

**Original Article**

**EMERGENCY PERIPARTUM HYSTERECTOMY AND ITS DETERMINANTS IN PATIENTS WITH PLACENTA PREVIA IN A TERTIARY CARE HOSPITAL, MULTAN**

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**Abstract**

**Background:** Placenta previa is an obstetric condition characterized by painless vaginal bleeding in the third trimester due to abnormal placentation near or covering the internal cervical os. Full previa occurs when the placenta completely covers the os, while marginal previa is when it is less than 2 cm away. This condition increases the risk of postpartum bleeding and may necessitate emergency hysterectomy, leading to significant maternal and fetal morbidity and mortality.

**Material and Methods:** A descriptive case series was conducted in the obstetrics and gynecology department of Multan Medical and Dental College from November 1, 2022, to April 30, 2023, including 171 women with singleton pregnancies, gestational age > 35 weeks, and parity 0-4. Hysterectomy followed failed postpartum bleeding treatments.

**Results:** The study included women aged 20-35 years, with a mean age of  $30.356 \pm 2.24$  years, mean gestational age of  $38.309 \pm 1.19$  weeks, parity  $1.848 \pm 1.10$ , weight  $71.994 \pm 13.27$  kg, height  $1.566 \pm 0.09$  meters, and BMI  $29.453 \pm 5.28$  kg/m<sup>2</sup>. Most patients (93%) were aged 28-35 years. Placenta previa grades: I (12.9%), II (65.5%), III (15.2%), IV (6.4%). Previous cesarean section history was 58.5%, with emergency hysterectomy in 14% of patients.

**Conclusion:** Placenta previa is no longer a rare obstetric complication. Major risk factor include previous caesarean delivery. Maternal and fetal morbidities and deaths are reduced when aberrant placental invasion is detected early in pregnancy.

**Keywords:** Placenta previa, Caesarean section, Emergency peripartum hysterectomy

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**INTRODUCTION**

The term “placenta previa” refers to a situation in which the placenta implants incorrectly in the lower uterine segment, perhaps covering the internal cervix entirely. There are around 4

cases of placenta previa for every 1,000 live births worldwide<sup>1</sup>. In many cases, adherent placenta, such as placenta accreta, increta, and percreta, coexists with placenta previa. The need for a cesarean hysterectomy is indicated by the possibility of fatal peripartum bleeding caused by certain factors. Those with placenta previa have a 30 times higher probability of needing a cesarean hysterectomy than those without placenta previa<sup>2</sup>.

Because of defensive obstetrics practices, an increase in cesarean births, rising maternal ages at first pregnancies, and the use of assisted

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reproductive technologies, the frequency of third trimester bleeding has been rising recently. The increasing number of pregnant women with non-intact uteri (due to prior cesarean delivery) allows us to already see the negative effects associated with this aspect. This factor also raises the risk of aberrant placental adhesions and low-lying placentas in subsequent pregnancies. In the third trimester of pregnancy, obstetrical bleeding is primarily brought on by placenta previa, according to current knowledge<sup>3</sup>. Given that scheduling a tertiary hospital delivery soon before labor or bleeding starts improves the chances of success for both the mother and the infant, antenatal diagnosis of placenta previa is crucial. Although there is evidence of placenta previa from the first trimester, it is typically discovered in the second and third trimester. Prenatal diagnosis frequently uses obstetric ultrasound. Since it occurs in more than 80% of instances, placenta previa raises the possibility of Placenta accrete spectrum<sup>4</sup>.

Peripartum hysterectomy can be done at the time of delivery or at any point from that point until the patient is released from the hospital. Severe uterine hemorrhage that is uncontrollable by conservative therapy is the primary reason for peripartum hysterectomy<sup>3</sup>. Worldwide, peripartum hysterectomy rates vary significantly. Peripartum hysterectomy complicates less than one in 1,000 deliveries in high-income nations, whereas it complicates four and eleven in one thousand deliveries in Nigeria and Pakistan, respectively<sup>5</sup>. Meta-analysis and systematic review of the epidemiology of placenta previa accreta conducted in London, UK, shows that of the 20 trials, 14 had data on surgical therapy, and 314 out of 441 women presented with a complex placenta previa due to PAS. 69.2% was the median rate of peripartum hysterectomy<sup>6</sup>. According to a hospital-based descriptive and retrospective research of obstetric hysterectomy performed at the Department of Gynecology & Obstetrics, Medical College & Hospital, Kolkata, 13.2% of patients with Central Placenta Previa underwent peripartum

hysterectomy<sup>7</sup>. According to a study done at the Nishtar Hospital in Multan, 31% of the patients had Grade III or IV placenta previa. In 29.2% of the patients, a hysterectomy was necessary<sup>8</sup>. This research paper delves into the intriguing realm of association of placenta previa with peripartum hysterectomy. The study will help to identify avoidable factors such as caesarean section and the necessity of setting up health care systems. It might help to enhance the outcomes for mothers and fetuses in our overall population. To ascertain the prevalence of emergency peripartum hysterectomy and the factors that influence it in women who have placenta previa.

## MATERIAL AND METHODS

In the obstetrics and gynecology department of the MMDC hospital in Multan, a descriptive case series was conducted using non-probability convenience sampling from November 1, 2022, to April 30, 2023. The formula below was used to determine the 171-sample size<sup>9</sup>.  $n = z^2pq/d^2$

In the case of emergency peripartum hysterectomy, proportion (p=7.7%) with q=1-p d=4% at 95% confidence<sup>9</sup>. Women aged 20–35 who are singleton pregnant according to ultrasound, gestational age > 35 weeks on ultrasound, parity 0-4, placenta previa of any grade according to operational definition, and scheduled cesarean birth are among the inclusion criteria.

Exclusion criteria include having a medical record with endometrial cancer, ovarian cancer, cervical cancer, uterine fibroids, or endometriosis.

After receiving approval from the research department and ethics committee, 171 patients who met the inclusion criteria from the obstetrics and gynecology department of MMDC, Multan, were included in the study. Age, parity, weight on the inclusion weighing machine, and placenta previa grade were recorded as the patients' baseline demographics. Each patient provided their informed consent, guaranteeing anonymity and

confirming that there is no risk to them from participating in this study.

As instructed by the consulting gynecologist, all women were delivered via cesarean section. An experienced consultant gynecologist with two years of post-fellowship experience oversaw the cesarean section. The decision to undergo a hysterectomy after a cesarean section was taken when the operational criteria of postpartum hemorrhage control was not met by routine medical (uterotonic medications, Bakri balloon) or surgical (transuterine compression sutures, surgical uterine devascularization) treatment.

Data was recorded by researchers for emergency peripartum hysterectomy as per operational definition and noted on specially designed proforma. A verbal as well as written consent was taken from each participant.

IBM-SPSS V. 22, a statistical software package, was used to examine the data. Percentages and frequency were employed to display the qualitative characteristics, such as age groups, placenta previa grades, prior history of cesarean section, and emergency peripartum hysterectomy. By computing the mean and standard deviation, the quantitative variables—such as age, gestational age, parity, weight, height, and BMI—were displayed. Using stratification, effect modifiers such as age, gestational age, parity, placenta previa grades, history of Caesarean section, and BMI were controlled. After stratification, chi square test was performed, and a p-value of less than 0.05 was considered statistically significant.

## RESULTS

**Table I: Demographic characteristics of the respondents**

	Demographic profile	Mean±SD
1	Age (years)	30.356±2.24
2	Gestational age (weeks)	38.309±1.19
3	Parity	1.848±1.10
4	Weight (Kg)	71.994±13.27
5	Height (m)	1.566±0.09
6	BMI (Kg/m <sup>2</sup> )	29.453±5.28

**Table II: Determinants of emergency hysterectomy**

Determinants	Frequency (n)	Percentage (%)
<b>Age group (years)</b>		
20-27	12	7%
28-35	159	93%
<b>Grades of placenta previa</b>		
I	22	12.9%
II	112	65.5%
III	26	15.2%
IV	11	6.4%
<b>History of Caesarean section</b>		
Yes	100	58.5%
No	71	41.5%

A history of cesarean sections accounts for 58.5% of the patient population, while emergency hysterectomy was observed in 14% of cases.

**Table III: Association of Emergency Hysterectomy and Parity**

Sr.	Parity	Emergency Hysterectomy		p-value
		Yes	No	
1	0-2	11 (9.7%)	102 (90.3%)	0.024*
2	3-4	13 (22.4%)	45 (77.6%)	
<b>Total</b>		24 (14%)	147 (86%)	

Using the chi-square test with a p-value of 0.024 revealed a significant difference between parity and emergency hysterectomy.

**Table- IV: Association of Emergency Hysterectomy and Grades of Placenta Previa**

Grades of Placenta Previa		Emergency Hysterectomy		p-value
		Yes	No	
1	I	0(0%)	22(100%)	0.000*
2	II	1(0.9%)	111(99.1%)	
3	III	15(57.7%)	11(42.3%)	
4	IV	8(72.7%)	3(27.3%)	
Total		24(14%)	147(86%)	

Chi-square test was significant at  $p = 0.000$  when applied to see association between increasing grades of placenta previa and emergency hysterectomy. The higher grade shows increased chances of emergency hysterectomy.

No significant association was found when chi-square test was applied between emergency hysterectomy and different variables such as age of respondents ( $p=0.147$ ), gestational age ( $p=0.815$ ), history of cesarean section ( $p=0.363$ ) and BMI ( $p=0.634$ ).

## DISCUSSION

Placenta previa is another risk factor that women experience for placenta accreta spectrum (PAS). Placenta accreta, increta, and percreta are among the conditions in this range. A hysterectomy that renders the patient infertile, an ICU admission, a blood transfusion, may be necessary in cases of uncontrollable postpartum bleeding caused by placenta previa or PAS. Our study was based on 171 participants visiting in the MMDC Hospital Multan's Obstetrics and Gynecology Department. The age range in this study is similar to other studies on placenta previa, with an average age of 30.356 years. The age range of 28 to 35 comprised 93% of the total cases. The study found that patients aged 28-35 had a higher percentage of emergency

hysterectomies (15.1%) compared to those aged 20-27 (0%). It was similar to another study where the prevalence of placenta previa varied by age group: it was 41.7% in women aged 30-34, 25% in those aged 35-39, and 33.3% in those aged over 40<sup>10</sup>. This is likely due to the fact that placenta previa is more common in older women, especially those who have had a previous cesarean section. The p-value suggests a significant association between age and the need for emergency hysterectomy. We also noted that in this study, 58.5% of patients with placenta previa had previously undergone a cesarean section. The study found no significant association between a history of cesarean section and the need for emergency hysterectomy. This result suggests that a previous cesarean section may not be a major contributing factor to the need for emergency hysterectomy in cases of placenta previa. These results were contrary to a retrospective study where cesarean section was considered a strong contributing factor to placenta previa and placenta accreta, as well as maternal morbidity<sup>11</sup>.

38.309 weeks was the mean gestational age at delivery, which is a little bit later than the average gestational age at birth for all pregnancies. This is likely due to the fact that many women with placenta previa require a cesarean section, which is typically performed at or after 37 weeks of gestation as compared to a tertiary central hospital's analysis of the newborn state at birth revealed that the average gestational age was 35 weeks<sup>12</sup>.

The mean parity in this study was 1.848, which is slightly higher than the average parity for all pregnancies. Mean parity in a study conducted in China was  $2.2 \pm 0.4$  of conventional group of mothers<sup>13</sup>. Patients with a parity of 3-4 had a higher percentage of emergency hysterectomies (22.4%) compared to those with a parity of 0-2 (9.7%). The p-value suggests a strong correlation between parity and the requirement for an urgent hysterectomy. This result suggests that patients with higher parity may be at increased risk of requiring an emergency hysterectomy.

This is also likely due to the fact that placenta previa is more common in women who have had previous pregnancies. According to our findings, multiparous women are more likely than primiparous women to experience placenta previa. It was similar to results reported in a study where multi gravida were mostly involved (45%)<sup>14</sup>.

The degree of placenta previa was found to be substantially linked with an emergency hysterectomy. An increase in the proportion of emergency hysterectomies was linked to higher-grade placenta previa.

In this research, 14% of hysterectomy cases were emergency cases. This is comparable to the emergency hysterectomy rate found in other placenta previa investigations. Like a retrospective study reported 18% of emergency hysterectomies were attributed to placenta previa<sup>14</sup>, p-value suggests a significant association between age and need for emergency hysterectomy. This indicates that older pregnant individuals in this study were more likely to require an emergency hysterectomy.

The average weight of the participants in this study was 71.994 kg, which is somewhat greater than the average weight of Chinese pregnant women. The mean height was 1.566 meters, which is marginally higher than the Chinese norm for pregnant women<sup>15</sup>.

The mean BMI was 29.453 kg/m<sup>2</sup>, which is in the overweight range. According to a study done on the Korean island of Jeju, significant bleeding after cesarean section was independently correlated with higher BMI at delivery, placenta accreta, and overall degree of previa in patients with PP<sup>16</sup>. The study found no significant association between BMI and the need for emergency hysterectomy. This result suggests that BMI might not be a significant predictor of the need for emergency hysterectomy in these cases. Nearly one third of women with suspected placenta previa in our study required admission to an ICU in contrast to an Indian study where half of the women required intensive care unit (ICU) support owing to significant blood loss<sup>17</sup>.

As it was a single setting study so results cannot be generalized on whole population. Similar studies should be conducted on large scale as well to reduce maternal and infant mortality rates the study may have significant therapeutic ramifications despite its shortcomings. In cases when mid-trimester ultrasonography results raise suspicions about placenta previa, doctors should use transvaginal ultrasound to determine the placenta's location (anterior or posterior). Considering the potential association with emergency postpartum hysterectomy, women identified as having placenta previa by mid-trimester ultrasonography would benefit from treatment in a tertiary hospital, where appropriate attention is provided to both mothers and infants to avoid complications.

## CONCLUSION

Placenta previa is no longer a rare obstetric complication. Major risk factors include previous caesarean delivery. Maternal and fetal morbidities and deaths are reduced when aberrant placental invasion is detected early in pregnancy. Additional research involving various sites and standardized diagnostic criteria is required to determine the best management approaches for this morbid illness.

## AUTHOR'S CONTRIBUTION:

ANJ: Conception, Study Design, Data Collection, Processing, Drafting of Manuscript, Critical Review

RM: Data Analysis, Interpretation, drafting of manuscript, critical review, literature research.  
MM: Data Collection, Processing, Drafting of Manuscript.

KA: Data Collection, Processing, Literature Search.

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