

## Original Research Article

### The Association Between Placenta Previa in Pregnant Women with Previous Caesarian Section

**Comment [A1]:** The complete topic must bear "what, who, where"

#### **Abstract**

**Background:** Placenta praevia is defined as a placenta implanted partially or completely over the lower uterine segment. ~~over and adjacent to the internal os is called placenta praevia.~~ 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 ~~was~~ carried out in the Department of Obstetrics and Gynaecology, Combined Military Hospital, Dhaka, from July 2020 to July 2021. Total 35 patients with placenta praevia were included in this study. Informed verbal and written consent were taken from the study ~~patients~~ participants. A detailed history was taken, general physical and per abdominal examination and previous records were reviewed properly. ~~After general and per abdominal examination,~~ 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 cesarean section was 1% compared with 0.75% without previous cesarean section. The commonest age group was 26-30 years, which included 44%, and 32% belonged to 31-35 years age group. The ~~average age was 29.28~~ 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 ~~PN~~ 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.

**Comment [A2]:** This can not be average age. It seems like a range. Please give the mean age.

**Comment [A3]:** Full meaning please

**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 cesareansections. 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.

**Corresponding author:** Col. Shamima Yasmin, Professor, Classified Specialist-Obs and Gynae, Post Fellowship Training in Gynae Oncology, CMH, Dhaka

## 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<sup>1</sup>. Placenta praevia occurs up to 1 % of pregnancies after 28 weeks and is responsible for 15% to 20% of cases involving antepartamhaemorrhage<sup>2</sup>. 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%<sup>3</sup>. Perinatal mortalities are three to four times higher than in normal pregnancies<sup>4</sup>.

Surgical disruption of the uterine cavity is a potential risk factor for placenta praevia<sup>5</sup>. 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<sup>6</sup>. 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<sup>7</sup>. 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.<sup>8</sup>

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

**Comment [A4]:** Authors can not reach this conclusion as no test of association between placenta praevia and previous cesarean section has been carried out. Authors should consult a biostatistician to aid in data analysis to bring out the possible association or otherwise. Alternatively, they can rephrase the Topic and leave the work as it is. E.g. "THE PREVALENCE OF PLACENTA PRAEVIA IN A MILITARY HOSPITAL"

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.

### Objective

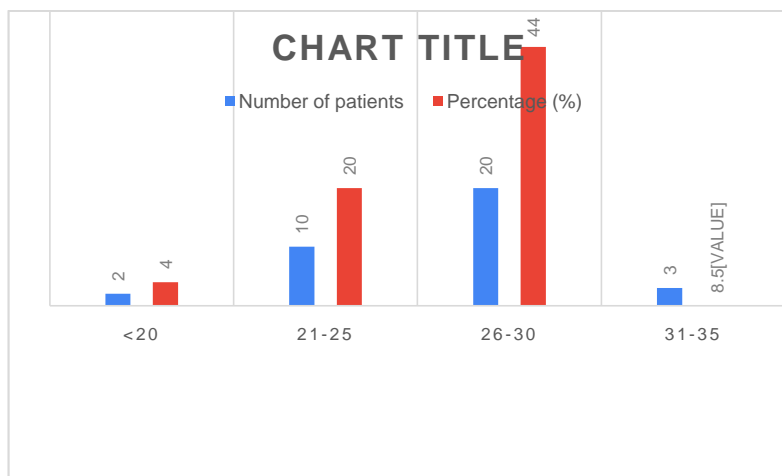
To evaluate the association between placenta previa in pregnant women with previous caesarian section.

### Methodology

This descriptive cross-sectional study was carried out at Department of Obstetrics and Gynecology, Combined Military Hospital, Dhaka from July 2020 to July 2021. ~~Where a~~ total of 35 ~~a~~ Admitted 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. ~~While evaluating~~ The patients with painless antepartum hemorrhage (>28 weeks of gestation) and asymptomatic placenta praevia diagnosed by USG or during caesarean were included. ~~And those~~ Patients with ~~a~~ Antepartum hemorrhages not caused by other than Placenta praevia ~~cases~~ 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.

### Results

Figure-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 average age was 29.28 years.



**Figure-1: Age distribution of the patients**

**Table-1: Gestational age at admission (n=35).**

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

Table 1 shows Gestational age at admission (n=35). Maximum number of cases 57.14% were admitted at the gestational period between 35-38 weeks.

**Table-2: Rate of placenta praevia**

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

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, of them 35 women were cases of had placenta praevia. So, the incidence was 1.75%.

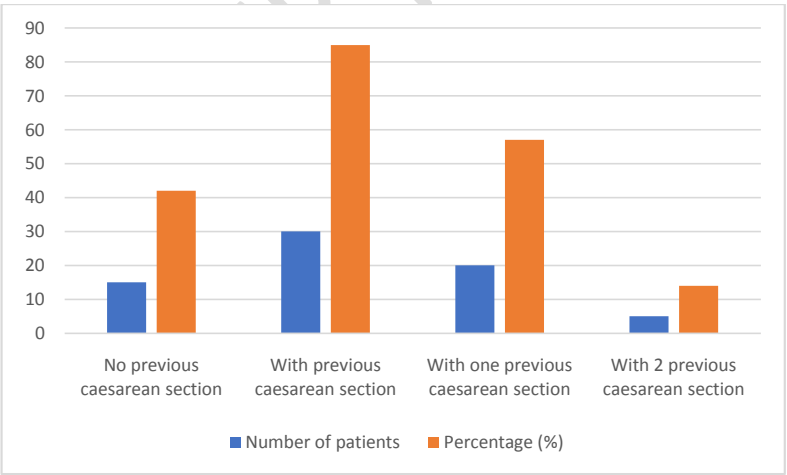
**Table 3: Rate of placenta praevia in previous caesarean section and without previous caesarean section**

Total obstetrics admission	Previous Caesarean section	No. of placenta praevia	Percentage	P Value
2000	Yes	20	1	0.037
	No	15	0.75	

**Comment [A5]:** Which test of significance did you employ. This important finding was not captured in the abstract to support your conclusion.

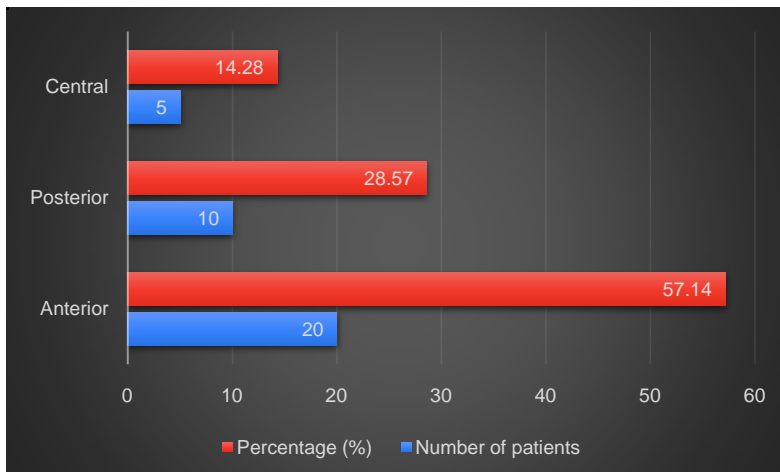
Table-3 shows that the incidence of Placenta praevia in woman with previous caesarean section was 1% compared with 0.75% ~~without previous~~ without previous caesarean section.

Figure-2 shows distribution of placenta praevia in relation with number of previous caesarean section, among 35 women of placenta praevia 15(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.



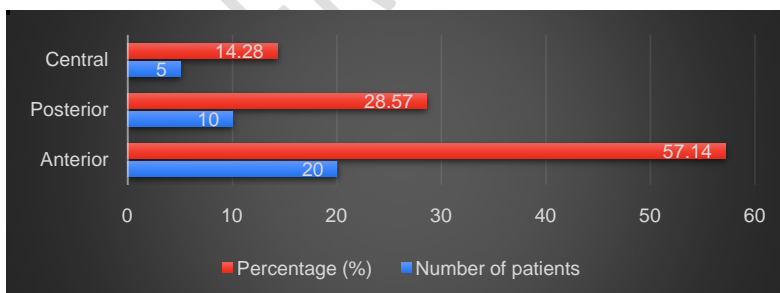
**Figure-2: Distribution of placenta praevia in relation with number of previous caesarean section**

Figure-3 shows distribution of placenta praevia according to gravidity where 28% were primigravida whereas 57% were multigravida.



**Figure-3: Distribution of placenta praevia according to gravidity (n=35)**

Figure-4 shows location of placenta praevia (n=35). There was increased incidence of placenta praevia with anterior location.



**Figure-4: Location of placenta praevia (n=35)**

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

	Placenta praevia	With one previous	With>2 previous
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	without previous CS (n=10)		Caesarean section (n=20)		caesarean section (n=5)	
Morbid adherent of placenta	No	%	No	%	No	%
	5	50	10	50	3	60

**Comment [A6]:** This does not tally with the heading of the table.

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: 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 adherent of placenta	No	%	No	%	No	%
	1	10	2	10	2	40

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 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 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<sup>3</sup>/<sub>4</sub> 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.

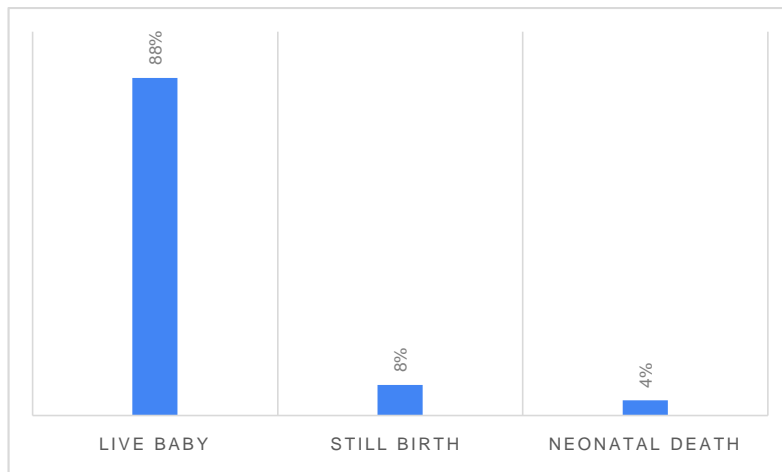
**Table-7: Per-operative findings of the mother**

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

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%).



**Figure-5 shows fetus outcome where 88% were live baby whereas 4% were neonatal death.**



**Figure-5: Fetus outcome**

## 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.<sup>12</sup>

In one study it was shown 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 placenta accreta in patients with placenta praevia was 35 times higher in those with a previous cesarean section than in those with an unscarred uterus.<sup>11</sup>

Another study 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 III (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%) fetal deaths and one (2.3%) cesarean hysterectomy.<sup>13</sup>

In this study the incidence of placenta praevia was 2.4%. This is higher than the other studies.

<sup>14-16</sup>. In this series incidence of placenta praevia with previous cesarean section was 1.25%.

Bender 1st suggested an association between previous caesarean section and placenta praevia.

Another study has shown a threefold increase in risk of placenta praevia in a woman with H/O 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 ~~the~~ prevents migration of placenta during the course of pregnancy towards the more vascularized uterine fundus.<sup>17</sup>

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.<sup>18</sup>

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. 18 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.

## Conclusion

**Comment [A7]:** These figures here are not in keeping with the figures quoted in the result section. Please clarify.

**Comment [A8]:** Spell fully please.

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.

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