OPEN ACCESS

Scholars International Journal of Obstetrics and Gynecology

Abbreviated Key Title: Sch Int J Obstet Gynec
ISSN 2616-8235 (Print) | ISSN 2617-3492 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: https://saudijournals.com

Original Research Article

Risk of Association of Placenta Praevia with History of Uterine Scar

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DOI: https://doi.org/10.36348/sijog.2024.v07i11.002 | **Received:** 22.09.2024 | **Accepted:** 30.10.2024 | **Published:** 05.11.2024

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Abstract

Background: In Placenta Previa the placenta is implanted in the lower uterine segment in pregnancy with previous Caesarian Section there is risk of placenta being adherent with the scar, leading to devastating hemorrhage. The aim of this study was to find out the risk of association of placenta praevia with history of uterine scar. ***Methods:*** It was a hospital based observational cross-sectional study and was carried out in Department of Obstetrics and Gynecology. Dhaka Medical College and Hospital, Dhaka from May 2013 to October 2013. Total 50 patients were enrolled as diagnosed case of placental praevia. Patients clinical condition and course of management, perinatal outcome were observed, recorded & categorized Data were analyzed using computer with Statistical Package for Social Sciences (SPSS) software for Windows version 20. ***Results:*** This study shows commonest age group was 26-30 years, which included 46%, 36% belonged to 31-35 years age group. The average age was 29.80 years. Most (94%) of the patients were multigravida Maximum (54%) number of cases were admitted during the gestational period of 35-38 weeks. Common clinical presentations were anaemia (80%) and per vaginal bleeding (84%). Regarding management, 76% patients were managed actively and 24% patients were managed expectantly. It was observed that placenta praevia with uterine scar is seen more frequently (66%) in cases of previous caesarean sections. Among 30 patients, 84% were live births, 10% were still births and 6% were neonatal deaths. No maternal death was observed in this study. ***Conclusion:*** This study shows strong association between previous caesarean section, uterine curettage and hysterotomy and placenta praevia. Most of the patients were provided with active modality of management. Hence the study advocates the use of contraceptive, advanced antenatal care & early referral to hospital and expectant management of patients after proper selection to reduce the premature birth.

Keywords: Placenta praevia, Uterine scar, Caesarean section, Maternal morbidity, Obstetric hemorrhage, Placental adhesion.

INTRODUCTION

Placenta Praevia is a major cause of third trimester haemorrhage complicating between 0.3% and 0.5% of pregnancies and accounting for significant maternal and perinatal morbidity and mortality [1,2]. It occurs in 2.8/1000 singleton pregnancies and 3.9/1000 twin pregnancies [3]. Although the etiology of Placenta Praevia remains speculative, several risk factors associated with this condition have been established. These include advanced maternal age, multiparity, multiple gestations, previous abortion and Placenta Praevia in previous pregnancy [1]. Myometrial damage due to caesarean section and dilatation and curettage are main predisposing factors [4]. The traditional classification of Placenta Praevia describes the degree to which the placenta encroaches upon the cervix in labour and is divided into low lying, marginal, partial or complete Placenta Praevia [3].

The cause of Placenta Praevia is usually unknown, although it occurs more commonly among women who are older, smoker, have had children before, have had a Cesarean Section or other surgery on the uterus, or have scars inside the uterus.

Women with Placenta Praevia, specifically if they have a Placenta Praevia after having delivered a previous baby by Cesarean Section, are at increased risk of Placenta Accreta, Placenta Increta, or Placenta Praevia.

In Placenta Accreta, the placenta is firmly attached to the uterus. In Placenta Increta, the placenta

has grown into the uterus, and in Placenta Percreta, it has grown through the uterus. These conditions can sometimes be confirmed by ultrasound, CT scan, or MRI. Women with one of these conditions usually require a Hysterectomy after delivery of the baby, because the placenta does not separate from the uterus [5].

A study concluded that more than two thirds of women the exact etiology of Placenta praevia is unknown. The condition may be multifactorial and is postulated to be related to multiparity, multiple gestations, advanced maternal age, previous cesarean delivery, previous, abortion [6].

Pregnancies and childbirths are physiological process but all women during pregnancy are at risk. About 15% of all pregnant women develop a potentially life threatening complication.[7] Maternal and foetal morbidity and mortality from Placenta Praevia are considerable and are associated with high demands on health resources [8,9]. About one third case of Antepartum haemorrhage (APH) belongs to Placenta Praevia. The incidence of Placenta Praevia ranges from 0.5-1% amongst hospital deliveries. It is associated with high maternal mortality and morbidity [10].

By definition, Placenta Praevia is the placenta implanted in the lower uterine segment within the zone of effacement and dilatation of the cervix. Defective vascularization of the decidua due to disease, large placental surface as in multiple pregnancy and delayed implantation of trophoblast are some of the known factors [11]. Recent study shows the risk of Placenta Praevia is increased with higher parity and previous Caesarian Section [7].

Another study shows there is a strong association between having a previous Caesarian Delivery, spontaneous or induced abortion and subsequent development of Placenta Praevia [11]. It is regarded as one of the leading cause of uterine bleeding in later stage of gestation and has been recognized as an important determinant of morbidity and adverse perinatal outcome. Inspite of the advent of Ultrasonography to diagnose Placenta Praevia and to asses foetal mortality for timely delivery in order to improve perinatal outcome, Placenta Praevia still continue to pose a challenge and adversely affect neonatal outcome. The neonatal complications of Placenta Praevia include preterm birth, respiratory distress syndrome and anaemia. Special neonatal care can reduce the perinatal morbidity and mortality.

Objective

The objective of this study was to find out the risk of association of Placenta Praevia with uterine scar.

METHODOLOGY & MATERIALS

The study was an observational, cross-sectional study conducted in the Department of Obstetrics and Gynecology at Dhaka Medical College Hospital, Dhaka, from May 2013 to October 2013. The study population comprised pregnant women over 28 weeks of gestation with a history of uterine scarring and diagnosed with placenta praevia during cesarean section. A total of 50 participants were selected using a purposive sampling technique. Inclusion criteria included cases of placenta praevia with a previous uterine scar delivered by cesarean section and pregnancies beyond 24 weeks with a history of prior uterine surgery. Exclusion criteria involved patients with antepartum hemorrhage due to placental abruption and cases of placenta praevia managed through vaginal delivery. Data were collected using a structured questionnaire containing key variables, refined after pretesting. Data analysis was conducted using SPSS software, with descriptive statistics applied as appropriate. Ethical considerations were maintained in accordance with the Helsinki Declaration, with verbal informed consent obtained from all participants after they were informed about the study's purpose, design, and their right to withdraw at any point.

RESULTS

Table I: Proportion and Distribution of Placenta Praevia with Uterine Scar among Obstetric Admissions and According to Gravidity

Category	Total Cases	Number	Percentage (%)
Total Obstetric Admissions	2650	54	2.07%
Total Placenta Praevia Cases	70	54	77.10%
Distribution by Gravidity	50		
- Primigravida (1st pregnancy)	-	3	6%
- Multigravida (2-4 pregnancies)	-	33	66%
- Grand Multigravida (≥5 pregnancies)	-	14	28%

Table I summarizes the proportion of placenta praevia with uterine scars among total obstetric admissions, its frequency among all placenta praevia cases, and the distribution of placenta praevia cases with uterine scars according to gravidity. The data shows that 2.07% of total obstetric admissions involved placenta praevia with uterine scars, with 77.1% of all placenta praevia cases occurring in women with a uterine scar. Most cases (66%) were in multigravida patients, with 28% in grand multipara.

Table II: Distribution of Patients with Placenta Praevia According to Maternal Age (n=50)

Age Group (years)	Number of Patients	Percentage (%)
21-25	8	16%
26-30	23	46%
31-35	19	36%

Mean ± SD: 29.80 ± 3.91

Table II shows the distribution of patients with placenta praevia according to maternal age. The maternal age ranged from 21 to 35 years, with the most common age group being 26-30 years (46%), followed by 31-35 years (36%). The average age was 29.80 years.

Table III: Distribution of Patients with Placenta Praevia According to Gestational Age at Admission (n=50)

Gestational Age (weeks)	Number of Patients	Percentage (%)
27-30	3	6%
31-34	12	24%
35-38	27	54%
≥38	8	16%

Mean ± SD: 34.76 ± 2.63

Table III shows the distribution of patients with placenta praevia according to gestational age at admission. Most cases (54%) were admitted between 35-38 weeks of gestation, with a mean gestational age of 34.76 weeks.

Table IV: Distribution of Patients with Placenta Praevia According to Placental Location and Morbid Adhesion with Uterine Scar (n=50)

Category	Number of Patients	Percentage (%)
Placental Location		
- Anterior Lower Uterine Segment	25	50%
- Posterior	12	24%
- Central	13	26%
Morbid Adhesion of Placenta		
- Present	18	36%
- Absent	32	64%

Table IV summarizes the distribution of placenta praevia cases based on placental location and the presence of morbid adhesion with a uterine scar. The most common location was the anterior lower uterine segment (50%), and morbid adhesion of the placenta was present in 36% of cases. And 18 patients (36%) had morbid adhesion of placenta.

Table V: Clinical Presentation, Types of Uterine Scar, and Management Modalities for Patients with Placenta Praevia with Uterine Scar (n=50)

Category	Number of Patients	Percentage (%)
Clinical Presentation		
- P/V Bleeding	42	84%
- Asymptomatic	8	16%
Types of Uterine Scar		
- Previous Caesarean	32	64%
- Previous Dilation & Evacuation (D&E)	8	16%
- Hysterotomy	6	12%
- Menstrual Regulation	2	4%
- Myomectomy	2	4%
Management Modalities		
- Active (Surgical)	38	76%
- Expectant (Non-surgical)	12	24%

Table V provides an overview of the clinical presentation, types of uterine scar, and management modalities for patients with placenta praevia and uterine scars. The majority of patients (84%) presented with P/V bleeding, and 64% had a history of previous caesarean section as the type of uterine scar. In terms of

management, 76% of patients required active (surgical) management, while 24% were managed expectantly.

Table VI: Other Interventions for Patients with Placenta Praevia and Uterine Scar (n=50)

Intervention	Number of Patients	Percentage (%)
Balloon Catheter	12	24%
B-Lynch	2	4%
Square Suture	2	4%
Over Sewing of Placental Bed	22	44%
Stepwise Ligation of Uterine Supply (Devascularization)	11	22%
Hysterectomy	1	2%

Table VI shows the distribution of surgical interventions for patients with placenta praevia and a uterine scar. The most common intervention was over sewing of the placental bed, performed in 44% of cases, followed by stepwise uterine devascularization in 22% of cases.

Table VII: Distribution of Study Subjects According to Amount of Blood Loss and Need for Blood Transfusion (n=50)

Category	Number of Patients	Percentage (%)
Amount of Bleeding		
- Average Amount of Bleeding	45	90%
- Severe Bleeding	5	10%
Blood Transfusion		
- 1-3 Bags	33	66%
- 4-5 Bags	11	12%
- >5 Bags	6	22%

Average (minor & major) amount of bleeding: up to 2 Litres
Severe amount of bleeding: more than 2 Litres

Table VII illustrates the distribution of study subjects according to the amount of blood loss and the need for blood transfusion. The majority of patients (90%) experienced an average amount of bleeding, with 66% requiring 1-3 bags of blood transfusion.

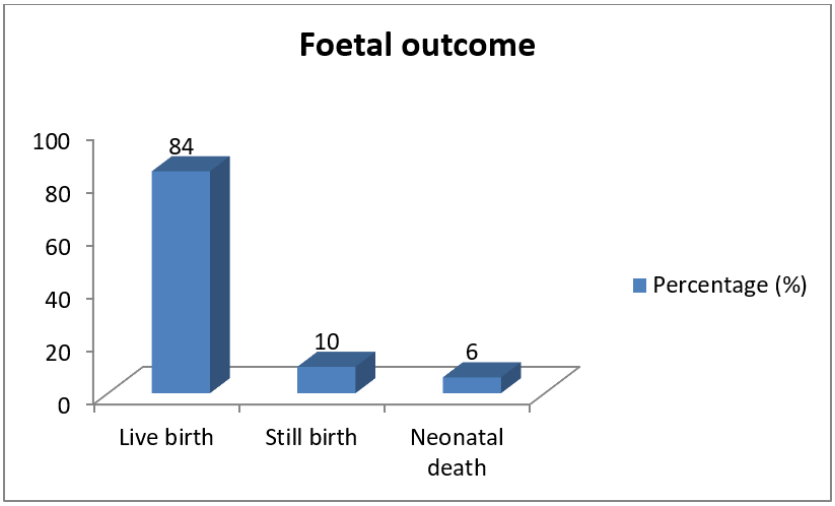

Figure 1: Bar diagram showing foetal outcome in patients of placenta praevia with uterine scar

Figure 1 shows that 84% were live babies, 10% were still birth and 6% were neonatal death.

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 outcome [12]. Though the causes of placenta praevia are frequently unclear, several studies have established that there is an association between uterine scar and subsequent development of placenta praevia [13,14].

In this study the incidence of uterine scar with placenta praevia was 2.07%. This is higher than the other

studies, 0.3% in Ananth, 0.5% in Movers study and 0.5% in Donald and 2.8% in Rouf [15-18]. As too many too frequent pregnancy is a norm in our population and the study was carried in tertiary referral centre it is likely that the occurance of placenta praevia in this study is higher than the other studies reported.

Risk of placenta praevia increased dramatically with advancing maternal age. Placenta praevia occurs 2-3 times more commonly in above 35 years as compared to those at age 20 years or less [19,20]. In this series, commonest age group were 26-30 years. This findings are consistent with Zhanj *et al.*, study they have shown that advancing maternal age has adverse effect on the risk of placenta praevia, regardless of others known risk factor [21].

Increased maternal age & high parity- appeared to be equally important to raise the incidence of placenta praevia. Most of the patients (94%) in this study was multigravida. This figure is more or less same in other series that of Cotton *et al.*, and Brenner study which was 83.3% and 82.7% respectively [12,22].

In this present series, about two third patients came with P/V bleeding. So pregnancy was terminated irrespective of gestation age. This is likely the cause of increase incidence of perinatal mortality than other series.

This study shows that among uterine scar, placenta praevia cases were mostly associated with history of previous caesarean section followed by dilatation and curettage and myomectomy. It was observed that placenta praevia in patients with previous caesarean section was 64%. Several studies conducted around the world confirmed that 2.5 fold increase risk of placenta praevia development in women with history of previous caesarean section [23,24]. Dashe *et al.*, has shown a threefold increase in the incidence of placenta praevia in a women with history of previous caesarean section. The exact mechanism of previous uterine scar predisposing to low plantation of placenta is not well understood. It has been recently shown that uterine scar prevented migration of placenta during course of pregnancy towards the more vascularized uterine fundus [25].

A meta-analysis by Faiz *et al.*, found that advancing maternal age, multiparity, previous caesarean delivery and abortion increased risk of placenta previa [26]. Another meta-analysis by Ananth CV found increasing risk of placenta previa with increasing number of caesarean deliveries [27]. Due to comparatively shorter duration of the current study, the number of the patients was not enough to determine the effect of increasing number of caesarean sections on the development of placenta previa. A study by Zaman *et al.*, confirmed our observation of increased incidence of placenta previa with increasing parity and advancing maternal age [28]. They, however, found increased risk of placenta previa with previous caesarean sections. Another study by Zamani reported an increased incidence with age and advancing parity supporting our observations [29]. They also found increased risk for placenta previa even with previous single caesarean section. Gilliam *et al.*, like our study, found an increased risk of placenta previa with increasing parity. However they also found an increased risk of placenta previa with previous single scar [30].

Management of placenta praevia is to improve the foetal salvage without Increasing undue maternal hazards, continuation of pregnancy until the baby has grown sufficient enough to survive ex-utero. In this study, 76% patients were managed actively and 24% patients were managed expectantly. This findings were less than previous studies - Cotton *et al.*, and Brenner, study which was 65% and 68% respectively [12,22].

Occurrence of expectant management is lower than the range reported in the literature, criteria for expectant management were gestational age < 36 weeks, intact membrane, without labour pain, devoid of life threatening bleeding, no congenital anomaly of foetus & proper well being of foetus.

In this study, 76% patients were either placenta accreta or placenta praevia - these were managed by surgical intervention. The most common (44%) surgical intervention was over sewing of the placental bed. Hysterectomy was done in 2% of surgically managed cases.

The rest 24% of the patients were managed by non-surgical management. The only non-surgical management was balloon catheter.

Maternal death is very unfortunate outcome of pregnancies. No maternal death was reported in this series. These findings consistent with Brenner study [12].

In this study 84% were live births, 10% were still birth and 6% were neonatal death. Others studies shows 12.6% perintal death was Cotton *et al.*, study [22]. Another study Brenner found 21.03% were perinatal death [12]. Hibberd *et al.*, reported in developed countries perinatal death is now much lower than developing countries [31].

The scope for specific prevention for placenta praevia is limited. But regular antenatal check up reduced risk of complication by prior determination of blood group, prevention of anaemia, in suspected cases confirmation of diagnosis by USG, booking the patient for hospital conferment & avoidance of trauma by vaginal examination [32].

Limitations of the study

Study was based on small sample size, so it does not accurately represent the whole population. Many of the patients come in such a moribund condition that the time and scope for investigation was limited. Most of the patients did not know their actual age and exact date of last menstrual period. Various maternal and foetal parameters had to be monitored only clinically due to lack of sophisticated monitoring method. Causes of maternal & foetal death assumed from clinical findings without post mortem examination.

Recommendations

The group of patients with placenta praevia with scar uterus should be identified early and planned for early surgical intervention for reducing mortality. The referral centers should bear experienced and skilled staff with awareness on this issue, necessary equipment support, and proper maternal and neonatal critical care support for optimum desired outcome. Effective referral system should be established. Increase community awareness on institutional delivery specially for those patients who have any history of surgical intervention on uterus.

CONCLUSION

This study shows that patients having a previous caesarean, uterine curettage and hysterotomy scar have increased rate of subsequent development of placenta praevia. The patients who have history of multiple caesarian sections have increased rate of subsequent development of placenta praevia. Most of the patients were managed by surgical interventions. As a result, there was no maternal mortality in this study. Therefore, 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 delivered at institutions with skilled personnel, adequate blood transfusion facilities, and good neonatal intensive care support facilities. Emergency referral system should be established from union to upazila health complexes and district hospitals. Early diagnosis and proper monitoring of these patients could minimize the possibility of poor outcome and death.

Acknowledgment

I would like to express my sincere gratitude for the invaluable support and cooperation provided by the dedicated staff, the participants, and my esteemed co-authors and colleagues. Their contributions were instrumental in the successful completion of this study.

Financial support and sponsorship: No funding sources.

Conflicts of interest: There are no conflicts of interest.

Ethical approval: The study was approved by the Institutional Ethics Committee.

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