19 -31 years are included. This is crucial period for reproductive age and normal deliveries. The mean weight of 2.62 kg with SD of 0.36 kg is observed. This Indicates that the deliveries included in this study were absolutely normal without any complications. Though the mean weight is in normal range, it is on its lower range. There is need to focus on nutritional suppliments for pregnant women in this region. Out of 50 newborns, the male newborns are 29 (58%) and female new borns are 21 (42%). Thus the male newborn born were more than females. The variation in the ratio observed may be because of small smaple size. Maximum 36 (72%) patients were from rural area. The reporting patients in this hospital are from rural area so the percentage of these patients are more. Among 50 womens 29 (58%) womens had FTND delivery and 21 (42%) were LSCS deliveries. Due to modifications in lifestyle and sedimentary work habits there seems to be increase in percentage of deliveries with LSCS. The placenta a was having range between 330gm - 620gm. The mean placental weight was 436gm and (SD=59.59). The value of mean weight of placenta is near to normal range of 500gm which indicates that the deliveries were normal and full term.[6] The mean birth weight of newborn was 2.62kg (SD=0.36kg) is observed. This indicate that the deliveries included in the study were absolutely normal without any complications. Though the mean weight is normal range, it is on its lower range. There is need to focus on nutritional suppliments for pregnant women in this region.

Approximately 68% (34), were the irregular placenta, 24% (12) were oval placenta, 8% (4) were round placenta respectively. F-value is non significant in this case which suggest that there is no correlation between shape of placenta and features of newborn. Similarly there is no correlation between shape and weight of placenta. Approximately 72% (36) were Maroon colour placenta and 28% (14) were red violet colour placenta. As ‘t’ value is non significant there is no correlation between colour of placenta and weight of newborn. Similarly there is no correlation between

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colour and weight of placenta. However maroon colour placenta were found in most of cases (36/50). The mean diameter of the 50 placenta were 15.04 cm. The diameter of placenta were ranging from 11 - 17.35cm. The diameter of the placenta may give an indication of the size of the placenta which in turn may give indirect information about the foeto-placental ratio. The diameter of the placenta affects the amount of nutrients, oxygen and carbon dioxide that will pass from the mother to the child and vice versa. Borton (2011) and Ohagwu et al. (2009) reported a term placental diameter range of 15 cm to 25 cm whilst Yetter (1998) reported a mean of about 22 cm. The mean diamter of placenta in this study is observed in lower limits of normal range. In proportion to this the mean weight of newbron is also seen within lower limit of normal range It suggest that there need to It prepare a module of dietary and nutrition precautions for improvement of this scenerio in this region. The head circumferences were ranging from 32.1 - 35.8cm. The mean head circumference was found to be 34.44cm. This observation is within normal range of head circumference, reflecting the normal growth of newborn. The *Prakriti* of newborns are found to be *Kapha-Pitta, Kapha-Vata, Pitta-Kapha, Pitta-Vatta* and *Vata-Pitta*. Among 50 newborns *Kapha-Pitta Prakriti* were 10 (20%), *Kapha-Vata Prakriti* were 2 (4%), *Pitta-Kapha Prakriti* were 11 (22%), *Pitta-Vata Prakriti* were 17 (34%), *Vata-Pitta Prakriti* were 10 (20%).

Discussions on Results

Correlation between the birth weight and the placenta weight.

There is no correlation between colour of placenta and *Prakriti* of a newborn as 'p' value is non significant. There is corraltion between mean weight of the newborn with the *Prakriti* of newborn as F - value is significant. It is observed in newborns of *Pitta Prakriti*. The relationship of placenta and newborn weight was found to be 1:5. Correlation between the colour of placenta and *Prakriti* of newborn. There is no correlation between colour of placenta and *Prakriti* of newborn as p' value is non significant.

Correlation between the shape of placenta and *Prakriti* of newborn

The correlation between shape of placenta and *Prakriti* of newborns was also studied, but no such significant association was observed. However 34 (68%) of placenta belongs to irregular shape. The shape or *Akruti* is of prime importance in the association of *Dosha*, but results was non-significant in the catergory.

CONCLUSION

Total 50 patients were selected for the study on the criteria mentoned in the methodology. The results are studied on the basis of data collected as per criteria (inclusion and exclusion) and statistically evaluated. After studying the relationship between *Apara* weight with weight of newborn we found that there is relation between both these characteristics and 1.59 ratio between weights and statistically significant. When the correlations of morphological characteristics with the *Prakriti* of newborn were studied, we found no significant relationship in these characteristics. The correlation of weight of *Apara* and *Prakriti* of newborn is found significant in our study.

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