

Previous Caesarean Section; Subsequent Placenta Previa and its Outcome

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ABSTRACT

Background: Caesarean section rate is increasing in most countries. The relative risk for the placenta previa is higher in those having previous cesarean section as compared to those having an unscarred uterus. **Objective:** To observe the effects of placenta previa with previous Caesarean section on maternal and fetal outcome. **Study Design:** This was a prospective study. **Settings:** Obstetrics and Gynecology Department, Liaquat University Hospital, Hyderabad Pakistan. **Duration:** Six months from December 2016 to June 2017. **Methodology:** All pregnant having placenta previa and history of previous caesarean section at or >28 weeks of gestation irrespective of their parity and age were enrolled. Maternal and fetal outcome in terms of complications and mortality was observed. Data was collected via study proforma and analyzed by SPSS version 20. **Results:** Total 196 women were studied, their mean age was 29.19+2.66 years and their mean gestational age was 35.44+2.44 weeks. Morbidly adherent placenta was 5.10%. Out of all 95.9% patients seen with antepartum hemorrhage and 86.7% underwent multiple blood transfusions. Postpartum hemorrhage was in 41.3% patients, renal impairment was in 25.5% patients, caesarean hysterectomy was done in 7.1% cases and maternal mortality was 1.5%. Premature birth was 53.1% and 35.2% were admitted in NICU. Still birth rate was 27%, 17.9% cases were IUD, while fetal growth restriction rate was 14.3%. Premature birth, still born, antepartum hemorrhage, Caesarean Hysterectomy and maternal mortality were significantly linked to high grade of placenta previa, p-values were quite significant. **Conclusion:** Placenta previa with previous caesarean section remains risk factors for adverse maternal and fetal outcome. Efforts should be made to decrease this adverse outcome by spacing pregnancies, limitation of family size, proper antenatal care and early referral of high-risk patients.

Keywords: Placenta previa, Antepartum hemorrhage, Blood Transfusion, Caesarean section.

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INTRODUCTION

Placenta previa has been characterized as a placenta, which is located within lower uterine region entirely or partly.¹ The precise reason of placenta previa remains unclear, however the related factors involve multiple gestation, drug abuse, high parity, older maternal age, smoking, and prior C-section.² Placenta previa is typically diagnosed by clinical features however validated by ultrasound imaging. The C-section rate is rising with each day in both industrialized and underdeveloped countries. The abdominal delivery rate in the USA, England and Latin America is 29%, 21.5 % and 40% respectively.³ Due to good postoperative and preoperative treatment and prophylactic antibiotic coverage, likely linked to greater safety of C-section in contemporary obstetrics. The risk factor for the growing prevalence of C-sections is older maternal age, rising labor induction rate and declining usage of surgical vaginal delivery. Primary elective abdominal deliveries are also a major contributor, either by inclination or considered valuable for certain reasons. Maternal morbidity is increasing gradually, although with a growing rate of C-sections with respect to scar dehiscence, dense adhesions, and risk of placenta previa and its pathological adherence.³ The prevalence of placenta previa is three times increased among females who had previous deliveries by caesarean sections,¹

this frequency may significantly increase with increased numbers of previous cesarean sections as; around 16.36% in those having only one previous c-section and 66.67% among those having multiple caesarean sections.⁴

Placenta previa may have significantly adverse fetometernal effects, including an elevated risk of parental, postnatal and maternal death, preterm delivery, fetal growth suppression and intrapartum and antenatal hemorrhage and further blood transfusions.⁵⁻¹⁰ Scar uterus has been reported to be a predisposing factor for morbid adherence and also placenta accreta. This research would help to explore the current knowledge regarding impact of placenta previa as well as its morbid adherence on fetal outcome and maternal health at local level.

METHODOLOGY

Study Design: Prospective Observational study.

Settings: Obstetrics and Gynecology department, Liaquat University Hospital, Hyderabad Pakistan.

Duration: Six months from December 2016 to June 2017.

Sample Technique: Non-probability consecutive sampling.

Sample Size: Total 196 women were selected in the study.

Inclusion Criteria: All the pregnant women having placenta previa with history of previous caesarean section at gestational age ≥ 28 weeks either of age and parity were enrolled.

Exclusion Criteria: All the patients having abruptio placentae, uterine scar due to gynecological surgeries, chronic hepatitis, thrombocytopenia and history of smoking were excluded.

Data Collection Procedure: This study was conducted after taking ethical approval from ethical review committee of Liaquat University of medical and health Sciences. Informed written consent was taken from all the enrolled patients those fulfilling the inclusion criteria. After taking demographic information including age, parity, and number of previous caesarean section history, complete clinical examination was done and routine required laboratory investigations were done. All the patients underwent fresh ultrasound for the type of placenta previa and its types with its morbid adherence to uterine scars. Placenta previa was defined as the placenta that is situated entirely or partly in the lower uterine segment. Maternal outcome was defined as antepartum hemorrhage, blood transfusion, postpartum hemorrhage, Caesarean hysterectomy and maternal death. Fetal outcome was defined as premature birth, intrauterine death, still birth, fetal growth restriction and neonatal intensive care unit admission. All the data was recorded in the study proforma.

Data Analysis Procedure: Data was analyzed via SPSS version 20. Mean and standard deviation were computed for numerical data like age and gestational age. Frequency and percentage were computed for categorical variables. Chi-square test was applied and a p-value ≤ 0.05 was considered significant.

RESULTS

Total 196 women having placenta previa with previous caesarean section were studied. Patients mean age was 29.19 ± 2.66 years and their mean gestational age was 35.44 ± 2.44 weeks. Mean of the previous caesarean section was 01.33 ± 0.71 . Most of the women 95.9% had anemia. Table.1

Table 1: Descriptive statistics of demographic variables (n=196)

Variables	Statistics
Patients age	29.19+2.66 years
Gestational Age	35.44+2.44 weeks
Number of previous C/S	01.33+0.71
Parity	02.13±1.21
Anemia	188(95.9%)

According to the types of placenta previa, 38.27% women had placenta type I, followed by 29.08% diagnosed as placenta type II, type II was in 27.55% and placenta previa type VI was in 5.10% of the patients. Figure 1

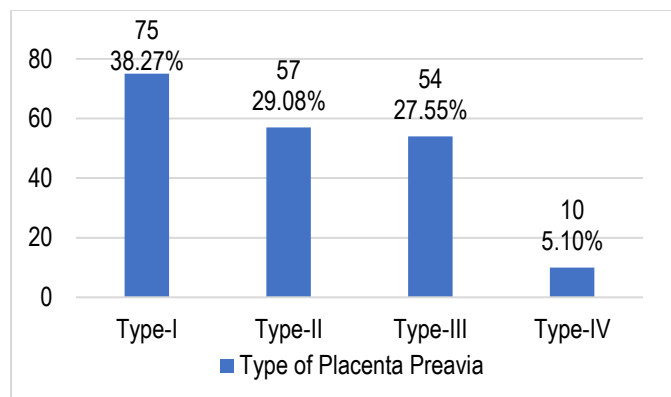


Figure 1: Types of placenta previa (n=196)

Out of all morbidly adherent placenta was found in 5.10% of the study participants. Figure 2

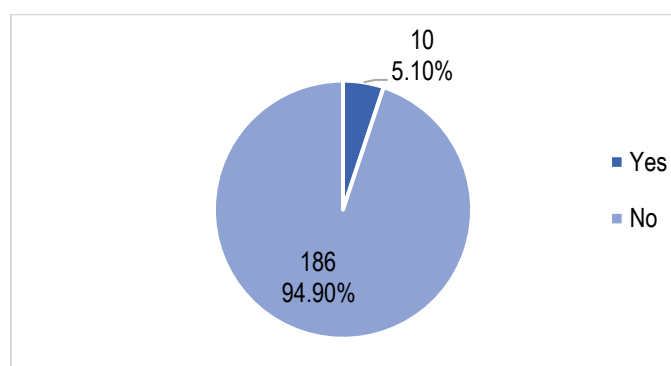


Figure 2: Morbidly adherent placenta in obstetrics patients (n=196)

According to the maternal outcome antepartum hemorrhage was frequently seen in 95.5% cases, and 86.7% women underwent blood transfusions, while postpartum hemorrhage was seen in 41.3% of the cases. Renal impairment was seen in 25.5% patients, caesarean hysterectomy was done 7.1% and maternal mortality was only 1.5%. However antepartum hemorrhage was almost in all cases of placenta type II, III and IV ($p=0.004$), while caesarean hysterectomy and maternal mortality were significantly higher in placenta type IV ($p=0.005$). Table 2

Table 2: Maternal outcome according to types of placenta previa (n=196)

Maternal Outcome	Types of placenta previa				P-Value
	I (n=75)	II (n=57)	III(n=54)	IV(n=10)	
APH	67/89.3%	57/100%	54/100%	10/100%	0.004*
PPH	29/38.7%	27/47.4%	20/37.0%	5/50.0%	0.616
Blood Transfusion	65/86.7%	47/82.5%	50/92.6%	8/80.0%	0.405
Caesarean Hysterectomy	00	4/7.0%	6/11.1%	4/40.0%	0.0005*
Renal Failure	20/26.7%	16/28.1%	11/20.4%	3/30.0%	0.776
Maternal Death	00	00	1/1.9%	2/20.0%	0.0005

APH= Antepartum hemorrhage, PPH= Post-partum hemorrhage

According to the fetal outcome premature birth and admission in neonatal intensive care unit were commonest as 53.1% and 35.2% respectively, followed by still birth was seen in 27% of the patients and 17.9% were IUD, while 14.3% were IUGR. However premature births were significantly high in placenta previa type III and IV ($p=0.007$), still birth was markedly high in type II, and NICU admission was significantly associated to placenta previa type IV ($p=0.058$). Table 3

Table 3: Fetal outcome according to type of placenta previa (n=196)

Fetal Outcome	Types of placenta previa				P-Value
	I (n=75)	II (n=57)	III(n=54)	IV(n=10)	
FGR	7/9.3%	12/21.1%	8/14.8%	1/10.0%	0.284
Prematurity	36/48%	23/40.4%	38/70.4%	7/70.0%	0.007*
Intrauterine Death	13/17.3%	7/12.3%	12/22.2%	3/30.0%	0.403
Still Birth	18/24.0%	23/40.4%	11/20.4%	1/10.0%	0.043*
NICU Admission	28/37.3%	23/40.4%	12/22.2%	6/60.0%	0.058

FGR= Fetal growth restriction

DISCUSSION

Placenta previa, correlated with elevated perinatal and maternal mortality and morbidity, is a major factor of obstetric hemorrhage. The mean age of the females in present study was 29.19 ± 2.78 years, and the females' mean gestational age was 35.10 ± 2.38 weeks. Likewise Bhuyar S et al¹¹ documented a mean age of 26 ± 3.3 years in their patients along with a mean gestational age of 36.9 ± 2.7 weeks on delivery. In present study, blood transfusion rate was high due to antepartum and postpartum hemorrhage. Ayaz et al¹² stated that the probability of cumulative maternal morbidity among placenta previa females was considerably higher. Among the females with placenta previa, the likelihood of PPH, coagulopathy and blood transfusions was substantially higher. Rouse et al¹³ observed that, among females having placenta previa, high C-section was correlated with a raised likelihood of transfusion. In the study of Silver et al¹⁴ further previous C-section was found to be correlated with a raised likelihood of complications, including need for frequent blood transfusions, prolonged maternal hospitalization, and operative injuries. In the study of Saleh S et al¹⁵ maternal complications were; in 62% cases antepartum hemorrhage, in 17% cases severe postpartum hemorrhage, in 30% cases necessity of blood transfusions ($p=0.002$), in 31% cases morbid adherent placenta, in 8% cases emergency c-section hysterectomy and in 4% cases maternal death ($p=0.407$). In comparison to our results, study conducted by Yadava PA et al¹⁶ reported that total 52% patients suffered from antepartum hemorrhage and 17.04% suffered from post-partum hemorrhage, 3% of total patients developed DIC and 2% developed acute renal failure. Similarly, our data regarding the complications of placenta previa entity is comparable to Thakkar

JK et al.¹⁷ Study conducted by Zhang L et al¹⁸ reported that in subsequent pregnancy, females with a placenta previa history are at risk for negative effects including postpartum hemorrhage. Placenta previa was found to be an independent determinant for bleeding, placenta accreta spectrum (PAS) disorders and placenta previa during subsequent pregnancy in females with a history of caesarean section. Another study conducted by Lyu B et al¹⁹ suggested that one prior cesarean section, two or more prior cesarean sections, anterior placenta, complete placenta previa, placenta accrete, antenatal hemoglobin $<10\text{g/L}$ and delivery prior to 34 gestational weeks were independent risk factors of peripartum hysterectomy among patients with placenta previa ($P<0.05$).

In this study, 5.10% of females had placenta previa (type IV), 27.55% were found to have type III placenta previa, 29.08% were found to have type II placenta previa and 38.27% were found to have placenta previa type I. Similarly, Swetha B²⁰ reported that commonest type of the placenta previa was type one among 13 cases having previous caesarean sections out of 24, followed by one patients had type III placenta previa and five patients each of type two & four respectively. On other hand Khan FM et al²¹ reported that placenta previa type IV was commonest among 40.0%, followed by type II 31.6%, placenta previa type III was 20% and type I was only 8.3% of the cases. In this study according to the maternal outcome antepartum hemorrhage was found in 95.5% of the patients. Yadava PA et al¹⁶ reported that 52% patients suffered from antepartum hemorrhage and 17.04% were found with post-partum hemorrhage. Uzma S et al⁴ also reported that antepartum hemorrhage was 54% and post-partum hemorrhage was 15%. Sarojini et al²² reported that 12.7% cases were found with postpartum hemorrhage and adherent placenta was seen in 4.7% of the patients. However, we also found adherent placenta 5.10%. In this series 86.7% women underwent blood transfusions, while postpartum hemorrhage was seen in 41.3% of the cases. Similarly, Sarojini et al²² stated that total 83% patients underwent blood and blood product transfusions. However, Khan FM et al²¹ reported that 23% patients ended up in hysterectomy and 30% underwent ≥ 10 blood transfusions. We found renal impairment in 25.5% patients, caesarean hysterectomy 7.1% and maternal mortality 1.5%. On other hand Sarojini et al²² reported that 3.8% cases had acute kidney injury and 1 (0.9%) was maternal mortality. However, Yadava PA et al¹⁶ reported that out of all 3% patients developed DIC and acute renal failure was developed in 2% of the cases. In agreement of this study Uzma S et al⁴ also reported that caesarean hysterectomy was done in 12% of the patients having placenta previa with previous cesarean section.

In the current study, NICU admission rate was 35.2% and prematurity rates were 53.1%. Still birth was recorded in 27%, intrauterine death in 17.9, and although the prevalence of still birth and prematurity and was strongly related to higher placenta previa degree while restricting fetal development, admission to NICU and intrauterine death were also insignificant among different placental grades which is analogous to the studies of Rangaswamy M et al and Maiti S et al.^{23,24} In the current study,

in 14.3% cases, fetal growth suppression was found to be as an impact of placenta previa with earlier C-section on fetal outcomes. However, Adere A et al¹ also observed that fetal born from placenta previa women having risk of being preterm birth, IUGR, and the respiratory distress syndrome.

CONCLUSION

Placenta previa with previous caesarean section is associated with adverse fetomaternal complications. The most frequent maternal outcome was blood transfusion and antepartum haemorrhage, likewise intrauterine growth restriction, low birth weight, intrauterine death, NICU admission and prematurity were common fetal outcomes. Placenta previa related perinatal and maternal morbidity and mortality are preventable. Efforts must be made to minimize these rates, which may be accomplished via spacing pregnancies, reducing the family size, appropriate and vigilant prenatal care, and timely referral of patients who are at high risk. To provide adequate counseling to their patients, healthcare professionals should be cautious of potential complications. This would undoubtedly assist in enhancing both mother and fetus outcomes in all the pregnancies that are at high risk.

LIMITATIONS

There were no significant limitations.

SUGGESTIONS / RECOMMENDATIONS

More multicenter studies should be done on this subject, transport facilities should be provided in basic health units for early arrival to tertiary care Hospitals. Arrangement of blood must be there of each group for emergency transfusion.

CONFLICT OF INTEREST / DISCLOSURE

There is no conflict of interests.

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