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MATERNAL AND PERINATAL OUTCOME IN ABRUPTIO PLACENTAE AT A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Abruptio placentae is a serious obstetric emergency associated with significant maternal and perinatal morbidity and mortality. Despite advances in obstetric and neonatal care, placental abruption continues to contribute substantially to adverse fetomaternal outcomes, particularly in tertiary care referral centers. The present study was conducted to evaluate the incidence, clinical profile, maternal complications, and fetal outcomes associated with abruptio placentae at a tertiary care hospital in Maharashtra. This prospective observational study was conducted in the Department of Obstetrics and Gynecology at Shri Bhausaheb Hire Government Medical College and affiliated tertiary care hospital, Dhule, Maharashtra, India, from January 2025 to December 2025. Detailed demographic, obstetric, clinical, maternal, and neonatal data were collected and analyzed. Total 214 cases of abruptio placentae were identified. The majority of women belonged to the 21–30 years age group (68.22%) and were multigravida (64.95%). Hypertensive disorders of pregnancy were the most common associated risk factor, observed in 48.60% cases, followed by severe anemia in 28.97%. Cesarean section was performed in 66.82% women. Major maternal complications included blood transfusion requirement (42.99%), postpartum hemorrhage (18.22%), disseminated intravascular coagulation (8.41%), and ICU admission (11.21%). Maternal mortality was observed in 1.40% cases. Prematurity was the most common neonatal complication (62.15%), while NICU admission was required in 40.65% neonates. Stillbirth and overall perinatal mortality were observed in 21.50% and 27.10% cases, respectively. Abruptio placentae remains associated with substantial maternal and perinatal morbidity in tertiary care practice. Early diagnosis, prompt referral, aggressive resuscitation, timely delivery, and multidisciplinary management are essential to improve fetomaternal outcomes.

INTRODUCTION

Abruptio placentae, defined as premature separation of a normally situated placenta after 20 weeks of gestation and before delivery of the fetus, remains one of the most serious obstetric emergencies associated with significant maternal and perinatal morbidity and mortality. The reported incidence varies between 0.5% and 1.5% of all pregnancies globally, with higher rates observed in developing countries due to poor antenatal care, hypertensive disorders, anemia, and delayed referral systems.[1]

Placental abruption is frequently associated with adverse maternal outcomes such as postpartum hemorrhage, disseminated intravascular coagulation, shock, acute renal injury, need for blood transfusion, and intensive care admission, while fetal complications include prematurity, fetal distress, low birth weight, stillbirth, birth asphyxia, and increased neonatal intensive care unit (NICU) admission.[2,3,4]

Despite advances in obstetric care, abruptio placentae continues to pose a major challenge in tertiary care obstetric practice because of its sudden presentation, unpredictable clinical course, and rapid deterioration of maternal and fetal condition. Early diagnosis, prompt resuscitation, timely delivery, and multidisciplinary management are essential to improve maternal and neonatal outcomes. Recent Indian studies have highlighted hypertensive disorders of pregnancy, severe anemia, multiparity, and previous history of abruption as important risk factors associated with placental abruption.[5,6]

Studies from Indian tertiary care centers have reported high rates of cesarean delivery, blood transfusion, perinatal mortality, and NICU admission among affected women, emphasizing the continuing burden of this condition in resource-limited settings.[1] The present prospective observational study was undertaken to evaluate the clinical profile, maternal complications, and fetal outcomes associated with abruptio placentae at a tertiary care teaching hospital.

MATERIAL AND METHODS

The present prospective observational study was conducted in the Department of Obstetrics and Gynecology at Shri Bhausaheb Hire Government Medical College and affiliated tertiary care teaching hospital, Dhule, Maharashtra, India, over a period of one year from January 2025 to December 2025. Study was approved by institutional ethical committee.

Inclusion Criteria

- Pregnant women diagnosed with abruptio placentae after 28 weeks of gestation (with clinical and/or ultrasonographic diagnosis of placental abruption), delivered at our tertiary care hospital during the study period
- Women willing to participate in the study and provide informed consent

Exclusion Criteria

- Placenta previa
- Antepartum hemorrhage due to local cervical or vaginal causes
- Trauma-related antepartum hemorrhage
- Bleeding disorders unrelated to placental abruption
- Patients with incomplete clinical records or missing outcome data
- Women unwilling to participate in the study

All pregnant women diagnosed clinically and/or radiologically with abruptio placentae after 28 weeks of gestation and admitted during the study period were included in the study. Diagnosis was based on the presence of painful vaginal bleeding, uterine tenderness, increased uterine tone, fetal distress or intrauterine fetal demise, retroplacental clot identified during delivery, and ultrasonographic findings wherever applicable.

Written informed consent was obtained from all participating women or their legally authorized attendants in emergency situations whenever required. Detailed demographic, obstetric, clinical, laboratory, intraoperative, and neonatal data were collected using a predesigned structured proforma. Relevant information including maternal age, parity, booking status, gestational age, associated risk factors, clinical presentation, grade of abruption, mode of delivery, intraoperative findings, and need for blood or blood product transfusion was documented.

Maternal outcome variables studied included postpartum

hemorrhage, disseminated intravascular coagulation, hypovolemic shock, acute kidney injury, blood transfusion requirement, cesarean delivery, obstetric hysterectomy, intensive care unit admission, and maternal mortality. Fetal and perinatal outcome variables included prematurity, low birth weight, fetal distress, Apgar score, birth asphyxia, NICU admission, stillbirth, intrauterine fetal demise, and perinatal mortality.

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

During the study period from January 2025 to December 2025, 214 cases of abruptio placentae were identified. The majority of women with abruptio placentae belonged to the age group of 21–30 years accounting for 146 cases (68.22%). Multigravida women constituted 139 cases (64.95%). Most women presented between 33–36 weeks of gestation, accounting for 92 cases (42.99%), followed by term gestation in 81 cases (37.85%).

Table 1: General characteristics

Variable	Frequency (n=214)	Percentage (%)
Age Distribution		
≤20 years	18	8.41
21–25 years	74	34.58
26–30 years	72	33.64
31–35 years	38	17.76
>35 years	12	5.61
Gravidity		
Primigravida	75	35.05
Multigravida	139	64.95
Gestational Age		
28–32 weeks	41	19.16
33–36 weeks	92	42.99
≥37 weeks	81	37.85

The most common presenting complaint was vaginal bleeding seen in 186 women (86.92%), followed by abdominal pain in 171 women (79.91%). Fetal distress was noted in 74 cases (34.58%), while absent fetal heart sounds at admission were observed in 49 women (22.90%).

Table 2: Clinical Presentation of Abruptio Placentae (n=214)

Clinical Feature	Frequency	Percentage (%)
Vaginal bleeding	186	86.92
Abdominal pain	171	79.91
Uterine tenderness	148	69.16
Fetal distress	74	34.58
Absent fetal heart sound	49	22.90
Hypertonic uterus	52	24.30

Hypertensive disorders of pregnancy were the most common associated risk factor observed in 104 women (48.60%), followed by severe anemia in 62 women (28.97%). Previous cesarean section was present in 38 cases (17.76%).

Table 3: Risk Factors Associated with Abruptio Placentae

Risk Factor	Frequency (n=214)	Percentage (%)
Hypertensive disorders	104	48.60
Severe anemia	62	28.97
Previous LSCS	38	17.76
PROM	21	9.81
Polyhydramnios	11	5.14
Trauma	4	1.87

Cesarean section was the predominant mode of delivery and was performed in 143 women (66.82%), whereas 71 women (33.18%) delivered vaginally.

Table 4: Mode of Delivery

Mode of Delivery	Frequency (n=214)	Percentage (%)
Vaginal delivery	71	33.18
Cesarean section	143	66.82

Maternal complications were observed in a substantial proportion of women. Blood transfusion was required in 92 cases (42.99%). Postpartum hemorrhage occurred in 39 women (18.22%), while disseminated intravascular coagulation developed in 18 women (8.41%). ICU admission was required in 24 cases (11.21%). There were 3 maternal deaths (1.40%).

Table 5: Maternal Complications

Maternal Complication*	Frequency (n=214)	Percentage (%)
Blood transfusion	92	42.99
Postpartum hemorrhage	39	18.22
Disseminated intravascular coagulation	18	8.41
Hypovolemic shock	21	9.81
Acute kidney injury	11	5.14
ICU admission	24	11.21
Obstetric hysterectomy	4	1.87
Maternal mortality	3	1.40

(*- multiple complications can be present in one patient)

Adverse neonatal outcomes were common. Prematurity was observed in 133 neonates (62.15 %). NICU admission was required in 87 neonates (40.65%). Stillbirth occurred in 46 cases (21.50%), while overall perinatal mortality was observed in 58 cases (27.10%).

Table 6: Neonatal Outcome

Neonatal Outcome	Frequency (n=214)	Percentage (%)
Prematurity	133	62.15
Low birth weight	102	47.66
Birth asphyxia	44	20.56
NICU admission	87	40.65
Stillbirth	46	21.50
Early neonatal death	12	5.61
Perinatal mortality	58	27.10

DISCUSSION

Antepartum hemorrhage, which affects 2-5% of pregnancies, can be caused by several conditions, including placenta previa, placental abruption, placenta accreta spectrum disorders, vasa previa, cervical or vaginal lesions, trauma, and systemic disorders. Abruptio placenta contributes to approximately 30% of cases of third-trimester bleeding and is a leading cause of antepartum hemorrhage.[3] The hemorrhage can be concealed, revealed, or mixed. Mehta et al.,[7] reported abruptio placentae as an important contributor to adverse fetomaternal outcome, while Fernandes and Gopalakrishna[8] also documented significant maternal and fetal morbidity in a tertiary care setting.

Hypertensive disorders of pregnancy were the most common associated risk factor in the present study, observed in 48.60% cases. Similar association between hypertensive disorders and placental abruption has been reported by Mehta et al.,[7] Fernandes and Gopalakrishna[7], and Barua et al.[8] Hypertension may predispose to decidual vasculopathy, placental ischemia, and premature placental separation. This finding reinforces the importance of effective antenatal screening and aggressive management of preeclampsia and gestational hypertension to reduce abruption-related morbidity.

Severe anemia was noted in 28.97% cases in the present study. Meena et al.,[5] evaluated the role of folic acid and vitamin B12 levels in abruptio placentae and fetomaternal outcome, suggesting that nutritional deficiency and anemia may contribute to adverse outcomes in such cases. Aparna and Anupama[9] also identified anemia as an important associated maternal factor in abruptio placentae. The high proportion of anemia in the present study may reflect poor nutritional status, inadequate antenatal care, and referral of complicated cases. Correction of anemia during antenatal care remains a clinically relevant preventive strategy.

Most women in the present study were multigravida, accounting for 64.95% cases. Comparable observations have been reported by Fernandes and Gopalakrishna[8] and Kanavi et al.,[10] where placental abruption was more frequent among multigravida women. Increased parity may be associated with vascular changes, higher prevalence of hypertensive disorders, and cumulative obstetric risk. This finding suggests that multigravida women with associated risk factors require careful antenatal surveillance.

In the present study, 42.99% cases presented between 33–36 weeks of gestation, while 62.15% neonates were premature. Barua et al.,[3] and Mallidi and Munikrishna[2] similarly reported prematurity as a major fetal outcome in abruptio placentae. Prematurity in abruptio placentae is often related to spontaneous preterm onset, fetal compromise, or need for urgent delivery to prevent maternal deterioration. Clinically, this emphasizes the need for neonatal preparedness and availability of NICU services in tertiary centers managing placental abruption.

Vaginal bleeding was the most common clinical presentation, seen in 86.92% cases, followed by abdominal pain in 79.91% and uterine tenderness in 69.16%. Similar clinical patterns were documented by Mehta et al.,[7] and Abhirami et al.,[6] who emphasized that painful bleeding with uterine tenderness remains a key clinical feature of abruption. However, clinical presentation may vary depending on concealed or revealed hemorrhage. Therefore, a high index of suspicion is required, particularly in hypertensive women presenting with abdominal pain or fetal distress.

Cesarean section was the predominant mode of delivery in the present study, performed in 66.82% cases, while 33.18% delivered vaginally. Similar higher cesarean rates have been reported by Fernandes and Gopalakrishna[8] and Kanavi et al.,[10] in tertiary care settings. The higher cesarean rate in the present study may be due to live fetus with fetal distress, unfavorable cervix, severe abruption, or need for rapid delivery. In cases of intrauterine fetal demise with stable maternal condition, vaginal delivery remains preferable; however, fetal and maternal status should guide individualized decision-making.

Postpartum hemorrhage was observed in 18.22% cases. Similar maternal hemorrhagic morbidity has been reported by Mehta et al.,[7] Mallidi and Munikrishna,[2] and Latha and Kamineni[11]. Abruptio placentae predisposes to uterine atony, coagulopathy, and concealed blood loss, thereby increasing the risk of postpartum hemorrhage. This finding underlines the importance of active management of the third stage of labor, readiness for blood transfusion, and early correction of coagulopathy.

Blood transfusion was required in 42.99% women in the present study. Comparable high transfusion requirements were documented by Fernandes and Gopalakrishna[8] and Barua et al.[3] The need for transfusion reflects the severity of antepartum hemorrhage, degree of concealed blood loss, pre-existing anemia, and associated coagulopathy. Availability of blood and blood products is therefore essential in all tertiary care centers managing abruptio placentae.

Disseminated intravascular coagulation was observed in 8.41% cases. Mallidi and Munikrishna[2] specifically studied abruptio placentae associated with DIC and reported significant maternal and fetal morbidity in such patients. Latha and Kamineni[11] also highlighted maternal morbidity in severe grade abruption. The occurrence of DIC in abruption is related to release of thromboplastin from the decidua and placenta into maternal circulation, leading to coagulation cascade activation. Early diagnosis and aggressive correction with blood products are vital to reduce maternal morbidity.

ICU admission was required in 11.21% women in the present study. Kanavi et al.,[10] and Latha and Kamineni[11] reported that severe abruption is associated with higher maternal morbidity and need for intensive monitoring. ICU admission in the present study was mainly related to shock, DIC, severe hemorrhage, acute kidney injury, and postoperative monitoring. This reflects the importance of multidisciplinary management involving obstetricians, anesthetists, intensivists, hematologists, and neonatologists.

Maternal mortality was observed in 1.40% cases in the present study. Recent Indian studies have reported variable maternal mortality depending on referral delay, severity at admission, blood product availability, and intensive care support.[7,8,9] The presence of maternal deaths in the present cohort indicates that abruptio placentae remains a potentially life-threatening obstetric emergency despite tertiary care availability. Early referral and rapid resuscitative management are crucial to improve maternal survival.

NICU admission was required in 40.65% neonates. Similar high NICU admission rates have been described by Barua et al.,[3] Kanavi et al.,[10] and Tambawaala and Kale.[4 8 17] NICU admission in abruption is usually related to prematurity, birth asphyxia, low birth weight, and respiratory distress. This finding emphasizes that centers managing abruptio placentae should have well-equipped neonatal intensive care facilities.

Stillbirth was observed in 21.50% cases and overall perinatal mortality was 27.10%. Fernandes and Gopalakrishna[8], Barua et al.,[3] and Tambawaala and Kale[12] reported high perinatal morbidity and mortality in abruptio placentae, particularly in cases presenting with fetal compromise or intrauterine fetal demise. The high perinatal mortality in the present study may be explained by prematurity, severe placental separation, fetal hypoxia, delayed referral, and high-risk tertiary care case mix. This finding demonstrates that fetal outcome in abruptio placentae depends strongly on severity, gestational age, fetal status at admission, and speed of intervention.

Overall, the present study confirms that abruptio placentae continues to be associated with substantial maternal and perinatal morbidity in tertiary care practice. The high burden of hypertensive disorders, anemia, prematurity, blood transfusion requirement, NICU admission, and perinatal mortality reflects the complex high-risk profile of referred obstetric patients. Strengthening antenatal detection of hypertension and anemia, early referral, timely diagnosis, rapid delivery when indicated, availability of blood products, and coordinated obstetric-neonatal care are essential to improve fetomaternal outcomes.

CONCLUSION

Abruptio placentae remains a significant obstetric emergency associated with considerable maternal and perinatal morbidity. Hypertensive disorders and severe anemia were important associated risk factors in the present study. Adverse neonatal outcomes including prematurity, low birth weight, NICU admission, stillbirth, and increased perinatal mortality were also observed frequently. Early diagnosis, timely referral to tertiary care centers, prompt obstetric intervention, and multidisciplinary management are essential for improving fetomaternal outcomes.

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