

Original Article

Placenta Previa and its Effects on Feto-Maternal Health at a Tertiary Care Hospital

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Abstract

Objective: To determine the frequency of placenta previa and its effects on maternal and fetal health at a tertiary care hospital.

Methodology: This descriptive study was held at Lady Aitchison Hospital, Lahore, Pakistan from December 2018 to November 2019. Women who were diagnosed as cases of placenta previa, any parity, and willingness to participate in the study were included. Placenta previa was categorized as Grade 1 to 4, according to covering the cervix. Surgeries were performed by gynaecologists having experience of at least 10 years. All the data including fetal and maternal outcomes were recorded in self-designed proforma. SPSS version 20 was used for data analysis.

Results: Total of 120 patients of placenta previa underwent cesarean section. The patients' mean age was 28.59±4.45 years and mean gestational age was 35.53±5.80 weeks. Hysterectomy was done in 19.2% cases, 8.3% had hypovolemic shock, 8.3% had prolonged hospital stay, 5.8% were admitted in ICU and 2 (1.7%) patients died. According to fetal outcome; NICU admission was 25.0%, 7.5% were IUD and 3.5% were still born. Apgar score 4-6 was commonest in 85.0% of cases.

Conclusion: Placenta previa showed adverse effects on maternal and fetal health like hysterectomies, PPH and neonatal ICU admission including feto-maternal mortality. Placental previa grade VI is mostly associated with adverse outcomes. To minimize morbidity in these females, the delivery should be carried out in institutes with preset preventive measures and good facilities.

Keywords: Placenta previa, maternal, fetal.

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Introduction

Placenta previa is defined as complete or partial placenta implantation in the lower segment of uterus. In the 3rd trimester, it is among the major causes of vaginal bleeding and a substantial cause of perinatal and maternal morbidity and mortality.^{1,2} Presently, a large body of research suggests that the type of placenta previa significantly influences the outcome of pregnancy.² In Asia nearly 30 percent maternal deaths occur because of major childbirth-related haemorrhage

in placenta previa, particularly because of increase in the prevalence of C-sections.^{4,5} Placenta previa occurs globally in 3-5 cases per 1000 pregnancies and tends to grow as the number of C-sections is increasing. This may be because a lower segment uterine scar can trigger a low placental implantation. The prevalence is much greater at around 13-27 weeks (mid-pregnancy) as compared to at 36 weeks and beyond because of lower segment development in the uterus

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and likely because of trophotropism causing placenta previa resolution.^{5,7} The overall incidence of placenta previa was reported at 1.24% within china and in the UK at 5.2 per 1000 pregnancies.⁸ The major level of placenta previa in the 2nd and 3rd trimesters of pregnancy is a significant cause of obstetrical haemorrhage and it correlates adversely with fetal and maternal outcomes.⁸ Antepartum haemorrhage in around 35% of cases is caused by Placenta Previa and in Asia, its correlation with severe maternal mortality and morbidity is around 30%.⁹ Pakistan ranks fifth with 178 per 100 000 maternal mortality cases. Obstetric hemorrhage contributes greatly to this maternal mortality, along with Morbidly adherent placenta (MAP) being the primary cause.^{10,11} Fetal and neonatal complications are also more frequent, largely because of preterm birth and SGA babies, and the prevalence of RDS among infants delivered via C-section at 30 to 35 weeks was substantially higher among mothers who previously had placenta previa as compared to females who had no placenta previa along with congenital anomalies.^{12,13} There are still controversies regarding fetomaternal health linked to placenta previa because recent national and international studies suggested that more studies are required.^{1,14} However this study has been conducted to determine the frequency of placenta previa and its effects on fetomaternal health at a tertiary care Hospital.

Methodology

This descriptive study was conducted at Lady Aitchison Hospital, Lahore, Pakistan. The study duration was one year from December 2018 to November 2019. Women diagnosed as the case of placenta previa with more than 28 weeks of gestational age, any parity and willing to take part in this study were included. Patients with a history of chronic liver disease, diabetes, eclampsia, multiple pregnancies and fetal anomalies were excluded. Routine laboratory workup was done, after taking demographic information including education, maternal age, booking status, parity and gravidity. Patients were interviewed regarding the previous mode of delivery also. Placenta previa was categorized as Minor (Grade 1): the placenta remains mostly in the womb at upper part, however sometimes reaches the lower part. Marginal (Grade 2): the placenta reaches but does not cover the cervix. Major (Grade 3): the cervix is partly covered by placenta. Major (Grade 4): the cervix is fully covered by the placenta (most severe form of placenta previa). Patients underwent emergency and elective caesarean section and surgeries were

performed by gynecologists having experience of at least 10 years. Pregnancy outcomes included postpartum hemorrhage, hysterectomy rate, blood transfusion rate, length of hospitalization and any mortality in the mother and 1-minute Apgar score, birth weight and any fetal mortality. All the data was recorded in self-designed proforma. SPSS version 20 was used for data analysis.

Results

A total of 120 patients of placenta previa underwent cesarean section. The patients' mean age was 28.59±4.45 years and the mean gestational age was 35.53±5.80 weeks. Most of the patients had a marriage duration of 1-10 years. Most of the cases 80.8% had parity 1-3 followed by 16.7% had 4-6 and only 2.5% had parity >6. Thirty percent (30%) of women had a history of spontaneous vaginal delivery in the past, 15.8% presented as primigravida and the remaining had a history of 1 to 4 previous cesarean sections. Previous DNC history was also found in 25.8% cases. 50.8% cases underwent elective caesarean section and the remaining underwent emergency cesarean section, results are shown in Table I.

Table I: Demographic characteristics of the patients (n=120)

Characteristics	Frequency	%	
Marriage duration	1-5 years	49	40.8
	6-10 years	45	37.5
	11-15 years	19	15.8
	>15 years	07	05.8
Parity	0-3	97	80.8
	4-6	20	16.7
	>6	3	02.5
Previous Mode of Delivery	SVD	36	30.0
	1 LSCS	27	22.5
	2 LSCS	21	17.5
	3 LSCS	13	10.8
	4 LSCS	04	3.3
	Primigravida	19	15.8
Previous history of DNC	Yes	31	25.8
	No	89	74.2
Conservative surgery	Emergency LSCS	59	49.2
	Elective LSCS	61	50.8
Numbers of blood transfusions	Nil	38	31.7
	1-3	65	54.2
	4-6	10	08.3
	7-10	03	02.5
	>10	04	03.3
Maternal age (mean±SD)	28.59±4.45 years		
Gestational age (mean±SD)	35.53±5.80 weeks		

Most of the patients 41.7% presented with grade IV of placenta previa, followed by 25.8% had grade II placenta previa, 20.8% had grade III and 11.7% had grade I placenta previa as shown in table II.

According to effects of placenta previa on maternal health; hysterectomy was done in 19.2% cases, 8.3% had hypovolemic shock, 8.3% had prolonged hospital stay, 5.8% were admitted in ICU and 2 patients died. According to fetal outcome; NICU admission were 25.0%, 10.8% were IUD. Apgar score 4-6 was commonest in 85.0% cases as shown in table III.

Table II: Patients distribution according to grade of placenta (n=120)

Types and location	Frequency	Percent	
Types of placenta	I	14	11.7
	II	31	25.8
	III	25	20.8
	IV	50	41.7

Table III: Effects on maternal and fetal health of placenta previa (n=120)

Outcome	Frequency	Percent	
Maternal outcome	Hysterectomy	23	19.2
	Shock	10	08.3
	Prolonged hospital stay	10	08.3
	ICU admission	07	05.8
	PPH	07	05.8
	Maternal death	02	1.7
Fetal outcome	NICU admission	30	25.0
	IUD's	13	10.8
Apgar score	0-3	11	09.2
	4-6	102	85.0
	7-10	07	05.8
Birth weight	Mean±SD	2.57±0.50 kg	

Discussion

In this study patients' mean age was 28.59±4.45 years and mean gestational age was 35.53±5.80 weeks. As compared to our findings, Memon E et al¹⁵ reported a mean age of 30.77±2.42 years and mean gestational age of 34.64±2.53 weeks. An earlier age at marriage and conception in our community may have influenced this, although it would be interesting to look into this again in a larger study.

In this study history of previous spontaneous vaginal delivery was seen in 30% women, 15.8% presented with

first delivery and remaining had a history of 1-4 preceding C-sections, while previous DNC history was also in 25.8% cases. Some risk factors that involve placenta previa with or without prior caesarean section and subsequent uterine surgery for placenta accreta have been reported. Clark et al,¹⁶ revealed a raised incidence of placenta previa following C-section deliveries from 0.26% among females containing typical uterus to 0.65% and around 10% following ≥ 4 C-section deliveries. This may be because the placenta within lower segment hinders the head active involvement, particularly in major previa. This demands C-section and can also trigger the transverse position of fetus. The incidence of MAP has recently risen in few decades from 1 case of MAP in 30,000 pregnancies in 1960s to 1 case of MAP in 533 pregnancies.¹⁷ It is due to the rise of the C-section percentage globally. This has been reported in our findings as well.

In this study, most women 41.7% presented with grade IV of placenta previa. However, Fatemeh C et al¹⁸ reported that 33.3% had placenta previa complete, 37.9% had partial and 28.7% had low lying.

In this study, hysterectomy was done in 19.2% cases, 8.3% had hypovolemic shock, 8.3% had prolonged hospital stay, 5.8% were admitted in ICU and 2 patients died. Similar morbidity was reported from nearly all globally conducted studies.¹⁸⁻²¹ The study conducted by Kollmann M et al²² reported high maternal morbidity as ante-partum bleeding was seen in 42.3% cases, post-partum hemorrhage in 7.1% cases, maternal anemia in 30% cases, comorbid adherent placentation in 4% cases, and hysterectomy in 5.2% of cases and they also reported frequent neonatal complications as preterm birth in 54.9% cases, low birth weight <2500 g in 35.6% cases, Apgar-score following five minutes <7 in 5.8% of cases, and fetal mortality in 1.5% of cases. Another study conducted by Crane JM et al²³ reported that maternal complications included the relative risk of hysterectomy in 33.26%, antepartum bleeding in 9.81%, intrapartum in 2.48%, and postpartum in 1.86% hemorrhages, moreover, blood transfusion was in 10.05%, septicemia in 5.55%, and thrombophlebitis was in 4.85% of cases.

In the current study, NICU admissions were 25.0% and 10.8% were IUD's. Apgar score 4-6 was commonest in 85.0% cases. Ahmed SR et al¹⁹ reported that mean birth weight was 3.1±0.28 kg and 17.3% were admitted to NICU. Shabnum H et al¹⁵ reported that mean apgar scores was 5.2 and 6.8 respectively at 1 and 5 minutes

and most babies were found with low birth weight. Fatemeh C et al¹⁸ reported 6.9% neonatal deaths and no still birth, IUGR was observed in 2.2% and average APGAR score was 6.8; and of those, 25 infants had APGAR score of less than 7 minutes. On the other hand, Shukar-ud-Din S et al²⁴ also stated that from 20 patients, perinatal mortality was 30.0% in placenta previa, fresh still birth rate was 20.0%, the intrauterine death rate was 10.0%. Out of 14 cases; APGAR score was 0 and 5 in 6 and 8 cases respectively at one minute.²⁴ Placenta previa correlates with adverse maternal and fetal outcomes according to recent studies.²⁵

Conclusion

Abnormal invasion of placenta is an increasing obstetric complication worldwide due to higher rate of caesarian sections and contributes to significant fetomaternal morbidity and mortality. To minimize morbidity and mortality in these women, the delivery should be conducted in specialized centers and managed by a multi-disciplinary team. Improved and modified surgical techniques such as use of local hemostatic agents and compression sutures; removal of placenta and underlying myometrium needs to be practiced for better maternal outcomes. These combined efforts and timely diagnosis along with patients counseling can reduce the maternal and fetal morbidity and mortality caused by placenta previa.

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