



Pregnancy Outcomes in Placental Abruption in a Tertiary Care Centre in Karnataka

Riya Bhattacharya^{1*} and A. C. Ramesh¹

¹*Department of Obstetrics and Gynaecology, JJM Medical College Davangere, Karnataka, India.*

Authors' contributions

This work was carried out in collaboration between both authors. Author RB designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author ACR managed the analyses of the study. Both authors read and approved the final manuscript.

Article Information

Editor(s):

(1) Dr. B. Eghon Guzman, Department of Obstetrics and Gynaecologist, Hospital Dr. Sotero del Rio, Santiago, Chile.

Reviewers:

(1) Shigeki Matsubara, Jichi Medical University, Japan.

(2) Rana Choudhary, Wockhardt Hospital, India.

(3) S. Sreelatha, India.

Complete Peer review History: <http://www.sdiarticle4.com/review-history/54352>

Received 25 November 2019

Accepted 27 January 2020

Published 05 February 2020

Original Research Article

ABSTRACT

Background: Abruptio placenta is a serious obstetric emergency which requires adequate management to avoid catastrophic events including maternal death.

Objective: To determine maternal and perinatal outcome and associate maternal risk factors on the outcome of pregnancy in patients with abruption whom we treated in the institute.

Materials and Methods: Retrospective study of 64 cases of placental abruption carried out in the Obstetric Department in JJM Medical College, Davangere between October 2018 and September 2019.

Results: The incidence of abruption was 0.65% (64 out of 9800 deliveries). Abruptio more often occurred in multipara and women from lower socioeconomic status. It occurred most commonly between 26-30 yrs of women. Severe preeclampsia and previous history of caesarean section were leading associated risk factors (45% and 18% respectively). Anaemia was the commonest maternal complication followed by postpartum haemorrhage. Peripartum hysterectomy was done in two out of 64 cases. Maternal deaths were two.

Conclusion: In this study we identified clinical profiles of patients with abruptio placentae. With early recognition of the pre-existing risk factors, timely diagnosis and early intervention, the maternal and perinatal morbidity and mortality can be significantly reduced.

Keywords: *Abruptio placenta; risk factors; pregnancy outcomes.*

1. INTRODUCTION

Placental abruption is a serious obstetric complication which is characterized as separation of a normally situated placenta after 20 weeks of gestation and prior to the birth of the fetus [1]. It occurs in 0.4-1% of all singleton pregnancies. The detached portion of placenta is unable to exchange gases and nutrients when the remaining feto-placental unit is unable to compensate for this loss of function, the fetus is compromised [2]. It is associated with adverse maternal and neonatal morbidity and mortality. Maternal complications include haemorrhagic shock, coagulopathy and disseminated intravascular coagulation (DIC), uterine rupture, renal failure, ischemic necrosis of distal organs and death [3]. Neonatal complications include prematurity, birth asphyxia, anaemia, fetal growth retardation and stillbirth [4]. Primary cause of abruption is unknown but one of the hypothesis suggests the involvement of placental or vascular abnormalities because of failure of secondary invasion of trophoblastic villi. Abnormal placentation, vascular malformations, and increased fragility of vessels predispose to hematoma formation, resulting in separation of the placenta [3]. The main predisposing factors are advancing age, parity, anaemia, poor nutrition, smoking, hypertensive pregnancies, gestational diabetes mellitus, premature rupture of membrane, and in women with previous caesarean section and women with previous history of placental abruption [5]. The clinical hallmarks of abruption are vaginal bleeding, abdominal pain, uterine hypertonicity with associated high frequency, low amplitude uterine contractions . Premature labour, maternal hemodynamic instability, fetal distress and death are the other associated findings [6]. Placental

abruption may be revealed where blood trickles between the membranes and and escapes through the vagina and cervix or concealed where blood collects behind the placenta with no evidence of vaginal bleeding or mixed type.

The signs and symptoms vary depending on the severity of bleeding and degree of separation of the placenta. As the clinical profiles of patients with abruption placenta have not been well characterized in this area and thus we attempted to determine them in this study. Maternal and fetal survival depends on early diagnosis and intervention [7].

2. MATERIALS AND METHODS

2.1 Procedure

This is a retrospective observational study conducted by analysing the cases of abruptio placenta admitted to the Department of Obstetrics and Gynaecology to all the attached hospitals in JJM Medical College, Davangere ie. Chigateri General Hospital, Women and Child Health Hospital and Bapuji Hospital from 1st October 2018 to 30th September 2019. A total of 64 cases were included in the study. Details regarding the age of the patient, parity and maternal high-risk factors were collected. Diagnosed was based on clinical signs and symptoms of vaginal bleeding, tense and tender abdomen, hypertonic uterus. Each case was confirmed by ultrasonography and at delivery by the local examination of placenta for separation and presence of a retroplacental clots following which it was clinically graded. All other causes of antepartum haemorrhage like placenta previa and other extraplacental causes were excluded. Detailed obstetric history was obtained and any

Table 1. Clinical classification of placental abruption

Grading	Severity	Clinical manifestation
Grade 0	Asymptomatic	Diagnosis made after inspection of placenta following delivery .
Grade 1	Mild	Vaginal bleeding is slight, uterus is irritable, tenderness may be minimal or absent, maternal blood pressure and fibrinogen levels unaffected, fetal heart sound good.
Grade 2	Moderate	Vaginal bleeding is mild to moderate, uterine tenderness present, maternal pulse increased, blood pressure mainted and fibrinogen - unaffected or decreased, shock absent, fetal distress or even fetal death occurs.
Grade 3	Severe	Bleeding moderate to severe or concealed, uterine tenderness marked, coagulation defect or anuria associated, shock pronounced, fetal death always present.

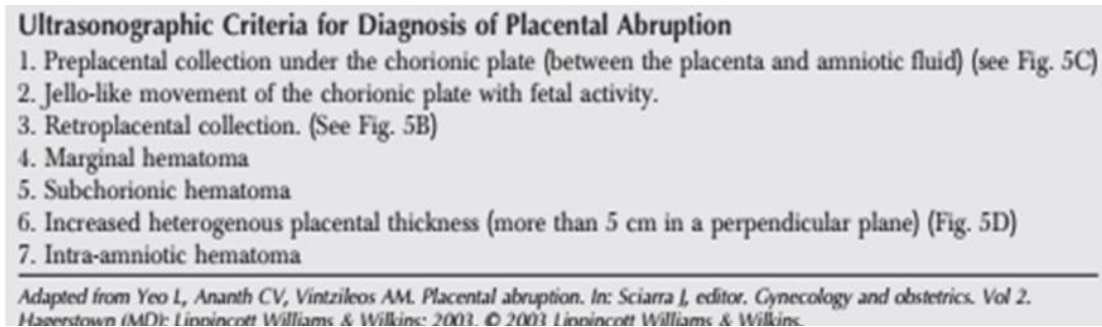


Fig. 1. Ultrasonographic criteria for diagnosis of placental abruption

associated maternal high risk factors were noted. Relevant laboratory investigations like haemoglobin, peripheral smear, platelet count, coagulation profile, renal function test, liver function test, urine routine and microscopy and ultrasonography were performed. Maternal complications studied were postpartum haemorrhage, disseminated intravascular coagulopathy, anaemia, need for blood transfusions. Fetal outcome in the form of perinatal mortality, prematurity and admission to the neonatal care unit were studied. All information were entered and analysed using Microsoft Excel software.

3. RESULTS

Total number of 9800 deliveries took place in the study period, out of which total number of abruption cases were 64. The incidence of placental abruption was 0.65%.

Table 2. Distribution of age

Age	Total cases	Percentage
20-25 years	25	39.06%
26-30 years	32	50%
>30 years	7	10.93%

Table 2 shows maximum cases of abruptio placenta from age group 26-30 years with a

mean age of 28.4. Most of them are from lower socioeconomic status. Out of 64 cases, 43 were unbooked and not taking antenatal care.

Table 3. Distribution according to order of gravid

Parity	Total cases	Percentage
Primigravida	14	21.8%
G2	27	42.5 %
G3	13	20.3%
G4,G5	10	15.6%

Table 3 shows a higher incidence of abruptio placenta in multiparous patients mostly in second gravidas.

Table 4. Distribution according to gestational age at presentation

Gestational age	Number of cases	Percentage
<25 weeks	1	1.56%
26-30 weeks	12	18.75%
31-35 weeks	20	31.25%
36-40 weeks	29	45.3%

Table 4 shows 45.3% of the cases presented between 36 -40 weeks of gestation, 24 were term gestation followed by 31-35 weeks of gestation.

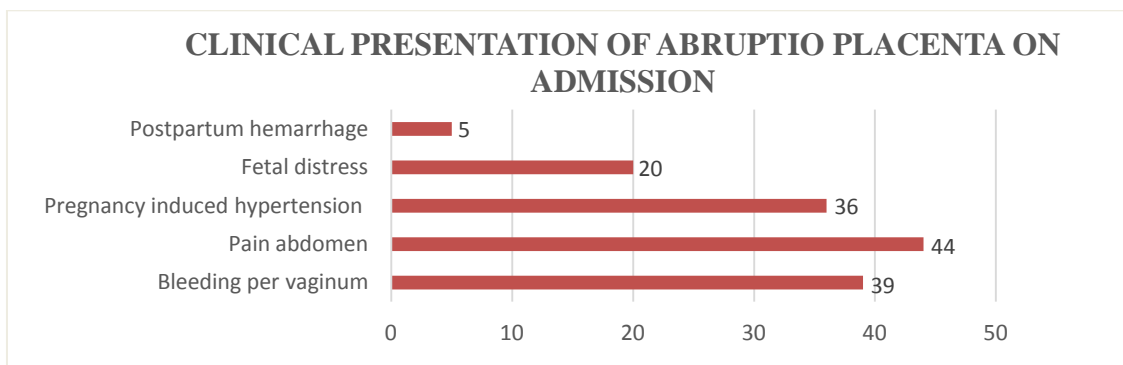


Fig. 2. Distribution of cases according to clinical presentation

Table 5. Distribution according to grading of abruptio placentae

Grading of abruptio placenta	No of cases	Percentage
Grade 0	18	28%
Grade I	26	40%
Grade II	15	24%
Grade III	5	8%

Table 5 shows that most of the cases of abruptio placenta was of grade 1 type ie. 40% followed by grade 0 ie 28% then grade 2. Only 5 patients were diagnosed as grade 3 abruptio placenta.

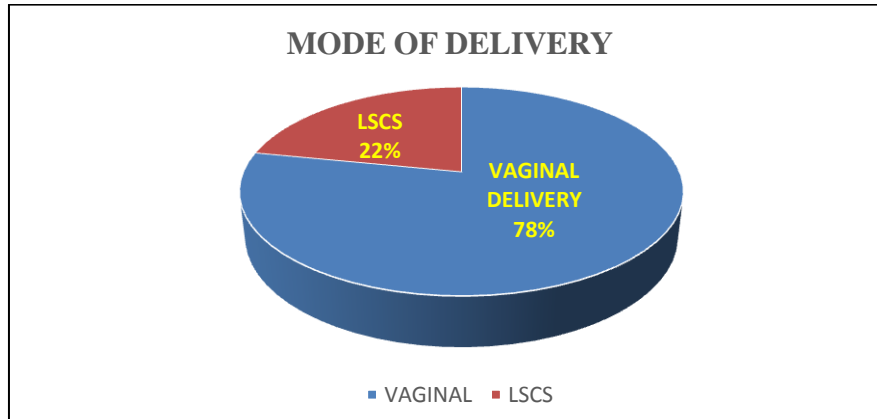


Fig. 3. Distribution of cases according to mode of delivery

Fig. 3 depicts that out 64 cases, 78% delivered vaginally and the remaining 22% had undergone LSCS.

Table 6. Distribution according to associated risk factors

Risk factors	Total cases	Percentage
Pre-eclampsia	29	45%
Previous 1 LSCS	12	18%
Previous history of Abruptio	10	15.6%
Rh Negative Status	6	9%
Type II Diabetes Mellitus	1	1.5%
Multiple Gestation	1	1.5%
Preterm Premature Rupture of Membranes	1	1.5%
Hypothyroidism	1	1.5%
Chronic Hypertension	1	1.5%

In Table 6, severe preeclampsia and previous history of caesarean section emerged as leading associated risk factors (45% and 18% respectively). Multiple gestation, PPROM, Chronic hypertension, hypothyroidism, Type 2 Diabetes Mellitus were the other associated risk factors.

Table 7. Distribution according to maternal complications

Complication	Total cases	Percentage
Anemia	26	40.6%
Need for Blood Transfusion	18	28.12%
Haemorrhagic Shock	4	6.25%
DIC	6	9.3%
PPH	16	25%
Uteroplacental apoplexy	5	7.8%
Peripartum Hysterectomy	2	3.1%

In Table 7, anaemia was the commonest maternal complication ie. 40% followed by disseminated intravascular coagulation (DIC) in 9%. Postpartum hemorrhage (PPH) was seen in 25% of cases. Peripartum hysterectomy was done in two out of 64 cases ie in 3.1%. 2 maternal deaths were noted. The cause of death were cardiopulmonary arrest secondary to grade 3 abruptio placenta in disseminated intravascular coagulopathy and septic shock with disseminated intravascular coagulopathy.

Table 8. Distribution according to fetal complications

Complication	Total cases	Percentage
NICU admission	35	54.68%
Perinatal mortality	24	37.5%
IUD on admission	18	28.12%
Preterm	25	39.06%

Table 8 shows that out Perinatal mortality was 37.5%. Out of 64 cases, 18 were intra uterine fetal demise on admission, 35 required NICU admission. Fetal complications included hypoxia, prematurity, growth restriction, anemia, neurodevelopment problems and death.

4. DISCUSSION

Placental abruption is one of the serious complications of pregnancy, as it leads to both poor maternal and fetal outcome .The incidence of abruptio placentae in our study is 0.65% which corresponds with the incidence that has been reported previously [8,9] It also falls within the range of 0.4-1% reported by other studies [10,11]. We found that 45% cases were associated with pregnancy-induced hypertension which in itself worsens the outcome of placental abruption. Similar study between the association of risk of abruptio placentae with chronic hypertension and preeclampsia by Krammer MS et al was comparable to our study [12]. Risk of abruptio placentae is increased by 18% with prior caesarean section in our study which is similar to the study conducted by Rasmussen, et al. [8,13]. The association between abruptio placentae and its recurrence is 15.6% in our study which is comparable to the study conducted by Cunningham, et al. [14]

The most common age of presentation in this study was between 26-30 years with mean age of 28.4 years. Majority of cases belonged to gravida 2 and primigravida followed by gravida 3. Most of the placental abruption cases presented

after 31 weeks of gestation, specifically between 36 to 40 weeks of gestation. Most common complaints were pain abdomen and bleeding per vagina. Most of the cases ie.78% weredelivered vaginally and the remaining 22% bylower segment caesarean section. Majority of the cases delivered live-born fetus, out of them almost 54.6% newborns required specialized care under NICU. 28.12% cases had intrauterine fetal deaths, perinatal mortality rate was 37.5%. Among the maternal complications, anaemia was the most common complication in 40% followed by postpartum haemorrhage, disseminated intravascular coagulopathy, shock. Couvelaire uterus was seen in 7.8% cases. PPH occurred in 25% of patients in our study similar to the study conducted by Talpur NN, et al. in which PPH was observed in 28% of patients [15]. DIC was associated with 9.3% of the patients in our study. Sher G observed DIC in 10-20% of his study patients with severe abruption and fetal demise which is comparable to our study [16].

5. CONCLUSION

Despite advances in obstetrics, placental abruption still remains an unpredictable and unpreventable serious complication. An understanding of predisposing factors and fetomaternal outcomes will help us manage these cases with a foresight. In this study we have identified hypertensive disorders, history of multiparity, prior LSCS and previous history of placental abruption as most important associated risk factors. Treatment depends on the severity of abruption and the gestational age. Hence, early recognition, timely diagnosis and appropriate medical intervention is needed to ensure a good outcome and reduce the morbidity and mortality.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Konje JC, Taylor DJ. Bleeding in later pregnancy. In: James DK, Steer PJ,

- Weiner CP, Gonik B editors. High risk pregnancy 3rd ed. Philadelphia: Pennsylvania. 2006;1266-71.
2. Sengodan SS, Dhanapal M. Abruptio placenta: A retrospective study on maternal and perinatal outcome. *Int J Reprod Contracept Obstet Gynecol* 2017;6:4389-92.
 3. Oyelese, Ananth. Placental abruption. *Obstet Gynecol.* 2006;108(4):1005-16.
 4. Pitaphrom A, Sukcharoen N. Pregnancy outcomes in placental abruption. *J Med Oncolassoc Thai.* 2006;1572-8.
 5. Tikkanen M, Nuutila M, Hiilesmaa V, Paavonen J, Ylikorkala O. Clinical presentation and risk factors of placental abruption. *Acta Obstet Gynecol Scand.* 2006;85:700-5.
 6. 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;5(2):425.
 7. Plowman RS, Javidan C, Raptis CA. Imaging of pregnancy-related vascular complications. *Radiographics.* 2017;37(4):1270-89.
 8. Getahun G, Oyelese Y, Salihu HM, Ananth CV. Previous cesarean delivery and risks of placenta previa and placental abruption. *Obstet Gynecol.* 2006;107(4):771-8.
 9. Wasnik SN, Naiknaware SV. Antepartum haemorrhage: Causes and its effects on mother child: An evaluation. *Obstetri Gynaecol Internat J.* 2015;3(1):00072.
 10. Ananth CV, Getahun D, Peltier MR, Smulian JC. Placental abruption in term and preterm gestations: Evidence for heterogeneity in clinical pathways. *Obstet Gynecol.* 2006;107(4):785-92.
 11. Ananth CV, Wilcox AJ. Placental abruption and perinatal mortality in the United States. *AJE.* 2001;153(4):332-7.
 12. Kramer MS, Usher RH, Pollack R, Boyd M, Usher S. Etiologic determinants of abruptio placentae. *Obstet Gynecol.* 1997; 89:221-6.
 13. Rasmussen S, Irgens LM, Dalaker K. A history of placental dysfunction and risk of placental abruption. *Paediatr Perinat Epidemiol.* 1999;13(1):9-21.
 14. Cunningham GF, Mac Donald PC, Gant NF, et al. eds, chapter 37. Obstetric hemorrhage. In: *Williams obstetrics.* 19th ed. Norwalk: Appleton & Lange. 1993; 819-51.
 15. Talpur NN, Memon SR, Jamro B, Korejo R. Maternal and fetal morbidity with abruptio placentae. *Rawal Med J.* 2011;36(4):297-300.
 16. Sher G. Pathogenesis and management of uterine inertia complicating abruptio placentae with consumption coagulopathy. *Am J Obstet Gynecol.* 1977;129:164-70.

© 2019 Bhattacharya and Ramesh; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:
<http://www.sdiarticle4.com/review-history/54352>