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Original Research Article

Maternal and fetal outcomes in cases of accidental haemorrhage at a tertiary care centre: a prospective observational study

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ABSTRACT

Background: Accidental haemorrhage is a major obstetric emergency associated with significant maternal and perinatal morbidity and mortality. Early recognition and timely management are crucial to improve outcomes, especially in resource-limited settings where anemia and hypertensive disorders are common.

Methods: A prospective observational study was conducted in the Department of Obstetrics and Gynaecology at NHL Municipal Medical College Ahmedabad Gujarat a tertiary care teaching hospital from December 2022 to March 2025. All pregnant women ≥ 28 weeks' gestation diagnosed with accidental haemorrhage were included. Women with bleeding due to other causes or < 28 week's gestation were excluded. Maternal demographics, risk factors, clinical features, management, and maternal and fetal outcomes were analysed. The collected data were compiled and analysed using Microsoft Excel 2019 (Microsoft Corporation, USA). Descriptive statistics were applied, and the results were expressed as frequencies and percentages.

Results: Among 11,560 deliveries, 105 cases of accidental haemorrhage were recorded (incidence 0.90%). Most women were unbooked (64.76%) and from lower socio-economic class (67.62%). Common risk factors were anemia (61.90%) and hypertensive disorders (47.61%). Abdominal pain (71.42%) and vaginal bleeding (61.90%) were the main symptoms. Cesarean section was performed in 56.20% cases. Blood transfusion was required in 66.66%. Major maternal complications included anemia (66.66%), shock (31.42%), PPH (22.85%), and DIC (7.61%), with no maternal mortality. Live birth rate was 63.80%, while perinatal mortality was 44.75%, largely due to prematurity and asphyxia.

Conclusions: Accidental haemorrhage remains a serious contributor to adverse fetomaternal outcomes. Strengthening antenatal care, early detection of anemia and hypertension, timely referral, and availability of comprehensive emergency obstetric care can substantially reduce morbidity and mortality.

Keywords: Accidental haemorrhage, Fetal outcome, Placental abruption, Maternal outcome

INTRODUCTION

Accidental haemorrhage, also known as placental abruption, is defined as the premature separation of a normally implanted placenta from the uterine wall before delivery of the fetus.¹ It is one of the most serious obstetric emergencies encountered in pregnancy and contributes significantly to maternal and perinatal morbidity and mortality.²

Pregnancy is usually a physiological process, but sudden complications such as placental abruption can threaten the life of both mother and fetus.³ The condition occurs due to rupture of uterine spiral arteries causing bleeding into the decidua basalis and formation of a retroplacental hematoma.⁴ As the hematoma enlarges, it separates the placenta further and compromises uteroplacental blood flow leading to fetal hypoxia.⁵

In severe cases, blood may infiltrate the myometrium and produce a Couvelaire uterus, which reflects extensive placental separation.⁶ Placental abruption may also activate coagulation pathways and result in disseminated intravascular coagulation.⁷ Clinically, the classical presentation includes vaginal bleeding, abdominal pain, and uterine tenderness.² However, some cases remain concealed and may not show obvious external bleeding. The incidence of placental abruption is approximately 0.5–1% of all pregnancies.¹

Hypertensive disorders of pregnancy are strongly associated with placental abruption.⁸ Previous history of abruption increases the recurrence risk in subsequent pregnancies.⁹ Maternal anemia and malnutrition are also important contributing factors, especially in developing countries.¹⁰ Cigarette smoking has been shown to increase the risk of placental abruption due to placental vascular damage.¹¹ Maternal complications include shock, postpartum haemorrhage, renal failure, and coagulopathy.⁵ Fetal complications include prematurity, low birth weight, and perinatal death.¹² Early diagnosis, prompt resuscitation, and timely delivery remain the cornerstone of management to improve fetomaternal outcomes.¹³

METHODS

This prospective observational study was carried out in the Department of Obstetrics and Gynaecology at NHL Municipal Medical College Ahmedabad Gujarat a tertiary care teaching hospital between December 2022 and March 2025. During this period, 11,560 deliveries were conducted, of which 105 pregnant women diagnosed with placental abruption were enrolled as the study participants. Pregnant women with a gestational age of ≥ 28 weeks and a clinical diagnosis of placental abruption were included. Those with antepartum haemorrhage due to other causes, gestational age below 28 weeks, or referrals for postpartum complications were excluded.

Informed consent was obtained from all participants. A detailed history, clinical examination, and necessary investigations were documented using a structured proforma. Information collected included maternal demographic characteristics, antenatal care status, obstetric history, associated risk factors, clinical presentation, laboratory parameters, management details, and mode of delivery. Maternal outcomes evaluated included anemia, hypovolemic shock, postpartum haemorrhage, disseminated intravascular coagulation, and requirement for blood transfusion. Fetal outcomes assessed were live birth, intrauterine fetal death, birth weight, APGAR score, and NICU admission.

All patients were managed according to standard obstetric guidelines. The collected data were compiled and analysed using Microsoft Excel 2019 (Microsoft Corporation, USA). Descriptive statistics were applied, and the results were expressed as frequencies and percentages.

RESULTS

A total of 11,560 deliveries occurred during the study period (December 2022–March 2025). Among these, 105 cases of accidental haemorrhage were identified, giving an incidence of 0.90%.

Majority of patients were unbooked (64.76%), reflecting inadequate antenatal supervision. More than half (57.14%) had no antenatal visits, indicating poor utilization of maternal health services. Most women belonged to the lower socioeconomic class (67.62%), suggesting a strong link between low socioeconomic status and risk of placental abruption. Multigravida women constituted the largest group (54.28%), though a significant proportion were primigravida (36.20%), showing that abruption affects both first and subsequent pregnancies (Table 1).

Table 1: Sociodemographic and obstetric profile of patients.

Variables	Number (n=105)	Percentage
ANC registration		
Booked	37	35.24
Unbooked	68	64.76
Antenatal visits		
None	60	57.14
1-3 visits	33	31.43
>3 visits	12	11.43
Socioeconomic class		
Lower	71	67.62
Middle	32	30.48
Upper	2	1.90
Parity		
Primigravida	38	36.20
Multigravida	57	54.28
Grand multigravida	10	9.52

Abdominal pain was the most frequent presenting complaint (71.42%), followed by vaginal bleeding (61.90%), suggesting that pain can often be the predominant symptom even when external bleeding is minimal or concealed. Pallor was observed in 61.90% of women, indicating either substantial blood loss or underlying anemia. Hypertension (47.61%) and proteinuria (39.04%) were present in a considerable proportion of patients, reinforcing the well-established link between hypertensive disorders of pregnancy and placental abruption. Regarding associated risk factors, anemia (61.90%) emerged as the most common, with hypertensive disorders being the next major contributor. PROM (33.33%) was also frequently noted and may contribute to abruption through sudden uterine decompression and disruption of placental attachment (Table 2).

Cesarean section (56.20%) was the predominant mode of delivery, reflecting the need for urgent intervention to prevent maternal and fetal compromise. Anemia was the

most frequent complication (66.66%), often due to both chronic nutritional deficiency and acute blood loss. Haemorrhagic shock (31.42%) and PPH (22.85%) were also common, underlining the life-threatening nature of abruption and ARF occurred in a smaller proportion but represent severe complications. Notably, no maternal mortality was recorded, indicating effective resuscitation and management at the tertiary care centre (Table 3).

Table 2: Clinical presentation and associated risk factors.

Parameters	Number	Percentage
Symptoms		
Abdominal pain	75	71.42
Vaginal bleeding	65	61.90
Absent fetal movement	35	33.33
Clinical signs		
Pallor	65	61.90
Hypertension	50	47.61
Proteinuria	41	39.04
PROM	35	33.33
Risk factors		
Anemia	65	61.90
Hypertensive disorders	50	47.61
PROM	35	33.33
Polyhydramnios	4	3.80
Twin pregnancy	3	2.85

Table 3: Maternal outcomes.

Maternal outcome	Number	Percentage
Mode of delivery		
Vaginal delivery	46	43.80
Cesarean section	59	56.20
Maternal complications		
Anemia	70	66.66
Haemorrhagic shock	33	31.42
PPH	24	22.85
DIC	8	7.61
ARF	5	4.76
Couvellaire uterus	17	16.19
Obstetric hysterectomy	2	1.90
Maternal mortality	0	0

Although 63.80% of babies were born alive, overall perinatal loss remained considerable. IUFD constituted 28.57% of cases, indicating significant placental compromise and fetal hypoxia. Prematurity was very common (77.14%) and served as a major factor contributing to neonatal morbidity and mortality. Additionally, a high proportion of newborns were low birth weight (71.42%), which further increased their risk of adverse outcomes. Neonatal deaths were primarily attributed to birth asphyxia and complications related to prematurity, contributing to an overall high perinatal mortality rate (Table 4).

Table 4: Perinatal outcomes.

Perinatal outcome	Number	Percentage
Live birth	67	63.80
IUFD	30	28.57
Stillbirth	10	9.52
Neonatal mortality	7	10.44
Preterm babies	81	77.14
Low birth weight	75	71.42

DISCUSSION

The incidence of placental abruption in the present study was 0.90%, which is comparable to Fernandes et al (0.95%) and Sahu et al (0.93%), but slightly lower than Mehta et al (1.2%).¹⁴⁻¹⁶ This similarity suggests that the burden of abruption remains consistent across tertiary care centers.

A higher proportion of unbooked cases (64.76%) was observed in this study, similar to Sahu et al who reported 66.66% unbooked mothers, though lower than Fernandes et al where over 90% were unbooked.^{15,17} This comparison indicates that inadequate antenatal care continues to be a major contributor to abruption. Studies by Abu-Heija et al also showed worse outcomes among women with poor antenatal follow-up.¹⁸ The predominance of women from lower socioeconomic class (67.62%) in this study aligns closely with Mohapatra et al, who reported 79.28% cases in the same group.¹⁹ Wandabwa et al similarly highlighted socioeconomic disadvantage as a significant determinant.¹⁰ Multigravida women formed the majority (54.28%), which is comparable to Pawani et al (59%) and Sahu et al (50%).^{15,20} However, the notable proportion of primigravida cases (36.20%) in the present study supports findings by Kramer et al, who emphasized that abruption is not restricted to high parity.²¹

Abdominal pain was the most common symptom (71.42%) in the present study, similar to Pritchard et al and Oyelese and Ananth, who reported pain as a dominant symptom in concealed abruption.^{2,22} Vaginal bleeding was less frequent, reinforcing that absence of bleeding does not exclude abruption. Anemia (61.90%) was the most common risk factor in this study, higher than Sahu et al (43.74%), suggesting a persistent burden of maternal anemia in the local population.¹⁵ Hypertensive disorders (47.61%) were also common, consistent with Abdella et al and Sibai, who identified hypertension as a major etiological factor.^{24,25} Most cases occurred between 33–36 weeks, similar to Ananth et al, who reported abruption predominantly in the late preterm period.²⁶

The cesarean section rate (56.20%) in this study is comparable to Sahu et al (51.85%) and Fernandes et al (49.23%), but lower than Mehta et al (87.5%).¹⁴⁻¹⁶ This variation likely reflects institutional protocols and fetal status at presentation. Maternal complications such as anemia, shock, and PPH were comparable to other Indian

studies.^{19,27} Notably, no maternal mortality was recorded, in contrast to Mohapatra et al who reported 5.71% mortality, suggesting improved emergency obstetric care in the present setting.¹⁹

Perinatal outcomes were similar to existing literature. The live birth rate (63.80%) was close to Fernandes et al (64.17%) but higher than Sahu et al (35.18%).^{14,15} The IUFD rate (28.57%) paralleled Mohapatra et al (30.07%).¹⁹ High prematurity and low birth weight rates were also consistent with previous reports.^{26,28} Neonatal mortality (10.44%) was slightly higher than Mohapatra et al (6.99%), likely reflecting higher prematurity rates in the present study.¹⁹ Oyelese and Ananth similarly emphasized that neonatal survival depends largely on gestational age and severity of separation.²³

Overall, the comparisons indicate that placental abruption continues to produce significant perinatal loss despite stable maternal outcomes. Strengthening antenatal care and early risk detection remain key preventive strategies.

Limitations

The present study has certain limitations. It was conducted at single tertiary care centre and sample size was relatively small which may limit the generalizability of finding to the wider population. Long-term neonatal outcomes were also not evaluated.

Despite these limitation, the study provides valuable insight into the maternal and fetal outcomes associated with accidental haemorrhage.

CONCLUSION

Accidental haemorrhage remains a serious obstetric emergency associated with significant maternal morbidity and high perinatal mortality. Anaemia and hypertensive disorders were the most common associated risk factors in the present study. Early diagnosis, prompt referral to tertiary care centres, availability of blood transfusion services, and timely obstetric intervention are crucial to improve fetomaternal outcomes. Strengthening antenatal care and early identification of high-risk pregnancies can help reduce the burden of complications related to placental abruption.

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