



Original Research Article

To evaluate the gross and microscopic changes in placenta in all preterm and full term pregnancies

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ABSTRACT

Background & Methods: This is a prospective type of study and constitutes the clinicopathological correlation of abnormal placental findings with pregnancy related maternal morbidities and associated foetal outcome in all preterm and full term pregnancies. Placentae from 80 deliveries of preterm and fullterm gestation were collected from labour room.

Result: 53.80% of the neonates were females and 45% were males. No significant difference in the sex incidence was observed. It is noticed that the maternal morbidity was higher with female child birth. 57.50% of the mothers were multigravida and 42.50% were primigravida. The young and multigravida mothers in the age group of 21-30 years were at increased risk for preterm birth. In our study we observed that 52.94% of multigravida pregnancies were associated with preterm birth.

Study Designed: Observational Study.

Conclusion: In the present study, conducted over 80 placentae obtained from the cases fulfilling the inclusion criteria, the majority of the patients (82.50%) belong to the age group of 21-30 years. The younger cohort of patients in the age group of 18-20 years were 16.30% and relatively older cohort of patients in the age group of 30-35 years constituted 1.30%. Most of the mothers were multigravida (57.50%). There was no considerable sex difference in the occurrence of preterm or full term birth as 45% of the neonates were males and 53.8% were female. Quantitative evaluation of placental lesions is essential in all maternal morbidities, as similar changes can be observed in full term uncomplicated deliveries.

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1. Introduction

The maternal indications include systemic disorders, preterm delivery, peripartum fever/infection, unexplained third-trimester bleeding, severe oligohydramnios, unexplained or recurrent pregnancy complication, abruption, invasive procedure with suspected placental injury, nonelective pregnancy termination, and thick meconium.¹ Foetal/neonatal indications include stillbirth/perinatal death, compromised clinical condition, hydrops foetalis, birth weight less than the tenth percentile, seizures, infection or sepsis, major anomalies, discordant twin growth, and multiple gestations with same-sex

twins. Placental indications include infarct, mass, vascular thrombosis, retroplacental hematoma, amnion nodosum, abnormal coloration, small or large placenta, umbilical cord lesion, and cord length <32 cm.²

Iron deficiency anaemia is the most common systemic maternal disorder during pregnancy. WHO has classified anaemia of pregnancy as mild, moderate and severe on the basis of maternal haemoglobin levels of 10-10.9 gm%, 7-9.9 gm% and <7 gm%.³ The other significant systemic maternal morbid conditions which have a great impact on the foetus and placental pathology include pre-eclampsia, eclampsia, diabetes mellitus, tuberculosis and viral infections like hepatitis B and HIV.

A preterm delivery, as defined by the World Health Organization, is one that occurs at less than 37 and more

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than 20 weeks of gestational age. The rate of preterm deliveries in India is 21%, in the United States it is approximately 11%, whereas in Europe it varies between 5% and 7%.⁴

Birth weight is an important determinant of foetal survival. Birth weight is governed by two major processes: duration of gestation and intrauterine growth rate. Low birth weight is thus caused by either a short gestation period or retarded intrauterine growth or a combination of both.⁵ According to WHO, infants with birth weight of <2500 gms are considered as low birth weight babies. Of the 127 million infants born in the world in 1982, 20 million (16%) were estimated to weigh less than 2500 g, and over 90% of these infants were born in developing countries.⁶

The requests for placental pathology are soaring, due partly to demands from obstetricians and to the litigious environment in which they practice, and to improved obstetrical care leading to pregnancies in medically challenging situations. Evaluation of the placenta requires a good understanding of the questions and issues concerning both the foetus/infant and the mother.

The present study is undertaken to study the placental pathology in settings of maternal morbidities and to investigate the association of placental pathology with the neonatal outcome in this cross section of population.

2. Materials and Methods

This is a prospective type of study and constitutes the clinicopathological correlation of abnormal placental findings with pregnancy related maternal morbidities and associated foetal outcome in all preterm and full term pregnancies. Placentae from 80 deliveries of preterm and fullterm gestation were collected from labour room.

For the study the cases were selected which fulfil the inclusion criteria such as all singleton pregnancies, all twin pregnancies, cases who presented with gestation period of <37 weeks, all patients with haemoglobin level of <11 gm/dl; cases associated with foetal abnormalities including low birth weight, IUGR and IUD.

We have excluded all the cases who had any associated systemic disorders like diabetes mellitus, preeclampsia, eclampsia, SLE, CNS disorders like epilepsy, poliomyelitis, polyneuritis and psychiatric disorders, rheumatic heart disease and pulmonary disorders like pneumonia and COPD; established cases of haemoglobinopathies and other haemoglobin disorders less anaemia and patients who were not willing to participate in study.

The cohort of patients with singleton uncomplicated term pregnancy, foetus with birth weight of ≥ 2.5 Kg, gestational period of >37 weeks, blood pressure < 140/90 mm of Hg throughout pregnancy and haemoglobin value of ≥ 11 g/dl formed the control group.

3. Results

Table 1: Maternal Age Distribution

Age	No of Cases	Percentage
<20 years	13	16.3
21-30 years	66	82.5
>30 years	01	1.3
Total	80	100

In this study the youngest patient was 18 years of age and the eldest was 32 years of age. The mean age of all the cases were 23.59 years. Out of them 72% of cases were associated with pregnancy related morbidity. The study suggests that majority of the patients belong to age group of 21-30 years, with younger patients (18-20 years of age) was second highest in study population.

Table 2: Gravidity of Pregnancy

Gravidity	No of cases	Percentage
Primigravida	34	42.5
Multigravida	46	57.5
Total	80	100

We found that 57.50% of the mothers were multigravida and 42.50% were primigravida. The young and multigravida mothers in the age group of 21-30 years were at increased risk for preterm birth. In our study we observed that 52.94% of multigravida pregnancies were associated with preterm birth.

In this study 53.80% of the neonates were females and 45% were males. No significant difference in the sex incidence was observed. It is noticed that the maternal morbidity was higher with female child birth.

4. Discussion

Histopathological examinations of the placenta can reveal changes which may be associated with maternal disorders and result in adverse foetal outcome.⁷ Placental studies are quantitative rather than qualitative, as some changes take place in placenta before it separates from the uterus. The changes are considered pathological when the extent of involvement is greater than normal.⁸ The present study was carried out to compare various parameters of placental histopathology and their significance with foetal outcome.⁹

The histomorphology of placenta is affected by number of factors including period of gestation, degree of anaemia and any other maternal health related conditions.¹⁰ In the present study correlation was seen between common maternal morbidities, prematurity, low birth weight, I.U.D and pathological changes in the placenta.

It was observed that in 36.25% of the patients with mild anaemia the mean gestational period was 34 weeks, in 33.75% of patients with moderate anaemia the mean

Table 3: Sex distribution of the neonates

Sex	No of neonate	Percentage	Mother's morbidity (No. of cases)	Percentage
Male	36	45.0	26	45.61
Female	43	53.8	31	54.39
Abortus	01	1.3	—	—
Total	80	100	57	100

gestational period was 33 weeks, in 1.25% of patients with severe anaemia the mean gestational age was 32 weeks and in control group the mean gestation period was of 38 weeks.¹¹ There is significant reduction in the birth weight of the foetus with increasing severity of anaemia.

In a study conducted by Rusia U et al. the gestational period in mild anaemic patients was in range of 28 to 40 weeks, moderately anaemic patients had gestational period of 34 to 40 weeks and severely anaemic patients had gestational period of 24 to 40 weeks.¹² Similarly the observed birth weights in three groups were 2.8kg, 2.6kg and 2.3 kg respectively.¹³ There is a substantial amount of evidence showing that maternal iron deficiency anaemia early in pregnancy can result in low birth weight subsequent to preterm delivery.

5. Conclusion

In the present study, conducted over 80 placentae obtained from the cases fulfilling the inclusion criteria, the majority of the patients (82.50%) belong to the age group of 21-30 years. The younger cohort of patients in the age group of 18-20 years were 16.30% and relatively older cohort of patients in the age group of 30-35 years constituted 1.30%. Most of the mothers were multigravida (57.50%). There was no considerable sex difference in the occurrence of preterm or full term birth as 45% of the neonates were males and 53.8% were female. Quantitative evaluation of placental lesions is essential in all maternal morbidities, as similar changes can be observed in full term uncomplicated deliveries.

6. Conflicts of Interest

All contributing authors declare no conflicts of interest.

7. Source of Funding

None.

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