VOLUME - 12, ISSUE - 04, APRIL - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper | Obstetrics & Gynaecology

MATERNAL AND NEONATAL OUTCOME OF ABRUPTIO PLACENTAE : A DESCRIPTIVE STUDY FROM RURAL TERTIARY CARE HOSPITAL

Snehal G Murde*	Department of Obstetrics and Gynecology, BKL Walawalkar Rural Medical College, Ratnagiri, Maharashtra, India. *Corresponding Author
Vishal R Harangulkar	Department of Pediatrics, BKL Walawalkar Rural Medical College, Ratnagiri, Maharashtra, India.
Leny E Bhadke	Department of Pediatrics, BKL Walawalkar Rural Medical College, Ratnagiri, Maharashtra, India.
Kanchan D Bhoyar	Department of Obstetrics and Gynecology, BKL Walawalkar Rural Medical College, Ratnagiri, Maharashtra, India.
Prajakta S Kesarkodi	Department of Obstetrics and Gynecology, BKL Walawalkar Rural Medical College, Ratnagiri, Maharashtra, India.
Supriya J Bapat	Department of Obstetrics and Gynecology, BKL Walawalkar Rural Medical College, Ratnagiri, Maharashtra, India.

ABSTRACT

Background: Placental abruption, defined as the premature separation of the placenta from the uterine wall, happens in 0.6%–1% of all pregnancies in the Western world and roughly 4-5% of pregnancies in underdeveloped nations like India. we did this study to comprehend the effects of the abruptio placentae (AP) on neonatal and maternal outcomes and pinpoint the risk variables involved. **Materials and methods:** In the medical college of the rural Konkan region of Maharashtra, a descriptive study was conducted in the obstetrics and gynecology, and pediatrics departments from January 2021 to December 2022. The following clinical data was gathered: Age, parity, gestational age at delivery, birth weight, general physical examination, abdominal and pelvic examinations, and any medical issues such as diabetes mellitus, hypertension, and thyroid illness. **Results:** The neonatal mortality rate was 13.64%, still birth rate was 2.73% and 40% of the cases needed NICU admission. Around 21.82% had abnormal APGAR at 1 minute and 33.64% had abnormal APGAR at 5 minutes in the present study. The low birth weight rate was 66.36% and 44.55% had pre term babies. There was no maternal mortality in the present study. **Conclusions:** Anaemia was the most common maternal outcome associated with placental abruption in the present study. Out of 10 random cases studied, 8 cases had anaemia which was the major co-morbidity. A few cases of HELLP syndrome and DIC have also been reported. There was no maternal mortality reported in the present study. More than ½ of the babies were low birth weight and nearly ½ of them were preterm in the present study.

KEYWORDS : Abruptio placentae; Maternal outcome; Neonatal outcome; Rural area

INTRODUCTION:

Placental abruption, defined as the premature separation of the placenta from the uterine wall, happens in 0.6%–1% of all pregnancies in the Western world and roughly 4-5% of pregnancies in underdeveloped nations like India.[1–3] The illness is characterized by placental malfunction, which when worsens, can reduce the amount of surface area that can be used for the oxygen exchange of the fetus. It is generally known that abruption increases the risk of growth restriction and preterm and perinatal mortality. [4,5]However, other harmful neonatal outcomes connected to hypoxia and preterm, including asphyxia, respiratory distress syndrome, and apnea, are still poorly researched. Additionally, little is known regarding the scope of medical treatments used for newborns that survive adverse birth events, such as neonatal resuscitation in the delivery room or admission to the neonatal intensive care unit (NICU). Last but not least, it is uncertain how much of the risk of newborn morbidity linked to abruption, is due to preterm birth or having a small gestational age (SGA).[6,6]

Smoking, cocaine usage while pregnant, maternal age over 35, hypertension, and placental abruption in a previous pregnancy are all risk factors for placental abruption. Multiple gestation pregnancies, polyhydramnios, preeclampsia, hyperglycemia, abrupt uterine decompression, and a short umbilical cord are particular to the current pregnancy and may cause placental abruption. A significant factor in maternal and perinatal morbidity and mortality is disruption. Pain and vaginal bleeding, the telltale signs of placental abruption, might be present in whole or partial cases.[7–9] Hemorrhagic shock, DIC, renal failure, and neonatal consequences, including hypoxia, anemia, growth restriction, preterm, neurological issues, and early mortality, are all caused mainly by abruption of placenta. Placental separation is linked to hypertensive disorders of pregnancy in 2.5% to 17.9% of cases. [10–12] Although its link to a poor fetomaternal result is becoming more widely known, it is still primarily unpredictable and unpreventable. Hence, we did this study to comprehend the effects of the abruptio placentae (AP) on neonatal and maternal outcomes and pinpoint the risk variables involved.

MATERIALS AND METHODS:

In the medical college of the rural Konkan region of Maharashtra, a descriptive study was conducted in the obstetrics and gynecology, and pediatrics departments from January 2021 to December 2022.

A study conducted by Mukherjee S et al[12] reported that the prevalence of abruptio placentae to be 1.4% in their study. With 95% confidence interval and 2.2% absolute error, we found the minimum sample size to be 110. All cases that presented with antepartum hemorrhage during the study period were included in the study population. Before delivery, the placenta might be entirely or partially separate from its specific location. The diagnosis of AP was made based on the presence of vaginal bleeding, a sensitive and tense abdomen, and a hypertonic uterus. Upon delivery, the placenta was examined locally to determine whether it had separated and

whether a retroplacental hematoma was present. The case was ruled out if clotting or hematoma were unintentionally discovered without any clinical symptoms. All pregnant women with a clinical diagnosis of AP after 28 weeks of gestation were included. The following clinical data was gathered: Age, parity, gestational age at delivery, birth weight, general physical examination, abdominal and pelvic examinations, and any medical issues such as diabetes mellitus, hypertension, and thyroid illness. In order to evaluate the health of the fetus, pertinent investigations were carried out, including laboratory tests like hemoglobin (Hb), peripheral smear, platelet count, coagulation profile, kidney function tests, liver function tests, urine examination, ultrasonography (USG) imaging, and cardiotocography. The patient's socioeconomic status was determined using the 2007 revision of the modified Kuppuswamy socioeconomic status scale. Any complications involving the mother or the fetus were recorded, and patients were addressed following their conditions.

Ethical considerations:

All the study participants were provided informed written consent forms before the start of the study. Strict confidentiality about their particulars was maintained throughout the study. The study was approved by Institutional Ethics committee before the start of the study.

Statistical analysis plan:

The data was collected, compiled, and analyzed using EPI info (version 7.2). The qualitative variables were expressed in terms of percentages. The quantitative variables were categorized and expressed in percentages or terms of mean and standard deviations percentages. The difference between the two proportions was analyzed using the chi-square or Fisher exact test. All analysis was two-tailed, and the significance level was set at 0.05.

RESULTS:

We have included 110 cases of abruption placenta is the present study.

Table 1: Demographic particulars of the sample

Demographic particulars	Frequency	Percentage
Age group (Years)		
18 to 20	5	4.55
21 to 25	56	50.91
25 to 30	40	36.36
>30	9	8.18
Literacy status		
Illiterate	24	21.82
Literate	86	78.18
Socio economic status		
Class I	8	7.27
Class II	11	10.00
Class III	19	17.27
Class IV	72	65.45
Associated conditions (n=110)		
Chronic kidney disease	1	0.91
Eclampsia	1	0.91
Heart disease	3	2.73
Hypertension	10	9.09
Hypothyroidism	4	3.64
Pre eclampsia	22	20.00
Previous C section	16	14.55
Gestational diabetes mellitus	6	5.45

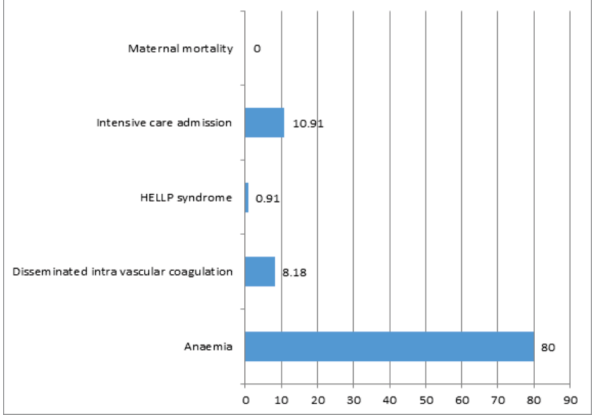
The mean age of the cases was 24.58 ± 3.78 years. Of the 110 cases studied, 21.82% were illiterate, 65.45% of the cases belonged to class IV socioeconomic status and the most common associated condition was pre eclampsia (20%) and previous caeserian section (14.55%).

Table 2: Obstetric history

Obstetric history	Frequency	Percentage
Gravida		
Primi- Gravida	36	32.73
Multi- Gravida	74	67.27
Abortion history		
Present	23	20.91
Absent	87	79.09
Mode of delivery		
Normal vaginal delivery	23	20.91
Caesarean section	87	79.09

Of the 110 cases studied, 32.73% were primigravida, 20.91% had history of abortion and 20.91% had normal vaginal delivery as the mode.

Chart 1: Distribution based on maternal outcome



About 80% of the cases were having anaemia receiving blood transfusions, 10.91% needed intensive care admission for the management of the condition, 8.18% had DIC and one cases showed up with HELLP syndrome.

Table 3: Neonatal outcome

Neonatal outcome	Frequency	Percentage
Outcome of baby		
Alive	92	83.94
Still birth	3	2.73
Intra uterine death	15	13.64
APGAR score at 1 minute		
Normal (≥7)	78	70.91
Abnormal (<7)	32	29.09
APGAR score at 5 minute		
Normal (≥7)	86	78.18
Abnormal (<7)	24	21.82
Low birth weight		
Yes	73	66.36
No	37	33.64
NICU admission		
Yes	44	40.00
No	66	60.00
Others		
Refractory shock	7	6.36
Respiratory distress	27	24.55
Term/Pre term		
Pre term	49	44.55
Term	61	55.45

The neonatal mortality rate was 13.64%, still birth rate was 2.73% and 40% of the cases needed NICU admission. Around 21.82% had abnormal APGAR at 1 minute and 33.64% had abnormal APGAR at 5 minutes in the present study. The low birth weight rate was 66.36% and 44.55% had pre term babies.

Table 4: Association of various parameters with placental abruption

Parameters	Placental abruption				P value
	Present		Absent		
	Frequency	%	Frequency	%	
Age group (Years)					
<25	16	57.14	45	54.88	0.6345
>25	12	42.86	37	45.12	
Literacy status					
Illiterate	7	25.00	17	20.73	0.6368
Literate	21	75.00	65	79.27	
Socio economic status					
Class I	2	7.14	6	7.32	0.6460
Class II	4	14.29	7	8.54	
Class III	3	10.71	16	19.51	
Class IV	19	67.86	53	64.63	
Associated conditions (n=110)					
Chronic kidney disease	1	3.57	0	0	0.0856
Eclampsia	0	0	1	1.22	0.5571
Heart disease	0	0	3	3.66	0.3040
Hypertension	6	21.43	4	4.88	0.0085
Hypothyroidism	2	7.14	2	2.44	0.2509
Pre eclampsia	7	25.00	15	18.29	0.4434
Previous C section	1	3.57	15	18.29	0.0567
Gestational diabetes mellitus	0	0	6	7.32	0.1410
Gravida					
Primi- Gravida	7	25.00	16	19.51	0.5375
Multi- Gravida	21	75.00	66	80.49	
Abortion history					
Present	5	17.86	18	21.95	0.6455
Absent	23	82.14	64	78.05	
Mode of delivery					
Normal vaginal delivery					
Caesarean section					
Outcome of baby					
Alive	21	75.00	71	86.59	0.0104
Still birth	3	10.71	0	0	
Intra uterine death	4	14.29	11	13.41	
APGAR score at 1 minute					
Normal (≥7)	20	71.43	58	70.73	0.9441
Abnormal (<7)	8	28.57	24	29.27	
APGAR score at 5 minute					
Normal (≥7)	21	75.00	65	79.27	0.6356
Abnormal (<7)	7	25.00	17	20.73	
Low birth weight					
Yes	19	67.86	54	65.85	0.8456
No	9	32.14	28	34.15	
NICU admission					
Yes	11	39.29	33	40.24	0.9245
No	17	60.71	49	59.76	
Others					
Refractory shock	1	3.57	6	7.32	0.4872
Respiratory distress	6	21.43	21	25.61	0.6571
Term/Pre term					
Pre term					
Term					
Maternal outcome					
Anaemia	24	85.71	64	78.05	0.3810
HELLP syndrome	0	0	1	1.22	0.5571
ICU admission	3	10.71	9	10.98	0.9654
DIC	1	3.57	8	9.76	0.3020

There was no significant association between the maternal and neonatal factors with presence of abruption in the present study.

DISCUSSION:

A leading cause of vaginal bleeding in the second part of pregnancy, placental abruption complicates roughly 1% of pregnancies. Moreover, it contributes significantly to prenatal morbidity and mortality.[13,14] The morbidity due to abruption in mother depends on severity of abruption, however, the morbidity due to abruption in neonate depends both on the severity of abruption and the gestational age at which it happens. Previous history of abruption, smoking, trauma, cocaine usage, multiple pregnancy, hypertension, preeclampsia, thrombophilia, advanced maternal age, preterm premature membrane rupture (PPROM), intrauterine infections, and hydramnios are risk factors for abruption. Fetal death is usually linked to placental rupture enco mpassing more than 50% of the organ.[15,16] In light of this, we conducted a study to comprehend the maternal and newborn outcomes of the AP patients in our setup.

In the current study, 10.91% of cases required intensive care admission to treat the condition, and more than 80% required blood transfusions for anaemia. 8.18% of cases also had DIC, and one had HELLP syndrome. In a study by Yadav S et al.[17], post-delivery abruption caused coagulopathy in 24 individuals and acute renal injury in 30 patients. Abruption and placenta previa lengthened ICU stays; assisted ventilation was needed for 30 patients, and intranasal oxygen therapy was needed for 120 others. In research by Long et al.[18], APH occurred in 43.6% of PP pregnancies (n=233). Five patients (0.9%) had severe APH with more than 1000 mL of blood loss, while 12 patients (2.2%) had APH with less than 500 mL of blood loss. Aside from that, there were 37 cases (6.9%) of salvage therapy with UAE, five cases (0.9%) of re-hospitalization, 11 cases (2.1%) of puerperal infection, no cases of maternal deaths, seven cases (1.3%) of peripartum hysterectomy, one case (0.2%) of bladder injury, and seven cases (1.3%) of peripartum hysterectomy. The three most common maternal sequelae were PPH (39%), hypovolemic shock (35%), and postpartum anemia (22%). Sepsis (4%), coagulation failure (5%), and renal failure (10%) were further problems. We discovered that the studies by Kiran Kumari et al[19]. showed a 3% fatality rate. Anemia was the most frequent complication in APH patients (51.7%), followed by postpartum hemorrhage (21.4%). A single patient had acute renal failure. Six people with placenta praevia had sepsis. Scar dehiscence occurred in three patients with placenta previa. Three patients with abruption placenta and five with placenta previa underwent a cesarean hysterectomy in the study by Yadav M et al.[20]

In a study by Assesfa et al.[21], women reported postpartum hemorrhage (15%) and anemia in 52 (14.5%) cases. Moreover, one mother passed away. 113 (30%) of the total APH patients admitted to Jimma University Medical Center are at risk for multiple adverse perinatal outcomes, and 192 (50.9%) are at risk for multiple adverse maternal outcomes, according to Gelan M. et al.[22] Thus, three (1.6%) of these women with APH died during the peripartum period, two (66.7%) due to eclampsia, and one (33.3%) due to an anesthesia-related

issue. Just five (2.6%) of these women with unsatisfactory maternal outcomes were referred to the intensive care unit (ICU). Postpartum hemorrhage developed in 44 (24%) of the antepartum hemorrhaging women hospitalized in the maternity and labor ward.

Neonatal mortality was 13.64%, stillbirth was 2.73%, and NICU admission was necessary in 40% of the cases in the current study. Around 21.82% of the subjects in the current study exhibited abnormal APGAR at 1 minute and 33.64% at 5 minutes. In addition, 44.55% of infants were premature, and 66.36% of neonates were underweight. According to studies by Yadav M et al.[20], neonatal jaundice was the most common complication among newborns with APH, followed by preterm delivery (22.3%), birth asphyxia (2.67%), and hyaline membrane disease (0.9%). Of the 112 instances, 69 (61.7%) involved infants with low birth weight. Of those, 53 (47.3%) had placenta previa, and 15 (13.39%) had abruptio placentae. There were 18 stillbirths and early neonatal deaths in the placenta previa instance. Perinatal outcomes reported by Yadav S et al.[17] indicated that placenta previa was associated with higher rates of prematurity than abruption. A placenta in abruptio is more likely to result in delivery asphyxia than a placenta previa. In research by Kiran Kumari et al.48, the combined IUFD, stillbirth, and NICU mortality were 27%. 14% of babies required NICU admission. Average NICU stays were 9.7 and 4.5 days, respectively. 32%, 39%, 19%, and 10% of infants, respectively, were born weighing >2.5kg, 2-2.5kg, 1.5-2kg, and 1-1.5kg, according to birth weight. In Jimma public hospitals, 393 children were born to 377 mothers; 361 (95.8%) were singletons, and the other 16 (4.2%) were twins, according to Gelan M et al.[22] 141 births, or 37.3% of all births, occurred before full term. 246 (65.3%) of the singletons were average weight at birth, 197 (52.3%) were male, and 244 (64.7%) had an Apgar score of 7. Of the 393 births, 283 (72%) were live infants, and 100 (26.5%) were stillbirths.

There were some limitations of the present study. One of the main limitation was the study was restricted to one geographical region. Larger sample studies with multi-center approach have to be conducted in this regard. Nonetheless, this study reflects the epidemiological aspect of the present tertiary care centre included.

CONCLUSIONS:

Anaemia was the most common maternal outcome associated with placental abruption in the present study. Out of 10 random cases studied, 8 cases had anaemia which was the major co-morbidity. A few cases of HELLP syndrome and DIC have also been reported. There was no maternal mortality reported in the present study. More than ¼ of the babies delivered had NICU admission, three cases were reported to be still birth and about 14% was the neonatal mortality rate in the present study. More than ½ of the babies were low birth weight and nearly ½ of them were preterm in the present study.

REFERENCES:

1. Oyelese Y, Ananth C V. Placental abruption. Obstet Gynecol. 2006 Oct;108(4):1005–16.
2. Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. Acta Obstet Gynecol Scand. 2011;90(2):140–9.
3. Sharmila G, Prasanna. Maternal and perinatal outcome in antepartum hemorrhage. Int J Clin Obstet Gynaecol. 2019;3(1):221–5.
4. Bhandari S, Raja EA, Shetty A, Bhattacharya S. Maternal and perinatal consequences of antepartum haemorrhage of unknown origin. BJOG. 2014 Jan;121(1):42–4.
5. Sheikh F, Khokhar SA, Sirichand P, Shaikh RB. A study of antepartum haemorrhage: Maternal and Perinatal outcomes. Med Channel. 2010;16(2):268–71.
6. Giordano R, Cacciatore A, Cignini P, Vigna R, Romano M. Antepartum haemorrhage. J Prenat Med. 2010 Jan;4(1):12–6.
7. Ananth C V. Ischemic placental disease: a unifying concept for preeclampsia, intrauterine growth restriction, and placental abruption. Semin Perinatol. 2014 Apr;38(3):131–2.
8. Parker SE, Werler MM. Epidemiology of ischemic placental disease: a focus on preterm gestations. Semin Perinatol. 2014 Apr;38(3):133–8.
9. Pariente G, Wiznitzer A, Sergienko R, Mazor M, Holcberg G, Sheiner E. Placental abruption: critical analysis of risk factors and perinatal outcomes. J Matern neonatal Med Off J Eur Assoc Perinat Med Fed Asia Ocean Perinat Soc Int Soc Perinat Obstet. 2011 May;24(5):698–702.
10. Ananth C V, Savitz DA, Williams MA. Placental abruption and its association with hypertension and prolonged rupture of membranes: a methodologic review and meta-analysis. Obstet Gynecol. 1996 Aug;88(2):309–18.
11. Bibi S, Ghaffar S, Pir MA, Yousfani S. Risk factors and clinical outcome of placental abruption: a retrospective analysis. J Pak Med Assoc. 2009 Oct;59(10):672–4.
12. Mukherjee S, Bawa AK, Sharma S, Nandanwar YS, Gadam M. Retrospective study of risk factors and maternal and fetal outcome in patients with abruptio placentae. J Nat Sci Biol Med. 2014 Jul;5(2):425–8.
13. Schmidt P, Skelly CL, Raines DA. Placental Abruption. In Treasure Island (FL); 2022.
14. Tikkanen M. Etiology, clinical manifestations, and prediction of placental abruption. Acta Obstet Gynecol Scand. 2010 Jun;89(6):732–40.
15. Ghaheh HS, Feizi A, Mousavi M, Sohrabi D, Mesghari L, Hosseini Z. Risk factors of placental abruption. J Res Med Sci Off J Isfahan Univ Med Sci. 2013 May;18(5):422–6.
16. Downes KL, Grantz KL, Shenassa ED. Maternal, Labor, Delivery, and Perinatal Outcomes Associated with Placental Abruption: A Systematic Review. Am J Perinatol. 2017 Aug;34(10):935–57.
17. Yadav S, Bamnia N. Prospective Observational Study On Maternal And Perinatal Outcome In Antepartum Haemorrhge. Eur J Mol Clin Med [Internet]. 2022;9(1):382–8. Available from: https://www.embase. com/search/results?subaction= viewrecord&id= L2016615657&from= export
18. Long SY, Yang Q, Chi R, Luo L, Xiong X, Chen ZQ. Maternal and neonatal outcomes resulting from antepartum hemorrhage in women with placenta previa and its associated risk factors: A single-center retrospective study. Ther Clin Risk Manag. 2021;17:31–8.
19. Kumari K. Clinical study of maternal and perinatal outcome in oligohydramnios in term patients at a tertiary care institute. MedPulse Int J Gynaecol. 2020;18(3):61–5.
20. Yadav MC. A Study of Antepartum Hemorrhage and Its Maternal and Perinatal Outcome at Tertiary Care Hospital in Western Rajasthan. J Med Sci Clin Res. 2019;7(9):80–5.
21. Assefa A, Fantahun Y, Mesfin E. Maternal and Perinatal Outcome of Antepartum Hemorrhage At Three Teaching Hospitals in Addis Ababa, Ethiopia. Ethiop J Reprod Heal. 2020;12(3):12–9.
22. Gelan M, Bekela T, Angasu K, Ebisa M. Adverse Perinatal and Maternal Outcomes and Associated Factors among Women with Antepartum Hemorrhage in Jimma University Medical Center, Southwest Ethiopia, 2020. Obstet Gynecol Int. 2022;2022.