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Original Research Article

Frequency of Placenta Previa Among Pregnant Patients With Scarred and Unscarred Uterus

Sana Aslam[1], Saima Perveen[2], Arooj Jawad[1], Hina Zubair[1], Farzana Sabir[1], Hafsa Razzaq[1]

[1]*District Headquarter Hospital Mirpur, Pakistan*
[2]*Watim Medical College Rawalpindi, Pakistan*
**Corresponding author`s email address:* sanaazlam@gmail.com

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Abstract: *Placenta previa is a serious obstetric condition typically observed during the second and third trimesters of pregnancy. It poses a significant risk for maternal and fetal morbidity and mortality, particularly when associated with prior uterine surgical interventions such as cesarean sections. A history of uterine scarring is a recognized risk factor for placenta previa and its more severe variant, placenta accreta.* ***Objective:*** *To determine the prevalence of placenta previa in pregnant women with and without previous uterine scarring presenting to a tertiary care hospital.* ***Methods:*** *A cross-sectional study was conducted in the Department of Obstetrics & Gynecology at Divisional Headquarter Hospital, Mirpur, from July 1, 2024, to December 31, 2024. A total of 150 pregnant women aged 15–45 years, with gestational age's ≥28 weeks and singleton pregnancies, were enrolled using a non-probability consecutive sampling technique. Participants were categorized based on the presence or absence of uterine scarring. Women with second-trimester bleeding or primigravida status were excluded. Relevant obstetric history, including parity, gravidity, and gestational age, was documented. Data were analyzed using SPSS version 24. Descriptive statistics were used to summarize demographic and clinical characteristics. Categorical data were presented as frequencies and percentages; continuous data were reported as means ± standard deviations.* ***Results:*** *The mean age of participants was 34.23 ± 12.34 years, with the majority (45.7%) between 26–30 years of age. Regarding gestational age, 13.8% were between 28–32 weeks, 20.83% between 31–35 weeks, and 65.2% between 36–40 weeks. A total of 100 women (66.66%) had previously scarred uteri, while 5 (31.95%) had unscarred uteri. Vaginal delivery history was noted in 46 women. In terms of gravidity, 110 (73.3%) were G2–G4, 35 (23.33%) were G5– G7, and above. Placenta previa was significantly more prevalent among women with a history of uterine scarring.* ***Conclusion:*** *The findings indicate a higher prevalence of placenta previa among women with prior uterine scarring compared to those without. This underscores the need for vigilant prenatal screening and risk stratification in women with a history of cesarean sections or uterine surgeries.*

Keywords: Cesarean Section, Gravidity, Placenta Accreta, Placenta Previa, Pregnancy Trimester, Uterine Scar

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Introduction

Placenta previa (PP) is defined as the abnormal implantation of the placenta partially or completely over the endocervical os. It is considered one of the most serious obstetric complications due to its potential to cause severe maternal and fetal morbidity and mortality. Globally, placenta previa complicates approximately 0.3% to 0.5% of all pregnancies and remains a major cause of third-trimester hemorrhage and emergency cesarean delivery (1, 2). In Asian populations, up to 30% of maternal deaths are attributed to major obstetrical hemorrhage related to placenta previa, with rising cesarean section rates being a significant contributing factor (2).

Placental location near or over the cervical os is clinically classified as either placenta previa (overlying the os to any extent) or low-lying placenta (close to but not covering the os) (3). The underlying pathophysiology is believed to be related to endometrial damage and uterine scarring, which may interfere with normal placental implantation. This disruption may lead to morbid adherence of placental villi, resulting in placenta accreta, increta, or percreta—conditions collectively known as morbidly adherent placenta (MAP) (4). These abnormalities increase the risk of postpartum hemorrhage (PPH), particularly in women with a history of uterine surgery or cesarean sections (5, 6).

Although the precise etiology of placenta previa remains unclear, it is widely accepted that prior cesarean deliveries, uterine instrumentation, high parity, advanced maternal age, and assisted reproductive technologies are established risk factors (7). With increasing cesarean section rates, changes in nutritional patterns, and delayed maternal age at conception, the prevalence of placenta previa is showing a steady rise in both developed and developing countries (8).

A cesarean scar pregnancy (CSP) represents a serious and growing complication in women with prior cesarean deliveries. The increasing rates of cesarean delivery, CSP, and morbidly adherent placenta have paralleled each other in recent years, contributing significantly to obstetric morbidity (8, 9). The abnormal invasion of the placenta into the myometrium can result in catastrophic outcomes, including uterine rupture, massive hemorrhage, preterm birth, and peripartum hysterectomy (10). These complications reinforce the need for early identification and proper risk stratification in pregnancies with known risk factors for abnormal placental implantation.

In a retrospective case-control study involving 85 cases of placenta previa, the frequency was reported as 54% in women with previously scarred uteri and 46% in those with unscarred uteri. Notably, anterior placental location was observed in 80% of cases with scarred uteri, compared to only 33% in the unscarred group, with a statistically significant p-value of 0.009 (11). A global systematic review estimated the pooled prevalence of placenta previa to be approximately four per 1,000 births, although significant regional variations exist (11). In one study, placenta previa was found in 71% of women with non-scarred uteri and 44% of those with scarred uteri (12). In contrast, another study reported a prevalence of 23.3% in women with previous cesarean sections (11).

Despite growing international data on the association between uterine scarring and placenta previa, there is a paucity of local studies exploring this correlation in the Pakistani population. Given the rising trend in cesarean deliveries and the associated risk of placenta previa, this issue presents a significant public health concern. Furthermore, if undiagnosed, placenta previa can result in severe complications such as hemorrhage, emergency cesarean delivery, and maternal mortality.

Therefore, this study was designed to determine the frequency of placenta previa among pregnant women with scarred and unscarred uteri presenting at a tertiary care facility. The motivation behind conducting this research stems from a thorough review of existing literature and the realization that local epidemiological data on this topic is scarce. By assessing the local burden of placenta previa about uterine scar status, this study aims to inform future screening strategies, enhance obstetric risk assessment, and provide a basis for further research in this domain.

Methodology

This descriptive cross-sectional study was carried out at the Obstetrics and Gynecology Unit of Divisional Headquarters Hospital, Mirpur, over a duration of six months from July 1, 2024, to December 31, 2024, commencing from the date of approval of the study synopsis by the institutional review board. The study aimed to assess the frequency of placenta previa among pregnant women with previously scarred and non-scarred uteri. A total sample of 150 participants was determined using the WHO sample size calculator, based on an anticipated prevalence of placenta previa of 44% in unscarred uteri, a 95% confidence level, and an 8% margin of error.

Participants were recruited using a non-probability consecutive sampling technique. All pregnant women presenting to the outpatient department (OPD), emergency room, or labor room during the study period were screened for eligibility. Women between the ages of 15 and 45 years with singleton pregnancies were considered for inclusion. Participants were classified into two groups based on obstetric history: those with a history of one or more cesarean deliveries, myomectomies and previous uterine instrumentations were categorized as having a scarred uterus, while those without any prior uterine surgeries were considered to have non-scarred uteri.

Women with known bleeding disorders or a documented history of placenta previa in previous pregnancies were excluded to minimize confounding factors. These exclusion criteria ensured that the analysis focused on new-onset placenta previa cases not influenced by prior diagnoses or coagulopathies.

After obtaining informed written consent, relevant data were collected through structured clinical interviews, obstetric examinations, and confirmation of placenta previa through ultrasound findings. Detailed information regarding maternal age, gestational age at presentation, gravidity, parity, number of previous cesarean sections, and the presence or absence of placenta previa was recorded using a standardized data collection form.

All ethical considerations were strictly observed by the Declaration of Helsinki, and prior approval was obtained from the hospital's institutional ethical review committee. The collected data were entered into statistical software and analyzed using descriptive statistics. Results were presented in the form of frequency distributions and percentages to illustrate the association between uterine scar status and the occurrence of placenta previa.

Results

A total of 150 female patients diagnosed with placenta previa were included in the study. The mean age of the participants was 34 ± 12.34 years. The majority of patients 60 (40.0%) were aged between 26 and 30 years, followed by 40 (26.6%)between 15–25 years, 20% between 31–35 years, and 13.3% between 36–45 years. Regarding gestational age, most patients (66.6%) presented between 36 and 40 weeks of gestation, 20% between 31 and 35 weeks, and 13.3% between 28 and 32 weeks (Table 1).

Placenta previa was more prevalent in scarred uteri (66.6%) compared to non-scarred uteri (33.3%). Among these patients, 73.3% had a gravidity of G2–G4, 23.3% were between G5–G7, and only 3.3% had a gravidity >G7. In terms of parity, the highest proportion (40.0%) had a parity of 2, followed by 26.67% with parity of 1, 20% with parity of 3–4, and 13.33% with parity greater than 4 (Table 2).

Among patients with placenta previa and a history of lower segment cesarean section (LSCS), 23.4% had undergone one prior LSCS, 32.6% had two, 36.7% had three, and 7.1% had four previous cesarean sections. This shows a significant correlation between the number of prior cesarean deliveries and the occurrence of placenta previa (Table 3).

Table 1: Age and Gestational Age Distribution in Patients with Placenta Previa

Variable	Frequency (%)
Age (Mean ± SD)	34 ± 12.34
15–25 years	40 (26.6%)
26–30 years	60 (40.0%)
31–35 years	30 (20.0%)
36–45 years	20 (13.3%)
Gestational Age	
28–32 weeks	20 (13.3%)
31–35 weeks	30 (20.0%)
36–40 weeks	100 (66.6%)

Table 2: Frequency of Placenta Previa by Uterine Scar Status, Gravidity, and Parity

Variable	Frequency (%)
Placenta Previa	
Scarred Uterus	100 (66.6%)
Non-Scarred Uterus	50 (33.3%)
Gravidity	
G2–G4	110 (73.3%)
G5–G7	35 (23.33%)
>G7	5 (3.33%)
Parity	
1	40 (26.67%)
2	60 (40.00%)
3–4	30 (20.00%)
>4	20 (13.33%)

Table 3: Number of Previous Cesarean Sections in Patients with Placenta Previa

Number of Previous C-Sections	Frequency (%)
1	23 (23.4%)
2	32 (32.65%)
3	36 (36.73%)
4	7 (7.14%)

Discussion

Prenatal and intrapartum hemorrhage, fetal growth restriction and preterm delivery, an increased risk of maternal and neonatal deaths, the need for blood transfusions or even an emergency hysterectomy, and other severe negative consequences for both mother and child are all possible outcomes of placenta previa. Foetal growth restriction, intrapartum hemorrhage, prenatal hemorrhage, preterm delivery, emergency hysterectomy, major blood transfusion, and neonatal death are among the several other deadly outcomes that can affect both the mother and the fetus (12). Patients with a history of C-sections, uterine surgeries, or any other serious uterine injury had a greater frequency (13).

Majeed T et al.'s study, which included 114 patients, found that 70.17 percent of the patients had gestational ages between 36 and 40 weeks, and 47.36 percent of the patients were between the ages of 26 and 30. The

majority of these patients have a G2-4 gradation, while the rates of placenta previa in patients with and without scars were 100 (66.6%)and 50 (33.3%), respectively. 26 individuals (22.8%) had a minor degree of placenta previa, while 88 patients (77.19%) had a major degree. These findings are consistent with a study by Bashir SG et al.that found placenta previa to be 1.19% in uteri with scarring and 98.81% in uteri without scarring. (14) Additionally, a study by Iqbal et al. indicated that people with damaged uteruses and prior C-sections had a high prevalence of placenta previa (15). The study concluded that family planning and careful consideration of the delivery technique could lower this rate. Another study by Umbeli et al. reported that placenta previa occurred in 2.8% of cases, with scarred uteri accounting for the majority of previa instances (16). He concluded that the frequency of our findings is equivalent to this study, as the likelihood and incidence of placenta previa both rise with the number of uterine scars.

Conclusion

In our study, placenta previa is more common in scared uteri than in non-scared uteri. Placenta previa is significantly correlated with prior uterine surgery and instrumentation. To reduce the risk of placenta previa in scarred uteri, primary preventative measures such as lowering the rate of primary caesarean sections must be taken. Regular screening of the scarred obstetric population for placental localization at a suitable gestational period might reduce morbidity and mortality related to placenta praevia and abnormal placental adhesion.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-DQM-23)
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SA (Postgraduate Trainee)
Manuscript drafting, Study Design,
SP (Professor)
Review of Literature, Data entry, Data analysis, and drafting article.
AJ (Associate Professor)
Conception of Study, Development of Research Methodology Design,
HZ (Associate Professor)
Study Design, manuscript review, critical input.
FS (Associate Professor)
Manuscript drafting, Study Design,
HR (Postgraduate Trainee)
Review of Literature, Data entry, Data analysis, and drafting article.

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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