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The Association between Placenta Previa in Pregnant Women with Previous Caesarian Section at Combined Military Hospital

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Background: Placenta praevia is defined as a placenta implanted partially or completely over the lower uterine segment. Placenta praevia is a major cause of massive obstetric bleeding that leads to significant maternal morbidity and mortality. In the present day, the hypothesis is that previous cesarean section is the risk of development of placenta praevia.
Objective: To assess the relationship between placenta praevia and previous cesarean section.
Material and Methods: It was a descriptive cross-sectional study carried out in the Department of Obstetrics and Gynaecology, Combined Military Hospital, Dhaka, from July 2021 to July 2022. Total 35 patients with placenta praevia were included in this study. Informed verbal and written

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consent were taken from the study participants. A detailed history was taken, general physical and per abdominal examination and previous records were reviewed properly. Placenta praevia was diagnosed by patient clinical presentation, ultrasonogram, and incidentally during cesarean section.

Results: The study shows the incidence of placenta praevia was 1.75% and incidence of placenta praevia in woman with previous caesarean section was 1% compared with 0.75% without previous caesarean section. The commonest age group was 26-30 years, which included 44%, and 32% belonged to 31-35 years age group. The mean age was 29.28± 10 years. Most of the patients were multigravida (62%). In maximum number of cases, (52%) were admitted at the gestational period between 35-38 weeks. Common clinical presentations were per vaginal bleeding 84% and 16% of patients were symptomatic. Regarding preoperative findings, 30(62.5%) patients had average preoperative bleeding. Postpartum hemorrhages corrected conservatively were 14(29.1%), and postpartum hemorrhage needed hysterectomy were 4(8.3%). In patients with no history of previous cesarean section 90% were delivered by cesarean section and 10% were delivered vaginally. Among patients with a history of the previous cesarean section all patients underwent cesarean section.

Conclusion: There is a strong association between having a previous caesarean delivery and the subsequent development of placenta praevia. The risk increases with the number of cesarean sections. So, pregnant women with a history of caesarean section must be regarded as high risk for placenta praevia and must be monitored carefully.

Keywords: placenta previa; pregnant women; previous caesarian section.

1. INTRODUCTION

In placenta praevia, the placenta is implanted in the lower uterine segment within the zone of effacement and dilatation of the cervix, resulting in obstruction to the descent of the presenting part [1]. Placenta praevia occurs up to 1 % of pregnancies after 28 weeks and is responsible for 15% to 20% of cases involving antepartam haemorrhage [2] It represents a significant clinical problem, as the patient may need to admit to the hospital for observation, and she may need a blood transfusion and at risk for preterm delivery. The incidence of hysterectomy after cesarean section for placenta praevia is 5.3% [3]. Perinetal mortalities are three to four times higher than in normal pregnancies [4].

Surgical disruption of the uterine cavity is a potential risk factor for placenta praevia [5]. Cesarean delivery is the most common operative procedure in practices of obstetrics and gynecology, which is known to cause damage to the myometrium and endometrium [6]. A defective decidual vascularization exists, possibly secondary to inflammatory or atrophic changes. As the number of cesarean deliveries are increasing, the number of scarred uterus is also increasing, exposing gravid women to increased morbidity from uterine rupture, placenta praevia and accreta, thus increasing the incidence of emergency obstetric hysterectomy [7]. It has been studied that due to scarring of the lower uterine segment, the placenta shows a greater predilection for its location in the lower uterine segment and a greater degree of penetration, as trophoblasts invade deeper tissues for search of maternal blood supply, resulting in placenta praevia and placenta accrete [8].

The increased incidence of placenta praevia in the last decade may be the result of the increasing cesarean delivery rate during this period [9-11]. Concurrent occurrence of placenta praevia and placenta accrete in a patient with a previous lower segment uterine scar was first reported by kistner [10].

Clinical suspicion should however, be raised in any woman with vaginal bleeding (classically pain less bleeding or bleeding provoked by sexual intercourse) and a high presenting part or an abnormal lie, irrespective of previous imaging results. However, spotting may occur during the first and second trimesters of pregnancy. In the study our main goal is to evaluate the association between placenta previa in pregnant women with previous caesarian section.

2. METHODOLOGY

This descriptive cross-sectional study was carried out at Department of Obstetrics and Gynecology, Combined Military Hospital. Dhaka

from July 2021 to July 2022. A total of 35 a dmitted cases of pregnant women >28 weeks of gestation with placenta praevia diagnosed either during antepartum period or during caesarean-section were included in the study. The patients with painless antepartum hemorrhage (>28 weeks of gestation) and asymptomatic placenta praevia diagnosed by USG or during caesarean were included. Patients with antepartum hemorrhages not caused by *Placenta praevia* were excluded. Data were collected using a structured questionnaire containing all the variables of interest. The questionnaires were finalized following pretesting. Data analysis was done by using statistical package for social science (SPSS) software. The test statistics to be used are descriptive statistics as appropriate.

3. RESULTS

Table 1 shows age distribution of the patients. The commonest age group was 26-30 years, which included 44%, 8.5% belonged to 31-35 years age group. Maternal age group <20 years was 4% and 21-25 years was 1. The mean age was 29.28± 10 years. Maximum number of cases 57.14% were admitted at the gestational period between 35-38 weeks. Among 35 women of placenta praevia15(42%) patients had no history of previous caesarean section. Out of 30(85%) patients with history of previous caesarean section, 20(57%) had history of one caesarean section and 5(14%) two or more previous caesarean section. 28% were primigravida whereas 57% were multigravida. Plus, there was increased incidence of placenta praevia with anterior location.

Table 2 shows the rate of placenta praevia where among 2000 obstetrics patients were admitted during the period from July 2020 to July 2021. Out of this number, 35 women had placenta praevia. So, the incidence was 1.75%.

Table 1. Demographic characteristics of the patients

Age Group	**Number of patients**	**Percentage (%)**
<20	2	4.00
21-25	10	20.00
26-30	20	44.00
31-35	3	8.5 .
Placenta praevia in relation with number of previous caesarean section	**Number of patients**	**Percentage (%)**
No previous caesarean section	15	42
With previous caesarean section	30	85
With one previous caesarean section	20	57
With 2 previous caesarean section	5	14
Gestational age in weeks	**Number of patients**	**Percentage (%)**
28-30	1	2.8
31-34	10	28.57
35-38	20	57.14
38	4	11.42
Gravidity	**Number of patients**	**Percentage (%)**
Primigravida	10	28
Multigravida	20	57
Grandmultigravida	2	5.7
Location	**Number of patients**	**Percentage (%)**
Anterior	20	57.14
Posterior	10	28.57
Central	5	14.28

Table 2. Rate of placenta praevia

Total Obstetrics admission	Total number of placentae praevia	Percentage (%)
2000	35	1.75

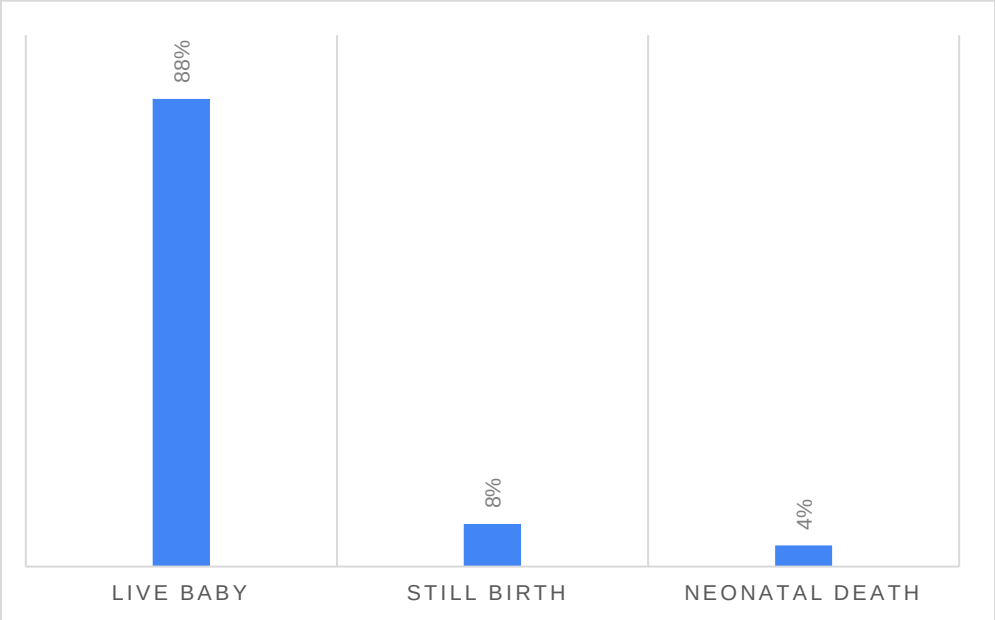

Fig. 1. Fetus outcome

Table 3 shows that the incidence of Placenta praevia in woman with previous caesarean section was 1% compared with 0.75% without previous caesarean section.

Table 4 shows Relationship of anterior placenta praevia with scarred and unscarred uteri where preponderance of anterior placenta praevia in group with previous caesarean section.

Table 5 shows where morbid adherent of placenta. It was observed that most of the morbid adherent of placenta occurred in women with previous cesarean section.

Table 3. Rate of placenta praevia in previous caesarean section and without previous caesarean section

Total obstetrics admission	Previous Caesarean section	No. of placenta praevia	Percentage	P Value
2000	Yes	20	1	
	No	15	0 .75	0.037

Chi-square test was used to find association between qualitative variables
P-value < 0.05 was considered significant

Table 4. Relationship of anterior placenta praevia with scarred and unscarred uteri

Relationship of anterior placenta praevia with scarred and unscarred uteri	Placenta praevia without previous CS (n=10)		With one previous Caesarean section (n=20)		With> 2 previous caesarean section (n=5)	
	No	%	No	%	No	%
	5	50	10	50	3	60

Table 5. Distribution of patients according to morbidity adherent placenta (n=35)

	Placenta praevia without previous CS (n=10)		With one previous Caesarean section (n=20)		With>2 previous caesarean section (n=5)	
Morbid adherence of placenta	No	%	No	%	No	%
	1	10	2	10	2	40

Table 6 shows maternal clinical status, methods of management & mode of delivery where it was observed that 42.85% of patients came with P bleeding, and 16°/4 patients were asymptomatic. This asymptomatic group of patients was diagnosed according to ultrasonogram and incidentally during caesarean section. Most of the patients (65.71%) were managed actively, who were either in labor or bleeding actively or gestational age 38 weeks and 34.28% were treated expectantly. It was observed that in no history of previous caesarean section 12 (60%) patients underwent cesarean and 2 (10%) patients had a vaginal delivery. In patients of previous cesarean section, all patients underwent cesarean section.

Table 7 shows per-operative findings of mother where It was observed that 25 (75.15%) patients had average per operative bleeding. Postpartum haemorrhages corrected conservatively were 7 (21.21%) and postpartum haemorrhage needed hysterectomy were 1 (3.03%).

Fig. 1 shows fetus outcome where 88% were live baby whereas 4% were neonatal death.

4. DISCUSSION

“Placenta praevia is regarded as one of the causes of uterine bleeding during the later stages of gestation and has been recognized as an important determinant of maternal morbidity and adverse perinatal outcomes” [12].

A study it was done by Wu S, Kocherginsky et al reported that, during the 10-year study period, a total of 50,485 deliveries, 421 (0.83%) had placenta praevia, 43 (10.2%) of whom had a history of previous cesarean section. The incidence of placenta praevia was significantly increased in those with a previous cesarean section (1.31 %) compared to those_ with an unscarred uterus·(0.75%), The incidence of an anterior placenta praevia and placenta accreta was significantly increased in those with previous caesarean scars. The incidence of placenta accreta was 1.18% among patients with placenta praevia, 80% being in patients with previous cesarean section. The relative risk for placentaaccreta in patients with placenta praevia·was 35 times higher in those with a previous cesarean section than in those with an unscarred uterus [11].

Another study done by Neilson JP et al. reported that there were 3565 deliveries and 59 cases of placenta praevia giving an incidence of 1.65%. Thirty-four (77.3%) occurred in women aged 35 years and below. The commonest was type Ill (12 cases; 27.3%) followed by type- 1v (10 cases; 22.7%). 12 Previous uterine scar was associated with 22 (50.0%) cases. The commonest gestational age range at presentation (13 cases; 29.6%) and at delivery (18 cases; 40.9%) was 37 -40 weeks. “The commonest mode of presentation was antepartum hemorrhage (34 cases; 77.3%) followed by abnormal lie and malpresentation (4 cases; 9.1%). The average admission delivery interval was one week in 33 (75.0%) cases, and only two (4.5%) received blood transfusions. Forty (90.9%) women had cesarean delivery, while 12 (27.3%) babies were of low birth weight. There were only 2 (4.5%0 fetal deaths and one (2.3%) cesarean hysterectomy” [13].

In this study the incidence of placenta praevia was 1.75%. This is higher than the other studies done by weerasekera et al, Brinsden et al, Jr, E. Albert Reece et al. [14-16]. In this series incidence of placenta praevia with previous cesarean section was 1%. Bender 1st suggested an association between previous caesarean section and placenta praevia.

Another study has shown a threefold increase in risk of placenta praevla in a woman with history of previous caesarean section. “The exact mechanism of previous uterine scar predisposing to low implantation of placenta is not well understood. It has been recently shown that uterine scar prevents migration of placenta during the course of pregnancy towards the more vascularized uterine fundus”[17].

Table 6. Clinical presentation of patients during admission & method of management during admission & Mode of delivery(n=35)

Clinical Presentation	Number of Patients	Percentage (%)
PV Bleeding	15	42.85
Asymptomatic	20	57.14
Methods of management	**Number of patients**	**Percentage (%)**
Active	23	65.71
Expectant	12	34.28
Mode of delivery	**Number of Patients**	**Percentage (%)**
No history of CS, n=20		
Cesarean Section	12	60%
Vaginal	2	10%
Previous history of CS: Cesarean Section	20	100

Table 7. Per-Operative findings of the mother

Peri operative findings	Number of patients	Percentage (%)
The average amount of bleeding	25	75.75
Postpartum haemorrhage corrected conservatively	7	21.21
Postpartum haemorrhage needed hysterectomy	1	3.03

In this present study it was observed that the development of placenta accreta in patients with previous one cesarean section was 9.09%, and previous >2 cesarean sections were 25%. The risk of placenta accreta in patients with previous caesarean section was estimated to be 16% by other studies done by Aliyu et al. [18].

Risk of placenta praevia increased dramatically with advancing maternal age. Placenta praevia occurs 2-3 times more commonly above the age of 35 years as, compared to those at age 20 years or less. In this series, the commonest age group were 26-30 years. This finding consistent with other study, which has shown that advancing maternal age has an adverse effect on the risk of development of placenta praevia, regardless of other known risk factors. Considering the justification of risk and benefits, management of placenta praevia is to improve the foetal salvage without increasing undue maternal hazards and continuation of pregnancy until the baby has grown sufficiently enough to survive in ex-utero. In this study, 22% of patients were managed expectantly.

5. CONCLUSION

This study shows a strong association between having a previous cesarean delivery and the subsequent development of placenta praevia. The risk increases with the number of cesarean sections. Most of the patients were managed actively. So, pregnant women with a history of caesarean section must be regarded as high risk for placenta praevia and must be monitored carefully. Women with these conditions should be considered at high risk and should be delivered at institutions with skilled personnel, adequate blood transfusion facilities, and good neonatal resources. Early diagnosis and proper monitoring of these patients could minimize the possibility of poor outcomes.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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