STUDY OF PLACENTAL LOCALISATION AND PREGNANCY OUTCOME AT A MEDICAL COLLEGE IN NORTH INDIA

H. K. Cheema[1], Rajiv Arora[2], Harshdeep Joshi[3]

[1]Associate Professor, Department of Obstetrics and Gynaecology, Punjab Institute of Medical Sciences, Jalandhar.
[2]Professor and HOD, Department of Physiology, Punjab Institute of Medical Sciences, Jalandhar.
[3]Associate Professor, Department of Community Medicine, Punjab Institute of Medical Sciences, Jalandhar.

ABSTRACT

BACKGROUND

Placenta fulfils many important roles as it is the interface between mother and foetus.

- Now-a-days screening ultrasonography (USG) of large proportion of pregnant women is undertaken, at least one obstetric ultrasonography for gestational age, amniotic fluid volume, foetal anomaly survey & placental location is done.
- Curiosity arises in the mind that; Are these placental implantation sites predictive of any adverse pregnancy outcome?

The aim of this study was to find the association of placental location on the outcomes of pregnancy. Survival of the baby and mean birth weight of the baby were taken as measures of pregnancy outcomes.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Punjab Institute of Medical Sciences, Jalandhar, Punjab from August 2016 till July 2017 and included all pregnant patients, with at-least one ultrasonographic report and delivered in PIMS. In total, 1000 cases were included in the study. We collected numerous antenatal, peripartum and post-natal variables of the included patients and birth weight of the babies. Using ultrasonography, we categorised each placenta as anterior, posterior and lateral. Comparison of placental location and pregnancy outcome was done using chi-square for categorical data and using one-way analysis of variance for quantitative variables, taking p value less than 0.05 as statistically significant.

RESULTS

During the study period, we included 1000 pregnant females, mean maternal age was 26.51 ± 4.25 years, mean period of gestation was 38.08 ± 2.30 weeks. The placenta was located anteriorly in 67%, posteriorly in 31% and laterally in 2% . We did not find any significant association between the location of the placenta and mortality of baby born to them (p value = 0.88). We found the mean baby weight to be significantly different among the three types of placental localizations (p value = 0.037).

CONCLUSION

There is a significant association between the location of the placenta and mean birth weight of the baby. Future studies should be done on larger populations at multiple centres.

KEYWORDS

Pregnancy, Placenta, Outcome, Diagnosis, Survival Study of Placental Localization & Pregnancy outcome in PIMS.

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BACKGROUND

The placenta is a foetal organ consisting of an umbilical cord, membranes and parenchyma. The placenta fulfils many important roles as it is the interface between mother and foetus and thus enables respiratory gas exchange, transports nutrients, eliminates foetal waste products, prevents rejection of the foetal allograft and secretes peptide and steroid hormones. Since the mother and foetus interface at placenta, maternal or foetal disorders may have placental squeal. Now-a-days screening ultrasonography (USG) of large proportion of pregnant women is undertaken, at least one obstetric ultrasonography for gestational age amniotic fluid volume, foetal anomaly survey & placental location is done. Curiosity arises in the mind that; Are these placental implantation sites predictive of any adverse pregnancy outcome?

On the other hand, placental abnormalities may also affect both maternal and foetal health outcomes.[1] The site of implantation and as a result of it the location of the placenta can affect the blood supply of placenta. This in turn can affect the outcome of pregnancy.[2]

Trans-abdominal sonographic assessment of placental location is one of the standard components of the basic obstetrical ultrasound examination. Some literature in the past has hinted at the possibility of using sonographic information of placental localization as a predictor of adverse outcome in a pregnancy. However, the evidence available to us is weak and not generalizable to all populations. The aim of this study was to find the association of placental location on the outcomes of pregnancy. Survival of the baby and mean birth weight of the baby were taken as measures of pregnancy outcomes.

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Corresponding Author:
Dr. Rajiv Arora,
Professor and HOD,
Department of Physiology,
Punjab Institute of Medical Sciences,
Jalandhar.
E-mail: drrajivarora@yahoo.com
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MATERIALS AND METHODS

This prospective observational study was conducted at Punjab Institute of Medical Sciences, Jalandhar, Punjab. We included all pregnant females who presented to the Department of Obstetrics and Gynaecology of our hospital for antenatal examination from August 2016 till July 2017. All data were anonymized, and approval to conduct the study was obtained from the institutional ethics committee. We included only those cases which received and had documented antenatal care provided and their delivery in our hospital. Prior documentation of placental location on the basis of antenatal USG was necessary. We excluded patients with incomplete documentation of the antenatal care, placental location or birth weight of the baby. The primary objective of the study was to compare the association between baby survival and placental location and secondary objective was to assess the association of mean weight of the baby and the placental location.

From the medical records, data was analysed, we collected maternal age, gestational age, gravidity, parity and the number of abortions of the patient, whether the patient received the lower section caesarean section (LSCS) or underwent normal vaginal delivery. Birth weight of the babies were noted from the medical records of the cases as well. All study subjects received ultrasound examinations, during which the position of the placenta was noted as well. We categorised each placenta as anterior, posterior and lateral. The master chart prepared in Microsoft excel was transferred and analysed in SPSS version 24. The quantitative data was described as mean and standard deviation and qualitative data was described using frequencies and percentages. Comparison of placental location and pregnancy outcome was done using chi-square for categorical data and using one-way analysis of variance (ANOVA) for quantitative variables, taking p value less than 0.05 as statistically significant.

RESULTS

During the study period, we included 1000 pregnant females. The mean maternal age was 26.51 ± 4.25 years and mean period of gestation was 38.08 ± 2.30 weeks (Table 1). The placental was localized as anterior in 67% of the cases, 31% posteriorly located and 2% laterally located. Majority of these pregnant females had LSCS (64%). Mean weight of the baby born to these females was 2.55 ± 0.56 kgs. We could not find any significant association between the location of the placenta and mortality of baby born to them (p value = 0.88). We found the mean baby weight to be significantly different among the three types of placental localizations (p value = 0.037) (Table 2).

DISCUSSION

Kalanithi et al[3] described a positive correlation between IUGR and lateral placentas, rather than anterior and posterior. Khan et al[4] reported that overall 8% cases of the low-lying placenta had growth retarded babies as compared to 6% of the normal ones. Comeau et al[5] found no difference in the gestation of babies between low lying and normally sited placenta. Some researchers have described that placental location has implications for poor pregnancy outcomes, especially small for gestational age (SGA). Kalanithi et al[3],[6] have reported that pregnancy complicated by IUGR are significantly more likely than non-IUGR pregnancies to have a lateral placenta as compared with an anterior or posterior placenta at 16 – 20 weeks gestation. Kofinas et al.[7] reported that unilateral placentas are more common than central (anterior and posterior) ones in pregnancies with IUGR and/or pre-eclampsia. Kalanithi et al[3] studied the possible influence of placental location on the Apgar scores of new-borns. They described the location of the placenta as either fundal, uterine body or lower uterine segment. They found no case of low Apgar score (< 4) in the lower uterine segment group, whereas they found that higher the placenta was situated in the uterus the greater the incidence of an Apgar score < 4 (i.e. 0.6% in the uterine body group and 2.4% in the fundal group). Our study showed no correlation between low Apgar score and placental location. We found no case with Apgar score < 4. In contrast, Shumaila Zia et al[8] did not observe a significant difference in mean BW among different placental location groups.

Placental location may be an important determinant of pregnancy outcome. Additional research is needed to confirm this observation and to determine whether pregnancies with anterior placenta may benefit from more intensive monitoring.

Variables	
Maternal age (years)	26.51± 4.25*
Period of gestation (weeks)	38.08 ± 2.30
Gravidity	1.71 ± 1.03
Parity	0.60 ± 0.75
Abortion	0.20 ± 0.553
Placental position	
Anterior	673 (67%)
Posterior	304 (30.7%)
Lateral	23 (2.3%)
Procedure performed	
Normal vaginal delivery	357 (35.7%) #
Lower section caesarean section	643 (64.3%)
Baby weight	2.55 ± 0.56
Antenatal haemoglobin (gm %)	9.56 ± 1.16

Table 1. Baseline characteristics of patients included in the study

* Mean ± Standard deviation, # Number (percentage)

	Placenta location			
	Anterior (n=673)	Posterior (n=304)	Lateral (n=23)	p value
(1) Outcome of delivery				
Alive	666	301	23	0.88*
Dead	7	3	0	
(2) Mean baby weight (kg)	2.53 ± 0.56	2.60 ± 0.56	2.32 ± 0.42	0.037#

Table 2. Comparison of placental location and pregnancy outcome

*chi-square test, #one-way ANOVA

CONCLUSION

We found placental location to significantly affect the mean birth weight of the baby. However, in our study population we could not find a significant association between placental location and survival of the baby. We need large scale multi-

centric studies prospective studies in future to support our findings.

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