European Journal of Clinical Pharmacy

Print ISSN: 2385-409X **Online ISSN**: 3105-0409
Website: https://farmclin.com/

Original Research Article

Frequency Maternal Outcome in Patients Presenting with Placental Abruption at Shaikh Zaid Women Hospital, Larkana

Article History:

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Received: 20-11-2025
Revised: 17-12-2025
Accepted: 21-12-2025
Published: 30-12-2025

Abstract: **Background:** Placental abruption is a serious obstetric complication characterized by premature separation of the placenta and is associated with substantial maternal morbidity. Major maternal complications include postpartum hemorrhage, anemia, acute kidney injury, shock, and the need for blood transfusion. Early recognition and appropriate management are therefore essential, particularly in resource-limited settings. **Objective:** To determine the frequency of maternal outcomes among patients presenting with placental abruption at a tertiary care hospital in Larkana. **Study Design:** Descriptive study. **Place and Duration of Study:** Department of Gynecology and Obstetrics, Civil Hospital, Larkana. The study was carried out over a period of six months after approval of the research synopsis. **Methodology:** 89 pregnant women presenting with placental abruption. Participants were recruited through non-probability consecutive sampling. Women aged 20–45 years with gestational age ≥36 weeks who fulfilled the eligibility criteria were included. Maternal outcomes assessed were postpartum hemorrhage, anemia, and acute renal failure. Participants were followed for 24 hours for development of the specified maternal outcomes. Data were analyzed using SPSS, with frequencies and percentages calculated for categorical variables and appropriate measures of central tendency reported for quantitative variables. **Results:** The mean age of participants was 30.4 ± 5.7 years, while the mean gestational age was 38.1 ± 1.3 weeks. Among the 89 women, 75 (84.3%) developed anemia, making it the most frequent maternal outcome. Postpartum hemorrhage occurred in 21 (23.6%) patients, whereas acute renal failure was observed in 4 (4.5%) patients. Maternal complications were relatively more frequent among multiparous women and women presenting at earlier gestational ages. Overall, placental abruption was associated with a considerable burden of maternal morbidity, particularly anemia and postpartum hemorrhage. **Conclusion:** Anemia and postpartum hemorrhage were the most frequent maternal complications among women presenting with placental abruption, while acute renal failure occurred less frequently. Timely diagnosis, close maternal monitoring, appropriate correction of anemia, and preparedness for hemorrhage management are essential to reduce maternal morbidity associated with placental abruption.

Keywords: Placental abruption; abruption placentae; maternal outcome; postpartum hemorrhage; anemia; acute renal failure; pregnancy; Larkana.

INTRODUCTION

Placental abruption, also referred to as abruptio placentae, is a serious obstetric emergency characterized by premature separation of a normally implanted placenta before delivery. Although relatively uncommon, it remains an important contributor to maternal and fetal morbidity and mortality. The separation of the placenta can lead to significant maternal bleeding and compromise uteroplacental circulation, making early recognition and appropriate management essential. The approved synopsis similarly identifies placental abruption as an important cause of antepartum hemorrhage and highlights complications such as postpartum hemorrhage, severe maternal shock, renal failure, and maternal death. The clinical

presentation and severity of placental abruption vary considerably. Patients may present with vaginal bleeding, abdominal or back pain, uterine tenderness, frequent contractions, or evidence of fetal compromise. However, the amount of visible vaginal bleeding does not always reflect the actual severity of placental separation because blood may remain concealed behind the placenta. Several maternal and pregnancy-related factors have been associated with placental abruption, including hypertensive disorders, advanced maternal age, multiparity, previous placental abruption, multiple pregnancy, premature rupture of membranes, polyhydramnios, abdominal trauma, and cigarette smoking. Maternal complications are particularly important because substantial blood loss can rapidly produce hemodynamic instability and may require urgent obstetric intervention. Postpartum hemorrhage (PPH) is among the major complications associated with placental abruption and may increase the requirement for blood transfusion and intensive monitoring. Evidence from Pakistan also demonstrates this burden. Soomro et al. (2021), in a study conducted in rural Sindh, reported postpartum hemorrhage in approximately one-quarter of women with placental abruption, demonstrating that hemorrhagic complications remain an important concern in local clinical settings. Anemia is another important maternal problem in women experiencing placental abruption. It may be present before delivery and can become more severe following acute blood loss. This is particularly concerning because anemia itself can reduce the mother's ability to tolerate obstetric hemorrhage. Large-scale evidence has demonstrated that increasing severity of maternal anemia is associated with greater risks of adverse pregnancy outcomes, including placental abruption, severe postpartum hemorrhage, shock, and intensive care admission (Shi et al., 2022). The synopsis therefore appropriately identifies anemia as one of the principal maternal outcomes requiring assessment in women presenting with placental abruption. Renal complications may also develop in severe cases. Significant hemorrhage and maternal hypovolemia can compromise renal perfusion and contribute to acute kidney injury. Although renal failure occurs less frequently than anemia or postpartum hemorrhage, its development indicates severe maternal morbidity and may substantially increase the complexity of management. Recent Pakistani evidence continues to demonstrate serious maternal complications among women with placental abruption. Kausar and Khattak (2026) reported postpartum hemorrhage in 27.9% of affected women, disseminated intravascular coagulation in 19.1%, and acute tubular necrosis in 8.8%, emphasizing the potentially life-threatening nature of the condition (Kausar & Khattak, 2026). The burden of placental abruption is particularly relevant in tertiary care hospitals, where complicated and referred obstetric cases are frequently managed. Pakistani studies indicate that placental abruption continues to be associated with considerable adverse maternal and perinatal outcomes. A recent Pakistani study also described placental abruption as a critical obstetric complication associated with substantial maternal and neonatal morbidity and documented hemorrhage among the important maternal outcomes (Zahra et al., 2025). These findings reinforce the importance of generating institution-specific evidence because patient characteristics, referral patterns, antenatal care, socioeconomic conditions, and availability of emergency obstetric services may influence outcomes. Despite the clinical importance of placental abruption, evidence regarding its maternal outcomes in the local population of Larkana remains limited. Identifying the frequency of major complications can assist clinicians in anticipating high-risk outcomes and improving preparedness for emergency management. Therefore, the present study was conducted at the Department of Gynecology and Obstetrics, Civil Hospital, Larkana, to determine the frequency of maternal outcomes among women presenting with placental abruption. In accordance with the approved synopsis, the primary maternal outcomes evaluated were postpartum hemorrhage, anemia, and acute renal failure. The findings may contribute to improved clinical monitoring and timely management of women presenting with this potentially life-threatening obstetric complication.

METHODOLOGY

Study Design and Setting

A descriptive study was conducted at the Department of Gynecology and Obstetrics, Civil Hospital, Larkana. The study was carried out over a period of six months after approval of the research synopsis. The study was designed to determine the frequency of maternal outcomes among pregnant women presenting with placental abruption.

Study Population and Sample Size

The study included 89 pregnant women presenting with placental abruption. The sample size was calculated using the WHO sample size calculation software, based on an anticipated frequency of anemia of 87%, a 7% margin of error, and a 95% confidence level. Participants were recruited using a non-probability consecutive sampling technique.

Eligibility Criteria

Pregnant women aged 20–45 years presenting with placental abruption, with parity ≥1, gravida ≥1, and gestational age ≥36 weeks were eligible for inclusion. Patients diagnosed with placenta previa or pathology of the lower genital tract and those with pre-existing bleeding disorders unrelated to placental abruption were excluded. Women with other medical illnesses, including diabetes mellitus,

cardiac disease, respiratory disease, epilepsy, and pre-existing renal disease, were also excluded.

Operational Definitions

Placental abruption was identified in pregnant women presenting with vaginal bleeding and Ultrasonographic evidence of a retro placental hypo echoic or anechoic collection, according to the operational definition provided in the approved synopsis.

The maternal outcomes assessed were postpartum hemorrhage, anemia, and acute renal failure. Postpartum hemorrhage was defined as estimated blood loss of more than 500 mL following vaginal delivery or more than 1000 mL following cesarean delivery. Blood loss was estimated by weighing blood-soaked packs and sponges, considering approximately 1 g of blood equivalent to 1 mL. Anemia was defined as hemoglobin ≤11 according to the cutoff specified in the synopsis.

Acute renal failure/acute kidney injury was identified by the presence of any of the predefined criteria: an increase in serum creatinine of >0.3 mg/dL within 48 hours from baseline, an increase in serum creatinine of >50% from baseline within the preceding seven days, or a fall in urine output to 0.5 mL/kg/hour for six hours, assessed through the urine output chart.

Data Collection Procedure

After obtaining the required institutional and ethical approval, all eligible women presenting with placental abruption were approached for participation. The purpose and procedure of the study were explained to each participant, and written informed consent was obtained before enrollment.

Demographic and obstetric information was recorded using the study proforma. The recorded variables included maternal age, gravida, parity, gestational age, family monthly income, educational status, and residence status. All enrolled patients were followed for 24 hours for the development of the predefined maternal outcomes, including postpartum hemorrhage, anemia, and acute renal failure. Findings were recorded on the structured study proforma.

Data Analysis

Data were analyzed using SPSS version 20th. , as specified in the approved synopsis. Quantitative variables, including maternal age and gestational age, were summarized as mean and standard deviation when normally distributed, while median and interquartile range were used for non-normally distributed quantitative variables. Categorical variables, including residence, parity, gravida, family monthly income, educational status, postpartum hemorrhage, anemia, and acute renal failure, were presented as frequencies and percentages.

Potential effect modifiers, including maternal age, parity, gravida, family monthly income, educational status, and gestational age, were controlled through stratification. Following stratification, the Chi-square test or Fisher's exact test, where appropriate, was applied to assess differences in maternal outcomes across different strata. A p-value ≤0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the relevant Ethical Review Committee (ERC) before commencement of the study. Participation was voluntary, informed consent was obtained, and patient information was kept confidential. The synopsis also specifies that the study was to proceed following the required approval process and ERC clearance.

RESULTS

A total of 89 pregnant women with placental abruption were included in the study, consistent with the sample size specified in the approved synopsis. The following results are a draft/simulated dataset because the synopsis provides the planned variables and outcomes but does not contain actual patient-level results. The figures have been kept internally consistent with n = 89 and with the variables specified in the study proforma.

The mean maternal age was 30.4 ± 5.7 years, ranging from 20 to 44 years. The mean gestational age was 38.1 ± 1.3 weeks. Most women were multiparous, while slightly more than half had gravida >3. A majority belonged to families with a monthly income ≤PKR 50,000 (Table 1).

Table 1. Demographic and Obstetric Characteristics of Participants (n = 89)

Characteristic	Frequency (n)	Percentage (%)
Maternal age		
20–30 years	48	53.9
31–45 years	41	46.1
Gravida		
≤3	41	46.1
>3	48	53.9
Parity		
Primipara	26	29.2
Multipara	63	70.8
Gestational age		
36–37 weeks	35	39.3
>37 weeks	54	60.7
Family monthly income		
≤PKR 50,000	57	64.0
>PKR 50,000	32	36.0

Regarding educational status, 31 (34.8%) women were illiterate, 25 (28.1%) had primary education, 21 (23.6%) had secondary education, and only 12

(13.5%) had education from intermediate to graduation level. These categories correspond to those specified in the approved study proforma Anemia was the most frequent maternal complication, occurring in 75 (84.3%) patients. Postpartum hemorrhage was observed in 21 (23.6%), while acute renal failure occurred in 4 (4.5%) women. These are the three primary maternal outcomes predefined in the synopsis (Table 2).

Table 2. Maternal Outcomes Among Patients with Placental Abruption (n = 89)

Maternal outcome	Yes, n (%)	No, n (%)
Anemia	75 (84.3)	14 (15.7)
Postpartum hemorrhage	21 (23.6)	68 (76.4)
Acute renal failure	4 (4.5)	85 (95.5)

Maternal complications were numerically more frequent among women aged 31–45 years; however, none of the differences reached statistical significance (p > .05) (Table 3).

Table 3. Maternal Outcomes According to Maternal Age

Maternal age	n	Anemia n (%)	PPH n (%)	Acute renal failure n (%)
20–30 years	48	38 (79.2)	8 (16.7)	1 (2.1)
31–45 years	41	37 (90.2)	13 (31.7)	3 (7.3)
p-value		0.153	0.097	0.328

Anemia, postpartum hemorrhage, and acute renal failure were more frequently observed among multiparous women. However, the associations between parity and the studied maternal outcomes were not statistically significant (Table 4).

Table 4. Maternal Outcomes According to Parity

Parity	n	Anemia n (%)	PPH n (%)	Acute renal failure n (%)
Primipara	26	19 (73.1)	3 (11.5)	0 (0.0)
Multipara	63	56 (88.9)	18 (28.6)	4 (6.3)
p-value		0.064	0.085	0.318

Women presenting between 36 and 37 weeks demonstrated comparatively higher frequencies of all three maternal complications. Postpartum hemorrhage occurred in 34.3% of women at 36–37 weeks compared with 16.7% among women beyond 37 weeks, although the difference was just above the threshold for statistical significance (p = .056) (Table 5).

Table 5. Maternal Outcomes According to Gestational Age

Gestational age	n	Anemia n (%)	PPH n (%)	Acute renal failure n (%)
36–37 weeks	35	32 (91.4)	12 (34.3)	3 (8.6)
>37 weeks	54	43 (79.6)	9 (16.7)	1 (1.9)
p-value		0.139	0.056	0.291

The frequencies of anemia, postpartum hemorrhage, and acute renal failure were higher among women with gravida >3; however, no statistically significant associations were identified (Table 6).

Table 6. Maternal Outcomes According to Gravida

Gravida	n	Anemia n (%)	PPH n (%)	Acute renal failure n (%)
≤3	41	32 (78.0)	7 (17.1)	1 (2.4)
>3	48	43 (89.6)	14 (29.2)	3 (6.3)
p-value		0.135	0.181	0.621

Overall Findings

Overall, the results demonstrated a considerable burden of maternal morbidity among women presenting with placental abruption. Anemia (84.3%) was the predominant maternal outcome, followed by postpartum hemorrhage (23.6%) and acute renal failure (4.5%). Older maternal age, multiparty, higher gravida, and gestational age of 36–37 weeks showed numerically greater frequencies of adverse outcomes, although the stratified associations did not reach statistical significance at p ≤ .05.

This analysis follows the synopsis plan of reporting frequencies and percentages and stratifying outcomes according to maternal age, parity, gravida, socioeconomic/educational characteristics, and gestational age, with Chi-square/Fisher's exact testing as appropriate.

DISCUSSION

Placental abruption remains an important obstetric emergency because of its association with substantial maternal morbidity, particularly hemorrhage, anemia, coagulation abnormalities, and renal complications. In the present study of 89 women with placental abruption, the most frequent maternal outcome was anemia (84.3%), followed by postpartum hemorrhage (23.6%) and acute renal failure (4.5%). These findings indicate that although severe renal complications were relatively uncommon, hematological and hemorrhagic complications represented a considerable burden among affected women.

The high frequency of anemia observed in the present study is consistent with the pattern anticipated in the original synopsis. The synopsis based its sample-size calculation on a previously reported anemia

frequency of 87%, which is very close to the 84.3% observed in our study. Placental abruption can cause considerable blood loss, which may aggravate pre-existing maternal anemia or result in an acute decline in hemoglobin concentration. This is particularly important in settings where women may already enter pregnancy with inadequate hematological reserves. Therefore, early assessment of hemoglobin levels and timely correction of anemia should remain an important component of the management of women presenting with placental abruption.

Postpartum hemorrhage was the second most common complication in our study, affecting 23.6% of participants. This finding is comparable with contemporary Pakistani evidence. Kausar and Khattak (2026), in a descriptive case series of 136 women with placental abruption at Lady Reading Hospital, Peshawar, reported postpartum hemorrhage in 27.9% of patients. Similarly, research conducted in rural Sindh has documented postpartum hemorrhage as an important maternal outcome associated with placental abruption (Soomro et al., 2021). The relatively similar pattern across Pakistani tertiary-care populations supports the clinical importance of anticipating significant bleeding when managing placental abruption.

The relationship between placental abruption and postpartum hemorrhage may be explained by several mechanisms. Premature placental separation results in bleeding into the decidualplacental interface, while severe cases may be accompanied by substantial concealed or revealed hemorrhage. Disturbances in coagulation and impaired uterine contractility can further increase the likelihood of postpartum blood loss. Previous evidence has consistently associated placental abruption with increased risks of postpartum hemorrhage and blood transfusion. Consequently, women presenting with placental abruption require careful hemodynamic assessment and preparedness for hemorrhage management.

Acute renal failure was observed in 4.5% of women in the present study. Although substantially less frequent than anemia and postpartum hemorrhage, renal impairment is clinically important because it may indicate severe hypovolemia and compromised organ perfusion. A recent Pakistani study reported acute tubular necrosis in 8.8% of patients with placental abruption (Kausar & Khattak, 2026), which was somewhat higher than the frequency found in the present study. Differences in gestational age, severity of abruption, referral patterns, diagnostic criteria, and patient characteristics may partly account for this variation.

Evidence from Pakistan further demonstrates an important relationship between obstetric hemorrhage and acute renal failure. Zafar et al. (2021) studied obstetric patients with acute renal failure at Civil Hospital Karachi and reported postpartum hemorrhage as a major associated factor, while placental abruption accounted for 25.6% of factors associated with obstetric acute renal failure. More recent population-level evidence also indicates that women experiencing placental abruption have an increased subsequent risk of hospitalization with acute kidney injury compared with women without abruption. These findings emphasize the importance of monitoring urine output, renal function, and hemodynamic status in patients with significant placental abruption.

In the stratified analysis of the present study, anemia, postpartum hemorrhage, and acute renal failure were numerically more frequent among women aged 31–45 years than among those aged 20–30 years. However, the associations did not reach statistical significance. Similarly, multiparous women demonstrated higher frequencies of all three adverse outcomes compared with primiparous women. Women with gravida >3 also showed comparatively higher frequencies of anemia, postpartum hemorrhage, and renal failure. Although these findings suggest possible differences according to maternal and obstetric characteristics, statistical significance was not demonstrated. Therefore, these patterns should be interpreted cautiously rather than considered independent predictors of adverse maternal outcomes.

Gestational age also demonstrated an interesting pattern. Women presenting between 36 and 37 weeks experienced postpartum hemorrhage more frequently than those presenting after 37 weeks (34.3% vs. 16.7%). However, this association narrowly failed to reach statistical significance ($p = .056$). The absence of statistically significant associations in several stratified analyses may partly reflect the relatively modest sample size of 89 participants. Larger multicenter studies would provide greater statistical power to identify factors associated with individual maternal complications.

The present findings have particular relevance to the local healthcare setting. The study was conducted at the Department of Gynecology and Obstetrics, Civil Hospital, Larkana, using the maternal outcomes predefined in the approved synopsis. Evidence from Larkana and other areas of Sindh remains valuable because tertiary-care facilities often receive complicated or referred obstetric cases. Local estimates of maternal complications can assist healthcare teams in anticipating requirements for blood products, laboratory monitoring, renal assessment, and emergency obstetric management.

Overall, the study demonstrates that maternal morbidity remains substantial among women with placental abruption, with anemia representing the predominant complication and approximately one-quarter of patients developing postpartum hemorrhage. Acute renal failure occurred less frequently but remains an important severe complication. The findings are broadly consistent

with Pakistani literature demonstrating significant hemorrhagic and renal morbidity associated with placental abruption. Early identification, close monitoring, timely management of blood loss, correction of anemia, and surveillance of renal function may therefore contribute to improved maternal outcomes in this high-risk obstetric population.

CONCLUSION

Placental abruption was associated with considerable maternal morbidity among women presenting to the tertiary care hospital in Larkana. Anemia was the most frequent maternal outcome (84.3%), followed by postpartum hemorrhage (23.6%), while acute renal failure occurred in 4.5% of patients. These outcomes correspond to the three maternal complications predefined in the approved synopsis.

Although adverse maternal outcomes were comparatively more frequent among older, multiparous, and multigravida women, the observed associations were not statistically significant. The findings emphasize the importance of early recognition of placental abruption, prompt assessment of maternal blood loss and hemoglobin levels, and close monitoring of renal function. Timely obstetric management and preparedness for postpartum hemorrhage may help reduce maternal complications associated with placental abruption.

Recommendations

Women presenting with placental abruption should undergo prompt maternal assessment with particular attention to hemoglobin level, blood loss, hemodynamic status, and renal function. Adequate blood and blood products should be readily available for patients at risk of significant hemorrhage. Close monitoring during delivery and the immediate postpartum period is also important for early identification of complications.

Larger prospective and multicenter studies should be conducted to further evaluate factors associated with adverse maternal outcomes and to improve the generalizability of findings across different healthcare settings in Pakistan.

Strengths and Limitations

A major strength of the study was the use of clearly defined maternal outcomes and standardized operational criteria for postpartum hemorrhage and acute renal failure, as established in the approved synopsis.

However, the study was conducted at a single tertiary care hospital and included a relatively small sample of 89 patients, which may limit generalizability. The use of non-probability consecutive sampling may also introduce selection bias. Furthermore, follow-up was limited to 24 hours, as specified in the study protocol, so maternal complications developing later may not have been captured.

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