

## FOETAL OUTCOME AMONG ABRUPTIO PLACENTAE CASES AT A TERTIARY HOSPITAL IN KERALA, INDIA- A RETROSPECTIVE ANALYSIS

Thanku Thomas Koshy<sup>1</sup>, Rachel Alexander<sup>2</sup>

<sup>1</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Government Tirumala Devaswom Medical College, Alappuzha, Kerala.

<sup>2</sup>Assistant Professor, Department of Obstetrics and Gynaecology, Government Tirumala Devaswom Medical College, Alappuzha, Kerala.

### ABSTRACT

#### BACKGROUND

Abruptio placentae denotes separation of a normally implanted placenta after 20 weeks of gestation. This is a uniquely dangerous condition to both the mother and the foetus because of its potentially serious pathologic sequelae. Abruptio placentae may lead to antagonistic foetal outcomes such as low birth weight, preterm birth, intrauterine growth restriction, birth asphyxia, foetal distress, low Apgar score, transfer to neonatal intensive care unit, stillbirth, congenital anomalies and perinatal death.

The objective of this study is to examine the foetal outcomes in abruptio placentae cases in a tertiary care center in Kerala.

#### MATERIALS AND METHODS

This is a retrospective study of Abruptio placentae cases carried at a tertiary centre in, Kerala. In our study we examined 99 women whose deliveries were complicated by abruption of placenta with onset preceded by the presence of active foetal movement. Statistical constants like mean, standard deviation and percentages were computed using appropriate formulae.

#### RESULTS

Incidence of Abruptio placentae was 0.32%. It is most common in the women of age group 21-24 years. Regarding the grade of abruption, maximum number of cases belonged to Page's grade 2, and the least number of cases were seen in grade 3. Abruptio was found to be a major contributor to perinatal mortality, with 43.43% of cases suffering a foetal loss. The causes of adverse foetal prognosis were prematurity and foetal hypoxia. The Apgar score of the babies were found to decrease, as the severity of abruption increased.

#### CONCLUSION

Abruptio placentae is related with poor perinatal outcome. Hence early diagnosis and prompt resuscitative measures would prevent perinatal morbidity and mortality.

#### KEYWORDS

Abruptio Placenta, Page's Grading, Perinatal Outcome, Apgar Score.

**HOW TO CITE THIS ARTICLE:** Koshy TT, Alexander R. Foetal outcome among abruptio placentae cases at a tertiary hospital in Kerala, India- a retrospective analysis. J. Evid. Based Med. Healthc. 2018; 5(15), 1324-1327. DOI: 10.18410/jebmh/2018/274

#### BACKGROUND

Abruptio placentae is the process of premature separation of the normally implanted placenta after 20 weeks of gestation and prior to the birth of the foetus. Worldwide it is considered as one of the major reason of foetal and maternal morbidity and mortality, especially in the developing and under developed countries.<sup>1,2,3</sup> Numerous risk factors such as former history of abruptio placentae, previous history of caesarean section, current diabetes mellitus, multiparity, maternal cigarette smoking, multiple gestations, chronic hypertension, preeclampsia, premature rupture of

*Financial or Other, Competing Interest: None.*

*Submission 06-02-2018, Peer Review 15-02-2018,*

*Acceptance 02-04-2018, Published 09-04-2018.*

*Corresponding Author:*

*Dr. Thanku Thomas Koshy,*

*Department of Obstetrics and Gynaecology,*

*Government TD Medical College,*

*Alappuzha- 688005, Kerala.*

*E-mail: drthanku@gmail.com*

*DOI: 10.18410/jebmh/2018/274*

membranes, thrombophilic disorders, abdominal trauma and polyhydramnios are associated with abruptio placentae.<sup>4</sup>

The signs of abruptio placentae in patients vary depending on the severity of bleeding and degree of separation of the placenta. Clinical presentations of abruptio placentae include vaginal bleeding, abdominal pain, uterine tenderness, abnormal uterine contractions, premature labor, maternal instability and identification of retroplacental clots at delivery.<sup>5</sup> Diagnosis of abruptio placentae is most commonly made in the third trimester, but the term may be used after the 20th week of pregnancy when the clinical and pathological criteria are met.

Abruptio placentae may lead to numerous maternal complications like atonic postpartum haemorrhage, renal failure, disseminated intravascular coagulation and even maternal death.<sup>6</sup> Besides maternal complications, abruptio placentae can also lead to antagonistic foetal outcomes such as low birth weight, preterm birth, intrauterine growth restriction, birth asphyxia, foetal distress, low Apgar score, transfer to neonatal intensive care unit, stillbirth, congenital anomalies and perinatal death.<sup>7</sup> Researches on neonatal



complications due to Abruptio placentae have been carried out in developed countries. But only limited studies are conducted in developing nations to explore the Abruptio placentae complications in foetal outcomes.

#### *Aims and Objectives*

This present study was conducted to determine the foetal outcomes in abruptio placentae cases in tertiary care centre in Kerala.

#### **MATERIALS AND METHODS**

A retrospective study was carried out at a tertiary care centre in Kerala. The sample population of this study consist of 99 cases of placental abruption, diagnosed and delivered at a tertiary care centre during the study period of two years.

Ninety-nine patients admitted with clinical presentation of Abruptio placentae were included in this study. The diagnosis was based on evidence of retroplacental clot accompanied by clinical features such as vaginal bleeding, pain abdomen or uterine tenderness. All the participants were informed about this research and written consents were obtained from each participant. To avoid inter observer and instrumental bias; all measurements were taken by the same measuring instrument/scale and by same person. The data were entered into master sheets and necessary statistical tables were constructed. Statistical constants like mean, standard deviation and percentages were computed using appropriate formulae.

#### **RESULTS**

The results of Abruptio placentae in neonatal outcomes are depicted in the following tables. We adopted Page's classification for abruptio placenta. Table 1 shows the grades of abruption in sample population. Maximum no. of cases were noted in grade 2 (44.44%) with foetal distress or death and least number of cases were reported in grade 3. The amount of retroplacental clot signifies the severity of placental separation, and maternal exsanguination, and thereby the subsequent maternal & foetal complications. The mean weight of retroplacental clot in grade 0 and 1 was 162.5 grams and 224.7 grams in grade 2 & 3. The standard deviation was 108 and 153 for grade 0 & 1 and grade 2 & 3 respectively.

Grade	Frequency	Percentage
Grade 0	11	11.11
Grade 1	38	38.38
Grade 2	44	44.44
Grade 3	6	6.06
Total	99	100

**Table 1. Distribution According to Page's Grade of Abruptio**

Table 2 shows the presentation of foetus. Majority of the fetuses (92.92%) were in vertex presentation. There were 6% cases of breech and 1% case of transverse lie.

Presentation	Frequency	Percentage
Vertex	92	92.92
Breech	6	6.06
Transverse	1	1.01
Total	99	100

**Table 2. Presentation of Foetus**

Table 3 portrays the methods of delivery in abruptio placentae women. In 56 cases (56.56%) the abdominal route of delivery was resorted to. 34 cases needed oxytocin augmentation after ARM to attain a vaginal delivery. 5 cases had a caesarean section in the previous pregnancy and underwent repeat section. In 5 cases, abruption developed after induction with prostaglandin E<sub>2</sub>.

Methods of Delivery	Frequency	Percentage
Spontaneous delivery	3	3.03
ARM, Vaginal delivery	6	6.06
ARM, Oxytocin, Vaginal delivery	34	34.34
Caesarean Section	56	56.56
Total	99	100

**Table 3. Methods of Delivery**

Relationship between the grade of abruption and the route of delivery is shown in table 4. Caesarean section was resorted to in 73.46 % cases of grade 0 and 1, while it was only 40% in grade 2 and 3. There was statistically significant ( $p$  value < 0.001) difference between two modes of delivery. This difference has great bearing on the foetal outcome and the prevention of maternal complications. An early decision to terminate the pregnancy by caesarean section has improved the perinatal outcome and has helped to reduce the maternal complications.

Grade	Vaginal Delivery		Caesarean Section	
	Frequency	%	Frequency	%
Grade 0 and 1	13	13.13	36	36.36
Grade 2 and 3	30	30.30	20	20.20
Total	43	43.43	56	56.57

**Table 4. Relationship between the Grade of Abruptio and the Route of Delivery**

Table 5 depicts the sex of baby and occurrence of abruption. There is not much difference in the male-female distribution.

Sex of Baby	Frequency	Percentage
Male	49	49.49
Female	50	50.51
Total	99	100

**Table 5. Sex of Baby and Occurrence of Abruptio**

Table 6 depicts the relationship with the outcome of previous pregnancy and current abruptio placentae. The obstetric career is found to have a strong bearing on the incidence of abruptio placentae. The study group had 5 cases of foetal loss in the previous pregnancy (5.05%) and this includes the case of a patient who had three repeated abruptions and foetal loss occurred in all the three.

Outcome of Previous Pregnancy	Frequency	%
Live birth	33	33.30
1 trimester abortion	14	14.14
IUD, still birth or neonatal death	5	5.05
Primi gravidas	47	50.51
Total	99	100

**Table 6. Relationship with Previous Pregnancy Outcomes and Current Abruptio Placentae**

Table 7 depicts the foetal outcomes in placental abruption. 56.56% women in the study group had live births, while the remaining 43 women had foetal death in the form of IUD (27.27%), still birth (8.08%) or neonatal death (8.08%). Out of the total 8 neonatal deaths, 3 were due to prematurity and 4 were due to birth asphyxia. There was one case of foetal death due to anencephaly and meningomyelocele. This reflects that abruptio placentae may increase the perinatal mortality rate.

Status of Foetal Outcome	Frequency	Percentage
Live birth	56	56.56
Intrauterine death	27	27.27
Still birth	8	8.08
Neonatal death	8	8.08
Total	99	100

**Table 7. Foetal Outcome in Abruptio Placentae**

Table 8 depicts the association between foetal outcome and grade of abruption. In our study 43 women had foetal death in the form of IUD, still birth or neonatal death. 47.47% fetuses survived in grade 0 & 1, whereas only 9.09% babies survived in grade 2 & 3. The prenatal mortality rate was 41.41% in grade 2 & 3 whereas the mortality rate was only 2.02% in grade 0 & 1. This shows an increasing rate of adverse effect of severe placental abruption on the foetal survival. This difference was statistically significant as the p value was less than 0.05.

Grade	Foetus Survived		Not Survived	
	Frequency	%	Frequency	%
Grade 0 & 1	47	47.47	2	2.02
Grade 2 & 3	9	9.09	41	41.41
Total	56	56.57	43	43.43

**Table 8. Association Between Foetal Outcome and Grade of Abruptio**

In our series, the mean birth weight was 2.39 kg in grade 0 & 1 and standard deviation was 0.5. In grade 2 & 3 the mean birth weight was 1.63 kg and standard deviation was 0.6. We found significant difference in the birth weights of grade 0&1 and grade 2 & 3. The decreased birth weight in grade 2 & 3 was contributed by prematurity and growth retardation, which also had its bearing on the perinatal outcome. The mean Apgar score in grade 0 & 1 was 8.06 and 3.9 in grade 2 & 3. The standard deviation was 1.6 and 2.9 in grade 0 & 1 and grade 2 & 3 respectively. The Apgar score was statistically significant ( $p < 0.001$ ) between two groups (Grade 0 & 1 and grade 2 & 3).

## DISCUSSION

During the study period of two years we found 99 cases of abruptio placentae among 30661 deliveries. The incidence of abruptio placentae was 0.32%. Ananth et al. reviewed 13 studies with 1.6 million pregnancies and reported an incidence of 1 in 55 cases of placental abruption.<sup>8</sup> The incidence of abruptio placentae appears to be decreasing over years. This may be due to the reduction in the number of high parity women cases, community wide availability of prenatal care and improved emergency transport facilities.<sup>9</sup>

Average age of study group was 26 years with standard deviation of 4.1. Maximum numbers of women with placental abruption belonged to the age group of 20 to 24 years and minimum number was found in the age group above 35 years old. Incidence of Abruptio placentae increases with age of pregnant woman.<sup>10</sup> The mean gestational age was 34.4 weeks for women with placental abruption and the standard deviation was 3.7 weeks. In our study there were 47 primi gravidas, 9 fourth gravidas and 1 sixth gravida. Previous studies confirmed that incidence of Abruptio placentae is less than 1% among primi gravidas and 2.5% among grand multiparas.<sup>11,12</sup>

Abruptio of placenta deprives the foetus of oxygen and nourishment.<sup>13</sup> Babies born after severe placental abruption have low Apgar scores.<sup>14,15</sup> Intrapartum asphyxia may lead to long term consequences among survivors. Chances of development of cystic periventricular leucomalacia or intraventricular haemorrhage are higher in neonates born after severe placental abruption.<sup>16,17</sup> The risk increases with prematurity and low birth weight. Severe placental abruption increases the risk for cerebral palsy and it is also linked with sudden infant death syndrome.<sup>18,19</sup> Preterm births are often associated with birth weight < 2500 g. Other consequences of placental abruption include foetal growth restriction, anaemia and hyperbilirubinemia of the new-born.<sup>20</sup>

Pregnancies complicated by abruptio placenta have tenfold increased risk for perinatal death. According to Spinillo et al., there is a greater risk for long term abnormal neurobehavioral outcomes in infants born after placental abruption.<sup>21</sup> In abruptio placenta, the incidence of abnormal foetal heart tracings and emergency caesarean section are high. When caesarean is required in the case of placental abruption with foetal bradycardia, a decision to incision interval of less than 20 minutes shows a better foetal outcome compared to 30-minute interval.<sup>22</sup> As 60 percent of fetuses may develop foetal bradycardia, continuous foetal heart rate monitoring is also required. About 40 percent of patients with placental abruption will have demonstrable signs of consumptive coagulopathy. A thorough knowledge of the natural history of severe placental abruption is required for adequate management of abruption with foetal demise and consumptive coagulopathy.<sup>23</sup>

## CONCLUSION

Abruptio placentae is considered to be a dreaded obstetrical emergency. If placental abruption is not diagnosed and managed at the earliest, it may result in perinatal morbidity and mortality.

We studied the perinatal outcomes associated with abruptio placentae. Most of the factors identified in our study were found to be consistent with known risk factors in various other studies. We report an incidence of 0.32% of Abruptio placentae in our study. When compared with normal pregnancies, pregnancies complicated by abruptio have a tenfold increased risk for perinatal death. Abruptio was found to be a major contributor to perinatal mortality, with 43.43% of cases suffering a foetal loss. Prematurity and foetal hypoxia were the causes of adverse foetal prognosis. The Apgar score of the babies were found to decrease, as the severity of abruptio increased. Though we cannot prevent the unprecedented occurrence of this form of ante partum haemorrhage due to placental abruptio, adequate antenatal care, education of the patient to report to hospital when symptoms occur, better transport facilities, early diagnosis and timely decision to conduct prompt delivery and adequate blood transfusion will improve both maternal and foetal outcomes.

## REFERENCES

- [1] Pariente G, Wiznitzer A, Sergienko R, et al. Placental abruptio: critical analysis of risk factors and perinatal outcomes. *J Matern Foetal Neonatal Med* 2011;24(5):698-702.
- [2] Bibi S, Ghaffar S, Pir MA, et al. Risk factors and clinical outcome of placental abruptio: a retrospective analysis. *J Pak Med Assoc* 2009;59(10):672-674.
- [3] Ananth CV, Oyelese Y, Yeo L, et al. Placental abruptio in the United States, 1979 through 2001: temporal trends and potential determinants. *Am J Obstet Gynecol* 2005;192(1):191-198.
- [4] Jabeen M, Gul F. Abruptio placentae: risk factors and perinatal outcome. *J Postgraduate Med Inst* 2011;18(4):669-676.
- [5] Chamberlain G, Steer PJ. Abnormal antenatal care. In *Turnbull's obstetrics*. 3<sup>rd</sup> edn. Churchill Livingstone 2001:220-225.
- [6] Wills V, Abraham J, Rajeev A. Abruptio placenta: an analysis of risk factors and perinatal outcome. *Academic Medical Journal of India* 2015;3(1):18-24.
- [7] Jakobsson M, Gissler M, Paavonen J, et al. The incidence of preterm deliveries decreases in Finland. *BJOG: An International Journal of Obstetrics and Gynaecology* 2008;115(1):38-43.
- [8] Ananth CV, Savitz DA, Luther ER. Maternal cigarette smoking as a risk factor for placental abruptio, placenta previa, and uterine bleeding in pregnancy. *Am J Epidemiol* 1996;144(9):881-889.
- [9] Pritchard JA. Genesis of severe placental abruptio. *American Journal of Obstetrics and Gynecology* 1970;108(1):22-27.
- [10] Rasmussen S, Irgens LM, Bergsjø P, et al. Perinatal mortality and case fatality after placental abruptio in Norway 1967-1991. *Acta obstetrica et Gynecologica Scandinavica* 1996;75(3):229-234.
- [11] Kramer MS, Usher RH, Pollack R, et al. Etiologic determinants of abruptio placentae. *Obstet Gynecol* 1997;89(2):221-226.
- [12] Hibbard BM, Jeffcoate TN. Abruptio placentae. *Obstet Gynecol* 1966;27(2):155-167.
- [13] Oyelese Y, Ananth CV. Placental abruptio. *Obstet Gynecol* 2006;108(4):1005-1016.
- [14] Toivonen S, Heinonen S, Anttila M, et al. Obstetric prognosis after placental abruptio. *Foetal Diagnosis and Therapy* 2004;19(4):336-341.
- [15] Allred LS, Batton D. The effect of placental abruptio on the short-term outcome of premature infants. *Am J Perinatol* 2004;21(3):157-162.
- [16] Spinillo A, Fazzi E, Stronati M, et al. Severity of abruptio placentae and neurodevelopmental outcome in low birth weight infants. *Early Hum Dev* 1993;35(1):45-54.
- [17] Gibbs JM, Weindling AM. Neonatal intracranial lesions following placenta abruptio. *Eur J Pediatr* 1994;153(3):195-197.
- [18] Klonoff-Cohen HS, Srinivasan IP, Edelstein SL. Prenatal and intrapartum events and sudden infant death syndrome. *Paediatric and Perinatal Epidemiology* 2002;16(1):82-89.
- [19] Thorngren-Jerneck K, Herbst A. Perinatal factors associated with cerebral palsy in children born in Sweden. *Obstet Gynecol* 2006;108(6):1499-1505.
- [20] Hladky K, Yankowitz J, Hansen WF. Placental abruptio. *Obstet Gynecol Surv* 2002;57(5):299-305.
- [21] Spinillo A, Fazzi E, Stronati M, et al. Severity of abruptio placentae and neurodevelopmental outcome in low birth weight infants. *Early Human Development* 1993;35(1):45-54.
- [22] Kayani SI, Walkinshaw SA, Preston C. Pregnancy outcome in severe placental abruptio. *BJOG: An International Journal of Obstetrics and Gynaecology* 2003;110(7):679-683.
- [23] Pritchard JA, Brekken AL. Clinical and laboratory studies on severe abruptio placentae. *American Journal of Obstetrics and Gynecology* 1967;97(5):681-700.