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RESEARCH ARTICLE

A STUDY OF FETO-MATERNAL OUTCOME IN CASES OF ABRUPTIO PLACENTAE

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ABSTRACT

Background: Abruptio placentae defined as the preterm partial or complete separation of normally situated placenta from the uterine wall, complicating 1 in every 200 pregnancies (0.5-1%) in western nations, with rates as high as 4% in developing nations. **Methods:** This was a descriptive observational hospital-based study design with a follow-up component conducted over a period of 16 months, from January 2016 to April 2017 in the department of Obstetrics and Gynecology at GMC Srinagar, India comprising of 83 cases. **Results:** A total of 83 cases of abruption placentae were present out of 9102 deliveries at department of Obstetrics and Gynecology at GMC Srinagar, India between January 2016 to April 2017. The incidence of abruption placentae in our study is 0.9%. Overall global incidence of abruptio placentae ranges between 0.5 to 2 % with more in developing countries as compared to the developed nations. (1a,6a,17a). Fetal adverse outcomes of abruptio placentae observed during study period were perinatal mortality 75.9%, prematurity 71%, low birth weight 69.8% and asphyxia 3.6%. Out of 83 cases, 59 deaths occurred in utero while 4 died in the first week of life. **Conclusions:** Abruptio placentae is one of the gravest hemorrhagic complications of pregnancy. Incidence in alarmingly high in resource poor set ups of developing countries like ours. The predictors of maternal adverse outcomes were found to be malnutrition, anemia, PPH, DIC and maternal shock. Predictors for perinatal death were low birth weight, birth asphyxia, low APGAR score, retroplacental clot volume more than 500 ML.

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INTRODUCTION

Abruptio placentae is defined as the preterm partial or complete separation of normally situated placenta from the uterine wall. It is a major cause of maternal morbidity and prenatal mortality complicating 1 in every 200 pregnancies (0.5-1%) in western nations, however rates may be as high as 4% in developing nations.Associated perinatal mortality is as high as 25-50 % with death due to abruptio placentae accounting for as much as one fourth of all perinatal mortality in some series.[1,2] Though exact etiology remains obscure, various risk factors have been implicated like impaired placenation, placental insufficiency, intrauterine hypoxia, uteroplacental underperfusion hypertension, Non vertex presentation, polyhydramnios, IUGR, advanced maternal age, maternal trauma, cigarette smoking, alcohol consumption, cocaine abuse, short umbilical cord sudden decompression of uterus, retroplacental fibromyoma, post amniocentesis, prior fetal demise, previous miscarriage, grand multiparity, premature rupture of membranes, trauma and/or low pre-pregnancy body mass index. Signs and symptoms depend upon the degree of separation.[3,4] The most common presentations include vaginal bleeding, uterine and abdominal pain and tenderness, abnormal uterine contractions, premature labor, maternal hemodynamic instability, fetal distress and fetal death.[5] Previous h/o abruption, family h/o and measurement of uterine artery flow may provide useful information.

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This study aims at studying the adverse feto-maternal outcomes in abruptio placentae and its predictors. Abruptio placentae occurs in about 1% pregnancies with 0.3% in pregnancy at term throughout the world with severe abruption leading to fetal death in 0.12 % of pregnancies. Incidence in India varies between 1:50 to 1:500. It may be an asymptomatic case where the diagnosis is done by the presence of a retroplacental clot post partum (4.5%) or a classic case presenting as sudden collapse of pregnant women with either overt or covert bleeding with fetal compromise. Objectives of present study were to Determine the incidence of abruptio placentae at LD Hospital, determine feto- maternal outcome and determine the predictors of maternal and fetal morbidity and mortality and prolonged hospital stay in patients with Abruptio Placentae at GMC Srinagar.

METHODS

This was a descriptive observational hospital-based study design with a follow-up component. It was conducted over a period of 16 months, from January 2016 to April 2017. The study was carried in the department of Obstetrics and Gynecology at GMC Srinagar, India. Pregnant mothers diagnosed with abruptio Placenta and their babies born at LD Hospital were included in the study. All pregnant women diagnosed to have abruption placenta from 28 weeks of gestation and above; All babies delivered by mothers with abruptio placenta at LD Hospital were included in the study. The study comprised of all (a total of 83) cases of abruptio placentae that came to labor ward of LD Hospital from January 2016 to April 2017. All patients with clinical

diagnosis of abruptio placenta over 28 weeks gestation characterized by painful vaginal bleeding accompanied by hypertonus uterine contractions, tender uterus ± nonreassuring fetal heart rate/ fetal distress, fetal demise, pallor and rapid breathing with hypotension (Systolic BP<90mmHg) were recruited in the study.

Study variables *Predictor variables* Maternal variables are:

- **Clinical presentations:** Systolic blood pressure, Pulse rate, Vaginal bleeding and Signs of DIC
- **Laboratory results:** Bedside clotting time, Serum creatinine, Hemoglobin level, Prothrombin time and Platelet level
- **Management received:** Mode of delivery, Number of blood transfusion, Number of Fresh frozen plasma (FFP), ICU admissions, and Peripartum hysterectomy.

Fetal variables are:

- Gestation age,
- Birth weight,
- APGAR score,
- FHR,
- Mode of delivery and
- Volume of retro-placenta clot

Dependent variables

- Maternal major outcomes: Prolonged hospital stay and maternal death/survival
- Fetal major outcome: Perinatal death.

Statistical analysis: Entry and cleaning of data was done using MS Excel software. P-values of less than 0.05 were considered significant.

RESULTS

A total of 83 cases of abruption placentae were presented. The incidence of abruptio placentae in this study was found to be 0.9 % which is in accordance with the overall incidence of abruption placentae (1%). About 66.6 % were in the age group of 26-35 yrs. About 56.6 % were multiparous with no formal education. 80% women were housewife by occupation. Most pregnancies culminated preterm with 39.6 % between 33 to 36 weeks.

Table 1. Baseline characteristics of participants

	Characterstic	Frequency	%
Maternal age (yrs)	=<25	24	28.9
	26-35	55	66.2
	36-45	4	4.8
Ooccupation	Houswife	68	81.9
	Peasant /farmer	15	18.01
Educational level	No formal education	47	56.6
	Primary school	35	42.1
	Secondary school	1	0.01
Parity	Primeparous	24	28.9
	Multiparity (1-4)	47	56.6
	Grand multiprity (>4)	12	14.4
Gestation age (wks)	28 to 32	27	32.5
	33 to 36	33	39.7
	37 to 45	23	14.4
Hb level	6-10	67	80.7
	<6	16	19.3

Almost all patients were anaemic with 80.7% having a haemoglobin range of 6-10 gms and 19.3% were severely anemic with hb level below 6 gms. Out of the various risk factors associated with abruption placentae, the ones that were found influential in this study turned out to be Multigravidity and multiparity, 45.7%. Pregnancy induced hypertension and pre-eclampsia, 14.4%. Preterm premature rupture of membranes, 18.7% Low birth weight/prematurity, 34.5%.

Table 2. High risk factors

High risk	Frequency	%
Prior abruption	2	0.02
Multigravidae	38	45.7
Pre-eclampsia	12	14.4
Chronic hypertension	1	0.01
Chorioamnitis	3	0.03
Pprom	15	18.7
Twins	1	0.01
LBW	29	34.9
Polyhydramnios	1	0.01
Cigaretes/bidi	1	0.01
Thrombophillia	1	0.01
Cocaine abuse	-	-
Uterus leiomyoma	-	-
Previous CS	4	0.04
Malpresentation	4	0.04

High risk factors: Among the various high risk factors associated with the occurrence of abruption placentae, the ones operative in this study at a higher rate comprised mainly of multigravidity and multiparity, pre-eclampsia and associated conditions, preterm PROM and low birh weight mostly associated with preterm deliveries. According to the grade of abruptio placentae the distribution was given in Table 3.

Table 3. Grade distribution

Grade	No. of patients	%
0	1	1.2
I	13	15.7
II	11	13.2
III	58	69.9

Maternal adverse outcomes: Maternal mortality in this study was 7.2%. 36.14% of patients had prolonged hospital stay as a result of complications that arose during the course of illness.

Table 4. Maternal adverse outcomes

Outcome	Frequency	%
Prolonged hospital stays	30	36.14
Maternal death	6	7.2
Acute kidney injury	13	15.6
Icu admission	14	16.8
Hysterectomy	1	1.2
Need for blood transfusion	83	100
Anaemia	83	100
Dic/coagulopathy	14	16.8
Pph	12	14.4
Shock	11	13.2

About 19.3% underwent emergency caesarean section either due to fetal distress, failed induction or those with h/o previous caesarean section. 100% patients required blood transfusion with 22.8% requiring massive transfusion (transfusion of more than 4 units of blood). Other complications observed during the study period were anemia (100%), primary post partum hemorrhage in 12 (14.4%), coagulopathy (16.8%), hysterectomy in one patient, acute renal failure in 13 (15.6%), transfusion induced lung injury in 3 patients, shock in 11 (13.2%) and a need for ICU care in 14 (16.8%) patients. Interestingly majority of patients with shock, early coagulopathy and early stages of renal involvement responded well to fluid challenge, furosemide and to timely blood and component therapy. 4 required dialysis and wshifted to medicine department for same, out of which two expired due to uremic encephalopathy with poor response to dialysis.

Fetal adverse outcomes: Perinatal death in this study was 63 (75.9%). Out of 59 stillbirths, 40 were fresh and 19 were old macerated stillbirths.

Out of 24 born live, 4 died within first week of life, 2 dues to extremely prematurity and low birth weight (1 and 1.3 kgs), 1 due to acute respiratory distress syndrome and other due to septicemia.

Of these 61 (73.5%) were born vaginally and 2 were delivered by caesarean section.

Table 5. Fetal adverse outcomes

Variables	No. of cases	%
Live birth	24	28.9
Fetal distress	10	12.05
Lbw	5	6.02
Healthy	9	10.8
Stillborn	59 (40, fresh 19, old)	71.08

Predictors of maternal survival or death: Nine predictors were evaluated for determining maternal survival or death among pregnant women with abruption placentae.

Characteristics which were strongly associated with maternal death were:

- Coagulopathy (p value 0.00006),
- Primary post-partum hemorrhage (p value 0.0005),
- Blood transfusion (p value 0.0002),
- Component transfusion (p value 0.008),
- Transfusion induced lung injury (0.002) and
- Acute renal failure (0.00002).

However, there was no significant association between maternal deaths and age (p value 0.14), shock (p value 0.132) and anemia (p value 0.365). Maternal anemia in this study might have been caused by either acute hemorrhage, or DIC associated with abruption placentae and/or chronic anemia due to nutritional deficiency and poor antenatal care. Hence anemia can be misleading due to failure to account for its confounding factor in the study.

Predictors of perinatal death: Ten predictors were used to evaluate for the perinatal death as adverse outcomes in patients presenting with abruption placentae.

Predictors strongly associated with perinatal death were

- Low birth weight (p value 0.002679),
- Gestational age (p value <0.001),
- Maternal anemia (p value<0.001),
- Vaginal delivery (p value<0.001),
- Low APGAR score (p value <0.001),
- Size of retroplacental clots (p value <0.001) and
- NICU admission (p value 0.01)

Table 6. Predictors of maternal survival or death

Patients characterstics	Maternal death		P-value
	Yes N (%)	No N (%)	
Age			
<25	3 (12.5)	21 (87.5)	
25-35	2 (3.6)	53 (96.4)	0.14
>35	1 (25)	3 (75)	
DIC			
Yes	5 (35.7)	9 (64.3)	0.00006
No	1 (1.4)	68 (98.6)	
Anemia			
>11	0 (0)	0 (0)	
6-10	4 (5.9)	63 (94.1)	0.365
<6	2 (12.5)	14 (87.5)	
Blood			
None transfusion	0 (0)	0 (0)	
1-3	1 (1.5)	63 (98.5)	0.0002
>4	5 (26.3)	14 (73.7)	
Shock			
yes	2 (18.18)	9 (81.8)	
no	4 (5.5)	68 (94.5)	0.132
PPH			
yes	6 (50)	6 (50)	0.0005
no	0 (0)	71 (100)	
ARF			
yes	5 (38.4)	8 (61.6)	
no	1 (1.4)	69 (98.6)	0.00002
Trali			
yes	3 (100)	0 (0)	
no	3 (3.75)	77 (96.25)	0.002

However, there was no significant association between perinatal death with maternal age, FHS on admission and sex of fetus.

Predictors of prolonged hospital stay: Out of six predictors used to evaluate /predict prolonged hospital stay in cases of abruption placentae, five were strongly associated with prolonged hospital stay.

- Postpartum hemorrhage (p value 0.046),
- Mode of delivery (p value<0.001),
- Shock (p value <0.001),
- Anemia (p value 0.008) and
- Acute renal failure (p value<0.001).

Table 7. Predictors of perinatal death

Patients characterstics	Perinatal death		P-value
	Yes N (%)	No N (%)	
Age of mother			
<25	13	11	
25-35	47	8	0.0514*
>35	3	1	
Birth weight			
<2.5	44	14	
>2.5-3.5	16	9	0.002679*
>3.6	0	0	
Gestational age			
28-32	25	0	
33-36	27	7	0.000011**
37-45	10	14	
FHR on admission			
F. Distress	2	8	0.7112*
120-160	2	12	
Anemia			
>11	0	0	
6-10	20	48	0.0000023*
<5	15	0	
Mode of delivery			
VD	61	12	
CS	2	8	0.000010**
Apgar score			
Low score	3	0	0.000034*
Normal score	1	20	
Retroplacental clot			
<700	20	54	
>700	9	0	0.0000145*
Sex			
Male	16	37	0.0845**
Female	4	26	
Admitted			
Nicu	4	2	
Not admitted	18	0	0.0105*

DISCUSSION

Abruptio placentae remains a major cause of maternal and perinatal morbidity and mortality globally, though of more serious concern in developing world. The incidence of abruption placentae in our study is 0.9%. Overall global incidence of abruptio placentae ranges between 0.5 to 2 % with more in developing countries as compared to the developed nations.[1-3] Early detection and management of modifiable risk factors for placental abruption in developed nations might have helped to reduce the incidence of placental abruption. Maternal adverse factors which were found prevalent in this study include maternal mortality, prolonged hospital stay, anemia, coagulopathy, hysterectomy, acute renal failure, primary postpartum hemorrhage, transfusion induced lung injury and shock. 100% were anemic with 19.3% having severe anemia. Similar findings were evident in other studies from developing nations.[4-6] A total of 83 cases of abruption placentae were present with 66.2% of patients lying in the age group of 26-35 yrs. About 56.6% were multiparous with no formal education. 80% women were housewife by occupation. Most pregnancies culminated preterm with 39.6% between 33 to 36 weeks.

Almost all patients were anaemic with 80.7% having a haemoglobin range of 6-10 gms and 19.3% were severely anemic with hb level below 6 gms. Out of the various risk factors associated with abruption placentae, the ones that were found influential in this study turned out to be

- Multigravidity and multiparity, 45.7%
- Pregnancy induced hypertension and pre-eclampsia, 14.4%
- Preterm premature rupture of membranes, 18.7%
- Low birth weight/prematurity, 34.5%

Table 8. Predictors of prolonged hospital stay

Patients characteristics	Prolonged hospital stay		P value
	Yes	No	
PPH			
Yes	6	6	0.046**
No	16	55	
Mode of delivery			
VD	12	55	
C section	10	6	0.0003**
Shock			
Yes	9	2	
No	17	55	
Anemia			
Yes	19	50	
No	9	5	0.0001**
Hysterectomy			
Yes	1	0	0.265*
No	21	61	
ARF			
Yes	8	5	
No	20	50	0.02095*

DIC was found in 14 patients out of 83 amounting to 16.8% which was comparable to incidences of other studies ranging between 4.16 to 16.5%.[7-9] Out of 14, 5 patients were lost to DIC as they were received in the hospital in a state of irreversible shock and advanced coagulopathy. It remains one of the leading cause accounting for maternal morbidity and mortality in hemorrhagic shock if not reversed in early stages. All patients in the study required blood transfusion depending on the amount of blood lost and whether DIC or anemia was operative. 19 patients (22.9%) required massive transfusion and a total of 47 (56.6%) required component transfusion. Out of those requiring massive transfusion, 6 expired either directly due to irreversible hypovolemic shock or indirectly due to multi organ damage resulting in acute renal failure or transfusion induced lung injury. As majority of the patients received in our hospital were of grade III abruptio placentae (58, 69.9%), babies were stillborn and delivered vaginally. Caesarean section was taken in 10 patients (in favour of fetal distress) and 6 for failed induction/ prev cs, out of which two babies expired. The caesarean in this study turned out to be 19.2%, comparable to other studies citing a range of 12.4% to 19.7%.[3,5] Delivery was expedited in patients with good fetal heart sound and in whom prompt vaginal delivery was possible either by augmentation or induction keeping in account feto-maternal condition The incidence of PPH has been reported to be between 3% and 22.2% in other studies.[5,7,8,10] An incidence of 14.4% was found in this study, contributed by cases with severe anemia and coagulopathy. Hysterectomy was performed in one patient due to intractable atonic hemorrhage, results similar to a study done by Iram et al, 2006 who reported an incidence of 1.9%. [10] Maternal shock was found in 11 patients (13.6%) and these findings lie close to a study done by Pitaphorm et al, where shock was the leading complication in 19%.[11] Adult intensive care admission was necessary in 14 (16.8%) cases for close vital parameter monitoring which is high as compared to other studies reflecting a rate of 1 to 4.5% owing to late presentation to hospital with severe complications and co morbidities.[7,12] Maternal mortality rate in this study was 7.2% falling in range with other studies from developing countries which have a mortality ranging from 3 to 15%.[3,4,10,11,13] Developed nations face a lower maternal mortality challenge due to abruption placentae due to early attendance to hospital with fewer adverse outcomes.

The availability of fractionated clotting factors and blood products for resuscitation has improved the prognosis in our setting over the past few years. Out of 23 maternal deaths in the study period abruption accounted for 6 (26%). Fetal adverse outcomes of abruptio placentae observed during study period were perinatal mortality 75.9%, prematurity 71%, low birth weight 69.8% and asphyxia 3.6%. Out of 83 cases, 59 deaths occurred in utero while 4 died in the first week of life due to severe birth asphyxia and prematurity related complications. Although the higher perinatal death rates were comparable to most studies done in developing world, it was contrary to that reported by WHO 2009 of 15% and other developed world statistics of 9 to 12% which could be attributed to lack of comprehensive advanced care of premature babies. Out of the 6 babies admitted at NICU, 4 expired within first week of life. All 4 were kept intubated and suffered from higher grades of hypoxia induced encephalopathy. Interestingly in this study it was found that the prevalence of abruptio placentae was lower in mothers of female babies as compared to males (36.14% vs 63.8%) but there was no sex difference in fetal survival observed. Gender differences associated with abruptio placentae have been reported by previous investigators. No mother detected with abruptio placentae was managed conservatively at our institute as most had higher grades of abruption and demanded prompt intervention in favour of maternal or fetal well-being. Generally, perinatal mortality has been strongly associated with AP across the world. In this study, the association is much stronger to low birth weight, birth asphyxia, low APGAR score, maternal anemia, preterm gestation, vaginal delivery and volume of retroplacental clots.

Conclusion

Abruptio placentae is one of the gravest hemorrhagic complications of pregnancy, contributing significantly to unacceptably high maternal and fetal morbidity and mortality ratios. Incidence in alarmingly high in resource poor set ups of developing countries like ours. The predictors of maternal adverse outcomes were found to be malnutrition, anemia, improper antenatal care, PPH, DIC, NICU admission and maternal shock. Predictors for perinatal death were low birth weight, birth asphyxia, maternal anemia, low APGAR score, retroplacental clot volume more than 500 ML. A need for mass information regarding importance of ante natal care, nutritional status and prompt diagnosis is envisaged. Institutional preparedness and the availability of blood and blood products in the management of abruptio placentae significantly improves fetal and maternal survival.

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REFERENCES

Abbasi RM, Rizwan N, Mumtaz F, Farooq S. Feto maternal outcome among abruptio placentae cases at a University hospital of Sindh. JLUMHS. 2008;2:106-9.

Bibi S1, Ghaffar S, Pir MA, Yousfani S. Risk factors and clinical outcome of placental abruption. *J Pak Med Assoc.* 2009; 59(10):672-4.

Dafallah SE, Babikir HE. Risk factors predisposing to abruptio placentae. Maternal and fetal outcome. *Saudi Med J.* 2004; 25(9):1237-40.

Hossain N. Abruptio placenta and adverse pregnancy outcome. *J Pak Med Assoc.* 2010; 60:443-6.

Jabeen M, Gul F. Abruptio placentae: risk factors and perinatal outcome. *J Postgrad Med Institute (Peshawar-Pakistan).* 2011; 18(4).

Kayani SI WS, Preston C. Pregnancy outcome in severe placental abruption. BJOG. 2003; 110:679- 683.

Kizza AP. Feto-maternal haemorrhage in Kenya. *East Afr Med J.* 1990; 67(11):801-7.

Mmbaga BT1, Lie RT, Kibiki GS, Olomi R, Kvåle G, Daltveit AK. Transfer of newborns to neonatal care unit: a registry based study in Northern Tanzania. *BMC Pregnancy Childbirth.* 2011; 11:68.

Nyberg DA, Cyr DR, Mack LA, Wilson DA, Shuman WP. Sonographic spectrum of placental abruption. AJR Am J Roentgenol. 1987; 148(1):161- 4.

Ozumba BC. Abruptio placentae at the University of Nigeria Teaching Hospital, Enugu: a 3-year study. Aust N Z J Obstet Gynecol. 1989; 29(2):117-20.

Sarwar I, Abbasi Au, Islam A. Abruptio placentae and its complications at Ayub Teaching Hospital Abbottabad. J Ayub Med Coll Abbottabad. 2006; 18(1):27-31.

Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. Acta Obstetricia et Gynecologica Scandinavica. 2011; 90:140-9.

Yinka Oyelese CVA. Placental Abruption. Obstet Gynecol. 2006; 108:1005-16.

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