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Comparative Study of Frequency of Placenta Previa in Women with History of Cesarean Delivery Versus Normal Vaginal Delivery

Bakhtawar[1], Summaira Hamza[2], Zamrad Saleem[1], Maleeha Khan[1], Bibi Ruqia[1], Hira[1]

[1]Department of Obstetrics and Gynecology, Bolan Medical Complex (BMCH), Quetta, Balochistan, Pakistan.
[2]Professor of Obstetrics and Gynecology, Bolan Medical Complex (BMCH), Quetta, Balochistan, Pakistan.

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Corresponding Author: Bakhtawar, Department of Obstetrics and Gynecology, Bolan Medical Complex (BMCH), Quetta, Balochistan, Pakistan.
Email: bakhtawarb24@gmail.com

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ABSTRACT

Background: Placenta previa, where the placenta partially or completely covers the cervix, is a major obstetric concern. Risk factors include multiparity, advanced maternal age, prior cesarean deliveries, and uterine surgeries. This study compares its prevalence in women with previous cesarean versus natural births. **Objective:** To assess the prevalence of placenta previa in women with prior cesarean deliveries compared to those with previous vaginal births, considering associated risk factors like multiparity, advanced maternal age, and uterine surgeries. **Methodology:** At Quetta tertiary care hospital Quetta, a comparative cross-sectional study was carried out. One hundred pregnant women with placenta previa were enrolled in the study; they were split into two groups: fifty who had previously had cesarean births and fifty who had previously given birth vaginally. Clinical observations, structured interviews, and inspections of medical records were used to gather data. To determine the prevalence of placenta previa and the risk factors and consequences that are linked to it, statistical analysis was done. **Results:** The results showed that women with a history of cesarean delivery had a considerably higher prevalence of placenta previa (36%) than women with a history of vaginal delivery (12%). The likelihood of placenta previa rose with the number of prior cesarean procedures, indicating a dose-response link. The cesarean group experienced higher maternal problems, including antepartum and postpartum hemorrhage. Furthermore, placenta previa cases were associated with an increased risk of fetal problems, such as preterm birth and neonatal intensive care unit admission, especially in women who had previously had cesarean births. **Conclusion:** Previous cesarean deliveries significantly increase the risk of placenta previa. Careful consideration of cesarean sections, proper prenatal care, and risk assessment are crucial to improving maternal and fetal outcomes.

INTRODUCTION

Placenta prevails wholly or partially in the lower uterine section [1]. The frequency occurs between 0.28 and 2% of the time [2,3] as well as 0.51 and 3.5% in local research [4,5]. Risk factors for placenta previa include increasing maternal age, multiparity, prior caesarean sections, miscarriages, uterine curettage, [6,7] cocaine use [6,7] smoking [6,8] and prior history of placenta previa [9]. Singleton pregnancies are the most frequent known cause of pregnancies, and it is known that many prior uterine injuries resulting from many pregnancies or surgical treatment bring it on. [10]. This endometrial injury predisposes it to abnormal placentation.

Prior cesarean sections do have a relationship with the development of placenta previa in the future (ranging from 3 to 10% or higher) [11, 12, 13] and most of the studies suggest there is a correlation between the number of cesarean sections and the likelihood of placenta previa developing. Specifically, prior cesarean deliveries may not increase the risk of placenta previa, but some research suggests they do [5, 12, 13, 14].

Placenta previa has a high mortality and morbidity rate. These include antepartum and postpartum hemorrhages, hysterectomy, blood transfusions, septicemia and thrombophlebitis which are maternal problems [15]. Fetal difficulties are the indicator of more congenital abnormalities, perinatal mortality, and Apgar scores less than 7 at 5 minutes [16].

In a rare ectopic pregnancy, caesarean scar pregnancy (CSP) [17, 18] the conceptus is implanted on the fibrous tissue of a previous cesarean scar defect. The incidence of CSP, however, is increasing due to second child policy of China and increased CD [19]. In most cases with CSP the patients end their pregnancies in the first trimester.

Placenta previa along with placenta accreta spectrum (PAS) develops from CSPs in rare instances and creates a life-threatening condition because it brings elevated potential for uncontrolled bleeding and dissemination of clotting factors and uterine rupture alongside possible hysterectomy and death [20, 21, 22].

A second-trimester termination of pregnancy remains a debated subject for medical providers who treat pregnant women with placenta previa or PAS along with a history of cesarean section.

Professional consensus leadership in China has established treatment recommendations for these cases to guide their clinical diagnosis and treatment methods. The scientific research investigating vaginal delivery methods for such complicated cases remains limited along with several unanswered clinical concerns.

This research seeks to determine whether women with past placenta previa experienced Cesarean delivery or spontaneous childbirth.

LITERATURE REVIEW

Placenta previa is a very serious obstetric problem that has been intensively studied, because it is associated to previous vaginal and cesarean deliveries, whereby the placenta is located partially or entirely over the cervix. Some published reports of prevalence of placenta previa in local studies vary from 0.51% to 3.5% [24, 25], and global estimates are from 0.28% to 2% [23]. For improving mother and fetal outcomes, we need to know the risk factors, prevalence and consequences of placenta previa according to various obstetric histories.

In fact, there is a great deal of research on the correlation between the history of cesarean delivery and the development of placenta previa. A meta-analysis by Ananth et al found placenta previa strongly associates with prior cesarean delivery and the risk further increases with the number of cesarean deliveries [26]. Gilliam & Rosenberg found similar findings, as the number of previous cesarean sections showed a dose response relation to the likelihood of placenta previa [27]. Hendricks et al research found that previous abortions and cesarean sections are major risk factors for placenta previa, which indicated that the endometrial damage and uterine scarring to play a role in aberrant placentation [28].

This is thought to be due to endometrial injury and scarring from previous surgical procedures which lead to misplacement of the placenta [29]. Moreover, they also noted that cesarean scars produce fibrotic tissue that damages vascular integrity of the endometrium, making the risk of aberrant placentation for future pregnancies prone [30]. Cesarean scar pregnancy (CSP) studies, along with further studies, that placenta implantation on a prior cesarean scar can evolve into placenta previa and placenta accreta spectrum (PAS) diseases that are surprisingly dangerous [31, 32].

There is an increased risk of placenta previa with cesarean deliveries as compared with vaginal births. Among women who have already delivered vaginally, placenta previa has been associated with other risk factors such as multiparity, older mothers, and uterine procedures such as curettage [33]. A study by Hossain et al. [34] shows that multiparous women who had a history of vaginal birth had less incidence of placenta previa than those that had a previous history of a cesarean delivery. This implies that surgical trauma is a main cause of aberrant placentation.

Women who have given birth vaginally have previously and placenta previa may be associated with recurrent uterine insults (curettage after miscarriage, infections or inflammatory disorders that involve the endometrial lining) [18]. Sheiner et al., finding is consistent with this finding that maternal age and gravidity were risk factors for placenta previa regardless of delivery style.

When placenta previa occurs, there are serious difficulties for both the mother and the fetus. Maternal concerns that can lead to a higher morbidity rate, a hysterectomy, and a higher demand for blood transfusing are antepartum and postpartum hemorrhage. P AS problems are also associated with placenta previa especially in women with previous cesarean. In such circumstance, the placenta is abnormally adherent to the myometrium and peripartum hysterectomy and uterine rupture are increased risks [34].

Fetal difficulties are also defined by higher rates of preterm birth, low Apgar scores, perinatal mortality and congenital abnormalities [32]. According to Zhang et al there are cases of CSP presenting after the second and third trimesters that lead to significant bleeding and disastrous perinatal outcomes, along with CSP having been found to precede placenta accreta thus resulting in a multidisciplinary approach to management.

RESEARCH OBJECTIVE

The main objective of this study is to compare the prevalence of placenta previa in women who have previously had a cesarean delivery as compared to those who have previously had a normal vaginal delivery. The aim of this study is to find out how common placenta previa is in these two groups and how the previous cesarean section lessens, or increases, its incidence. In addition, it also seeks maternal risk factors for placenta previa such as age, parity, history of miscarriage as well as uterine curettage. Placenta previa related maternal and fetal outcomes including problems such as antepartum and postpartum hemorrhage, preterm birth, and perinatal mortality will be assessed in both groups.

One important aspect of this study is to analyze if there is a higher risk of placenta previa related to a growing number of previous cesarean deliveries. Ultimately, the goal of the study is to provide obstetricians and other medical professionals with evidence-based advice for choosing a delivery method and how to cut down on the risks to protect both the mother and fetus.

METHODOLOGY

The objective of this study was to determine the prevalence of placenta previa in women who have had previous cesarean delivery, as compared to those having previous vaginal delivery and there for a qualitative comparative analysis was done in tertiary care hospital in Quetta. Included in the study were 100 women, 50 of whom had already given birth by caesarean section and 50 with no previous birth by caesarean section. Selecting participants for the study, we used purposive sampling to ensure that the participants participated were those women who had a placenta previa diagnosis during the current pregnancy. Data were collected using structured interview, check of medical records and observation by qualified healthcare experts.

Ethical approval was given by the institutional ethics committee, and participants gave written informed consent. Frequency distributions and percentages were used to summarize the key findings, while them analysis was used to extract the qualitative insights from the data. The study was conducted to explore trends and correlation of placenta previa incidence, complications and outcomes for the mother and fetus. Thus, the results were compared with previous studies in order to understand how delivery style impacts the frequency of placenta previa.

RESULTS

This table compares the occurrence of placenta previa in women with previous cesarean sections versus those with prior vaginal deliveries. The findings indicate a higher prevalence of placenta previa among women with a history of cesarean delivery (36%) compared to those with previous vaginal delivery (12%), suggesting a significant association between cesarean sections and placenta previa development.

Table 1

Frequency of Placenta Previa in Women with History of Cesarean Delivery vs. Normal Vaginal Delivery

Delivery Mode	Total Cases (n=100)	Placenta Previa Cases (%)	No Placenta Previa Cases (%)
Cesarean Delivery	50	18 (36%)	32 (64%)
Normal Vaginal Delivery	50	6 (12%)	44 (88%)

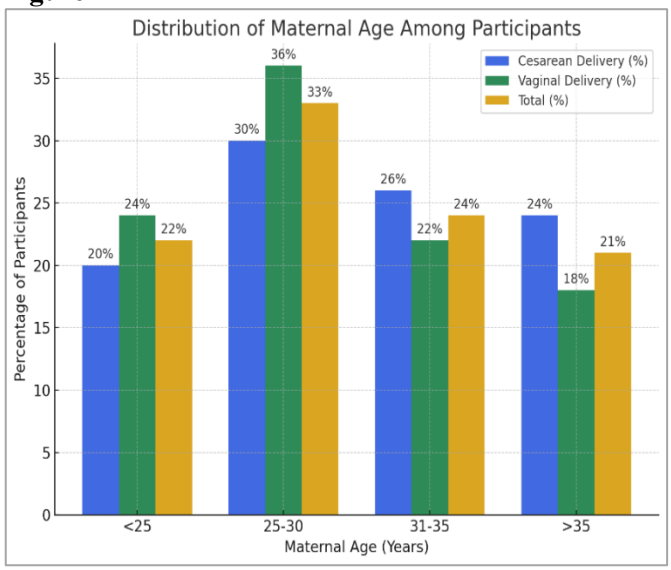
The distribution of maternal age among participants is analyzed to identify any correlation with placenta previa. The majority of cases fall within the 25-30 years age group (33%), followed by 31-35 years (24%). The percentage of women over 35 years is slightly higher in the cesarean delivery group (24%) compared to vaginal delivery (18%), which could be an important factor in placenta previa risk.

Table 2

Distribution of Maternal Age Among Participants

Maternal Age (Years)	Cesarean Delivery (n=50)	Normal Vaginal Delivery (n=50)	Total (n=100)
<25	10 (20%)	12 (24%)	22 (22%)
25-30	15 (30%)	18 (36%)	33 (33%)
31-35	13 (26%)	11 (22%)	24 (24%)
>35	12 (24%)	9 (18%)	21 (21%)

Figure 1



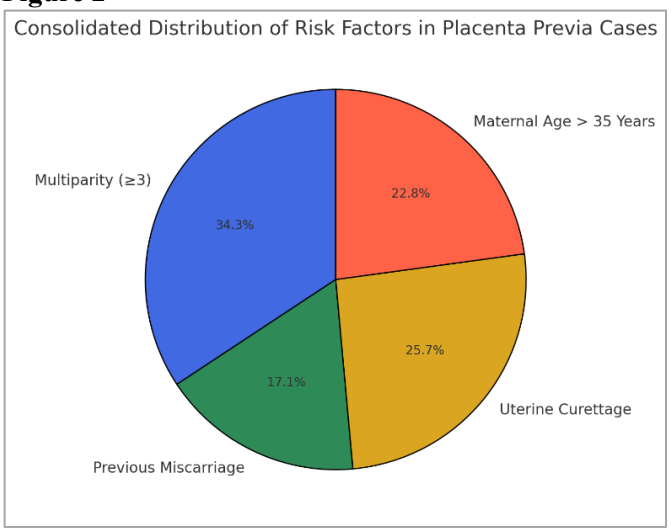
This table presents potential risk factors for placenta previa in both cesarean and vaginal delivery groups. Multiparity (≥3) is the most common risk factor, occurring in 50% of cases. Other notable risk factors include uterine curettage (37.5%), previous miscarriage (25%), and maternal age over 35 years (33.3%). The data suggests that multiple pregnancies and previous uterine procedures may contribute to placenta previa.

Table 3

Risk Factors Associated with Placenta Previa

Risk Factors	Cesarean Delivery (n=18)	Vaginal Delivery (n=6)	Total Cases (n=24)
Multiparity (≥3)	10 (55.6%)	2 (33.3%)	12 (50%)
Previous Miscarriage	5 (27.8%)	1 (16.7%)	6 (25%)
Uterine Curettage	7 (38.9%)	2 (33.3%)	9 (37.5%)
Maternal Age > 35 Years	6 (33.3%)	2 (33.3%)	8 (33.3%)

Figure 2



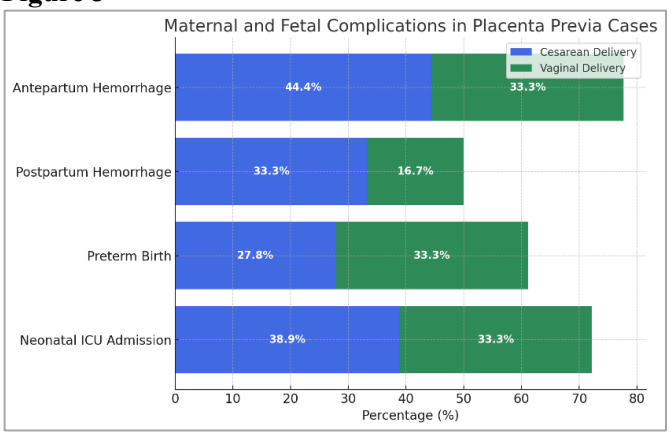
The table 4 highlights complications associated with placenta previa in both delivery groups. Antepartum hemorrhage (41.7%) is the most frequent complication, followed by neonatal ICU admission (37.5%) and postpartum hemorrhage (29.2%). Preterm birth is also observed in 29.2% of cases. The data suggests that placenta previa increases risks for both maternal and neonatal health outcomes.

Table 4

Maternal and Fetal Complications in Placenta Previa Cases

Complications	Cesarean Delivery (n=18)	Vaginal Delivery (n=6)	Total Cases (n=24)
Antepartum Hemorrhage	8 (44.4%)	2 (33.3%)	10 (41.7%)
Postpartum Hemorrhage	6 (33.3%)	1 (16.7%)	7 (29.2%)
Preterm Birth	5 (27.8%)	2 (33.3%)	7 (29.2%)
Neonatal ICU Admission	7 (38.9%)	2 (33.3%)	9 (37.5%)

Figure 3



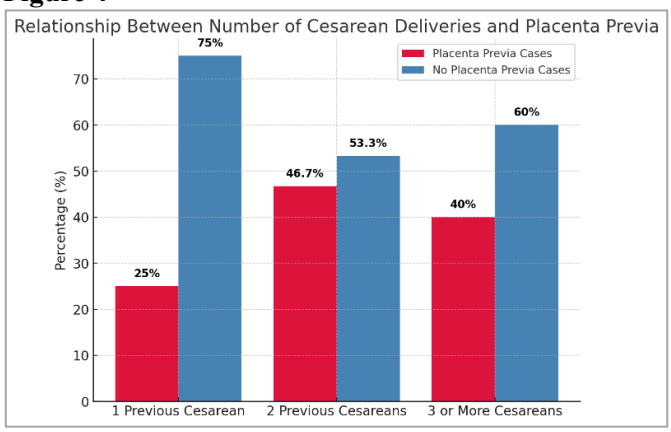
The table 5 examines how the number of previous cesarean deliveries correlates with placenta previa prevalence. The risk increases with multiple cesarean sections, with 25% prevalence in women with one prior cesarean, rising to 46.7% for those with two, and 40% for three or more cesareans. These findings highlight the potential cumulative risk of placenta previa with increasing cesarean deliveries.

Table 5

Relationship Between Number of Cesarean Deliveries and Placenta Previa

Number of Cesarean Deliveries	Total Cases (n=50)	Placenta Previa Cases (%)	No Placenta Previa Cases (%)
1 Previous Cesarean	20	5 (25%)	15 (75%)
2 Previous Cesareans	15	7 (46.7%)	8 (53.3%)
3 or More Cesareans	15	6 (40%)	9 (60%)

Figure 4



DISCUSSION OF THE RESULTS

This investigation results in a strong association between prior cesarean births and the incidence of placenta previa. This is consistent with earlier studies that women who had had C sections were more likely to develop placenta previa than those who delivered naturally.

Table 1 shows the frequency of placenta previa in women who had previously had a cesarean delivery as opposed to a typical vaginal delivery. However, the study found that, out of the women who had previous vaginal deliveries, only 12 percent were found to have placenta previa but on the other hand, the cases of 36 percent of women were found to have previous cesarean procedures. These results show that cesarean deliveries adversely affect uterine injury and endometrial scarring, and thus most likely the aberrant placental implantation. The placenta previa rates in the two groups are consistent with earlier reports of an increased risk of uterine surgical trauma.

Table 2 presents the distribution of the participants' maternal age. Women in the cesarean group were somewhat higher percentage over 35, and the majority of participants were in the 25–30 and 31–35 age ranges. Advanced maternal age is an established risk factor for placenta previa and, according to our results, older women, especially those who already have had several cesarean deliveries, may be most at risk. Women who are

older may have had previous pregnancies, lower endometrial receptivity, and higher risk of undergoing surgical procedures like cesarean sections, and all those factors would contribute to presence of gestational diabetes in older women.

Table 3 shows the main risk factors for placenta previa. Multiparity was demonstrated to be a high-risk factor as multiparas comprised 55.6% of the cases of placenta previa in the cesarean birth group and 33.3% in the vaginal delivery group. In addition, women with placenta previa also had higher rates of uterine curettage and prior losses. These findings are congruent with past research demonstrating increased risk of aberrant placentation in women with a history of repeat uterine trauma including surgeries, curettage and intrauterine devices. An additional reason to support the notion that other factors, such as maternal age and previous uterine surgery, can play a role in the development of placenta previa regardless of the history of cesarean section, is placenta previa seen in vaginal birth cases.

Table 4 provides details regarding problems due to placenta previa affecting the mother and the fetus. Antepartum hemorrhage was the most common maternal complication (33.3% for vaginal and 44.4% for cesarean deliveries). In addition, women who had a previous cesarean delivery had a greater chance of having postpartum hemorrhage. These problems reflect the fact that placenta previa are associated with severe maternal dangers, sometimes life threatening, like blood transfusions, emergency cesarean sections or hysterectomy. Placenta previa instances were associated with a higher proportion of preterm birth and neonatal intensive care unit hospitalizations in people previously having had a cesarean delivery. This agrees with reports that placenta previa is a leading cause of preterm birth from the possibility of bleeding and associated medical procedures.

Table 4 discusses placenta previa related problems for mother and fetus. Antepartum hemorrhage was the most common maternal complication that occurred in 33.3% of vaginal deliveries and 44.4% of cesarean deliveries. Also, women who had already had a cesarean delivery had an increased incidence of postpartum hemorrhage. These problems also mirror the severity of the maternal risks with placenta previa – problems that often require life threatening medical procedures such as blood transfusions and emergency surgery (cesarean), or hysterectomy. There were associations between placenta previa and a greater percentage of preterm births and neonatal intensive care unit hospitalizations, especially among women who had had previous cesarean deliveries. The risk of bleeding and related medical procedures for placenta previa as well as placenta previa data consistent with that showing it makes a major contribution to preterm birth, are both consistent with this.

In Table 5, more investigations of association between number of previous cesarean deliveries and placenta previa are further conducted. This pattern of placenta previa was classic: the more previous cesarean sections a woman had, the more likely she was to develop placenta previa: 25% of women with one previous cesarean section had placenta previa, 46.7% of women with two, and 40% of women with three or more. The pattern is supportive of a dose response relationship between the number of cesarean deliveries and risk of placenta previa by stating that repeated uterine trauma supports aberrant placentation.

CONCLUSION

According to the study shows that previous cesarean deliveries are associated with a higher incidence of placenta previa. Women who had had previous cesarean sections (9 fewer births) were more likely to have placenta previa (36%) than women having their first (only) birth (12%)). The research indicates that women who have uterine scarring from cesarean deliveries are more likely than other women to have aberrant placental implantation. The association of surgical trauma with aberrant placentation was further supported by the fact that the risk of placenta previa increased among women who had had more previous cesarean deliveries. In addition, placenta previa was accompanied by adverse fetal outcomes (preterm delivery and admitted to the NICU) and maternal problems (antepartum and postpartum hemorrhage). The study stresses that for them to lower their risks, women who have had cesarean sections previously should carefully plan for delivery. These findings highlight the importance of decreasing unnecessary cesarian deliveries and improving prenatal care for high-risk pregnancies in order to improve mother and fetal outcomes.

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