



A Clinical Study of Maternal and Perinatal Outcome of Abruption Placentae

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Abstract

Aim and Objectives: *The aim of present study was to study maternal and perinatal outcome in cases of abruptio placenta and initiate early intervention to bring down maternal morbidity and to prevent maternal and perinatal mortality.*

Methods: *A prospective observational study was done on 110 cases of abruptio placenta presenting to the labour ward and delivered. Maternal outcome such as mode of delivery, maternal complications and Operative interference were studied. Perinatal outcome in the form of birth weight, APGAR score at 1 and 5 minute, NICU admissions and perinatal deaths were studied.*

Results: *Incidence of abruptio placentae was 0.97%. Majority (59.1%) of cases with abruptio placenta was multipara and 39.1% were primigravida with commonest age group being 21-25 years. The associated conditions were preeclampsia (54.5), anaemia (13.6%), trauma (11.8%), polyhydramnios (5.5) and twins (1.8) and unknown (12.7%). LSCS was performed in 62% patients. 38% had a normal vaginal delivery whereas 5.5 % had a forceps delivery. Maternal complications were DIC (24.5%), PPH (14.5%), shock (10%) and ARF (5.4%). Operative Interference was done in 13.7% cases. No maternal mortality was noted. Maximum (74.6 %) were live births and 28(25.5 %) were stillbirths. The perinatal mortality was 29.1%.*

Conclusions: *Early intervention is the key to reduce maternal and perinatal morbidity and mortality. Availability of adequately trained staff, ICU and NICU facilities, well equipped operation theatres, blood and blood products, infrastructure is of utmost importance for active management of a patient with abruptio. Therefore tertiary care centres are an ideal setup to manage such patients.*

Keywords: *Abruptio placentae, Morbidity, Mortality, APGAR score, Primigravida, Polyhydramnios.*

Introduction

Placental abruptio is the most common cause of antepartum haemorrhage and is defined as premature separation of normally implanted

placenta⁽¹⁾. The Royal College of Obstetricians and Gynaecologists (RCOG) defines antepartum haemorrhage (APH) as bleeding from or in to the genital tract after 24 weeks till the birth of the

baby, and recognizes abruptio placenta (AP) as an important cause of APH⁽²⁾. AP refers to premature separation of a normally situated placental before the delivery of the foetus. The term abruptio in Latin means breaking away from a mass, so it is a process by which placental attachment to the uterus is disrupted by haemorrhage.

AP is a serious obstetric condition that increases maternal and neonatal morbidity and mortality⁽³⁾. AP complicates approximately 1% of all pregnancies⁽⁴⁾ and accounts for 20 – 25% of all cases of APH⁽⁵⁾. In developed countries the incidence is 1% of deliveries, whereas in developing countries it is around 2-8%⁽⁶⁻⁸⁾. In many countries the rate of placental abruptio has been increasing, perhaps due to advancing maternal age and increasing cesarean section rates⁽⁹⁻¹¹⁾. The incidence appears to be increasing probably due to increase in prevalence of the risk factors for the disorder. The primary cause of AP in majority of the cases remains unknown⁽¹²⁾ but the RCOG recognizes pregnancy induced hypertension (PIH), pre-eclampsia, advanced maternal age, multiparity, premature rupture of membranes (PROM), smoking, polyhydramnios, abdominal trauma, fetal growth restriction, intrauterine infections and past history of abruptio as predisposing risk factors⁽²⁾. Several other risk factors with possible aetiological relationships include low socioeconomic strata, gestation with male fetus, and gestation at higher altitudes, twinning, drug addiction, infections, thrombophilias and diabetes^(13,14).

The maternal effect of abruptio placenta depends primarily on its severity, whereas the fetal effects are determined by both severity and gestational age at which it occurs. The major maternal complications of abruptio placenta are hemorrhagic shock, disseminated intravascular coagulation, acute renal failure, postpartum hemorrhage and maternal death^(13, 15). The poor perinatal outcome is due to low birth weight, prematurity and still birth^(16,17). With the better availability of blood and blood products and coagulation factors, the management of shock and

DIC has decreased the maternal and perinatal morbidity and mortality over last few decades. There has been increase in the use of Cesarean delivery over recent years in abruptio placentae, which have resulted in a better obstetric outcome. The aim of the study was to determine the incidence and to evaluate the risk factors that predispose to placental abruptio. The primary outcomes also included the occurrence and frequency of various maternal complications apart from evaluation of fetal and neonatal outcomes in patients with AP in a tertiary care hospital. This would enable us to plan prompt management strategies to decrease morbidity and prevent maternal and perinatal mortality due to AP.

Materials and Methods

This was a prospective, observational study conducted in the Department of Obstetrics and Gynecology of a tertiary care hospital in Mumbai, Maharashtra, India. It was conducted over a period of 18 months from April 2016 to September 2017. A total of 110 cases of abruptio placenta presenting to the labour ward and delivered were enrolled in the study. Non-probability consecutive sampling technique was used for this study until the required sample size was achieved. All pregnant women admitted with complaints of bleeding per vaginum (PV) after 28 weeks of gestation and diagnosed as abruptio during the course of delivery were included in the study while all pregnant women over 28 weeks of gestation admitted with complaints of bleeding PV diagnosed as Placenta Praevia and genital tract trauma were excluded from the study. Written informed consent was taken from all patients included in study.

In all cases, a detailed record was maintained regarding age, weight, height, parity, medical co morbidities, history of previous surgery, symptomatology and menstrual history. A general physical examination was performed with attention to vital parameters (Temperature, Pulse, and BP) and pallor was assessed. Blood investigations and pelvic examination was done.

An Obstetric Ultrasound was performed. Assessment of AP with respect to risk factors for abruptio placenta (pregnancy induced hypertension, anemia, multiple pregnancy, polyhydramnios, unknown factor). Type and grade of abruptio placenta and Presenting features of abruptio placenta were assessed Initial management given to all mothers. Subsequently cases managed as per gestation age, fetal and maternal status was given.

Maternal outcome parameters studied were the mode of delivery (Vaginal, Operative vaginal delivery or LSCS, maternal complications (PPH, DIC, Acute renal failure, Puerperal sepsis, mortality), Haemoglobin on admission & required blood transfusion, Operative interference (B lynch suture, Internal iliac artery ligation, Obstetric hysterectomy) and ICU admissions required for patient. Fetal outcome parameters studied were Birth weight, APGAR score at 1 minute & 5 minute, NICU admissions for baby and perinatal outcome (still birth, live birth, and neonatal death.).

Statistical Analysis

The data collected regarding all the selected cases was recorded in a Master Chart in Microsoft Excel 2010 ((Microsoft Corporation, NY, USA)) and analyzed using the SPSS (Statistical Package for the Social Science; SPSS Inc. Chicago, IL, USA) version 20.0. The qualitative data was represented as frequency or percentage and quantitative data was presented with the help of mean and standard deviation.

Observations and Results

During the study period (April 2016 to September 2017) there were a total of 12,498 deliveries. Of these, there were 122 cases of accidental hemorrhage with an incidence of 0.97%. Out of 122cases, 110 cases were included to study fetal and maternal outcome, to analyze its association with possible high risk factor & to diagnose & manage complication related to accidental hemorrhage. Table 1 shows that majority (42.7%) of the patients were found to be in 21-25 years

group. The mean age of all the patients was 24.3+ 4.13 years with a range of 20-35 years.

Table 1: Prevalence of AP in different age groups (N==110)

Age (years)	No. of cases	Percentage
≤20	23	20.9
21-25	47	42.7
26-30	32	29.1
31-35	7	6.4
>35	1	0.9

Table 2 shows that majority (59.1%) of cases with abruptio placenta was multigravida and 39.1% were primigravida, while only 1.8% cases were grand multigravida.

Table 2: Distribution of subjects on the basis of Gravidity

Gravida	No. of Patients	Percentage
1	43	39.1
2	38	34.5
3	17	15.5
4	10	9.1
≥5	02	1.8

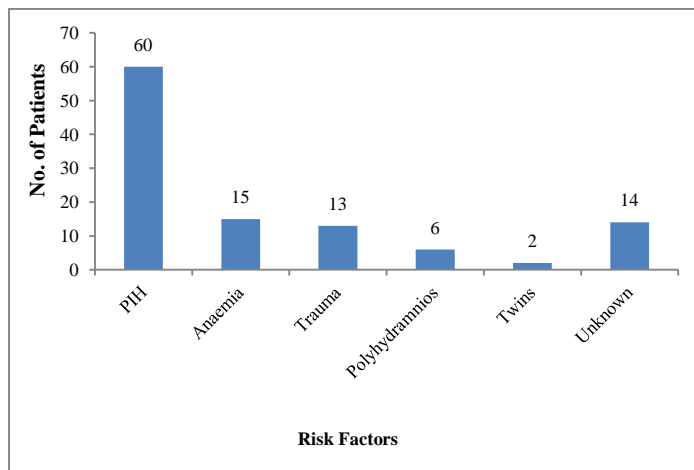
Table 3 shows that most patients (51.3%) presented with clinical findings of abruption between 33 to 37 weeks of gestation whereas 26.5% were of term gestation followed by 17.7% belonged to 28-33 weeks of gestation.

Table 3: Analysis of period of gestational age at presentation

Gestational Age	Number of patients	Percentage
<28 weeks	02	1.8
28 to 33 weeks	20	18.2
33.1 to 37 weeks	58	52.7
>37 weeks	30	27.3

The most common associated condition was preeclampsia (60; 54.54%) followed by anaemia (15; 13.63%) as shown in figure 1. About 14 (12.72 %) cases cause of abruptio was not known.

Figure 1: Analysis of Associated conditions/Risk factors



The most common presentation on admission was hypertonic uterus (103; 93.6%) followed by pain in abdomen (85; 77.3%) and bleeding Pervaginum (81; 73.6%). Fetal distress was found in 55 (50%) cases and 28 (25.5 %) presented with Intrauterine fetal death. Hypotension observed in 15 (13.6%) cases.

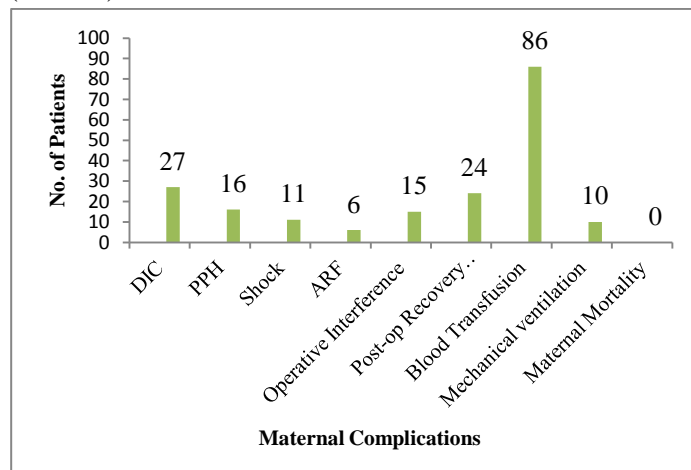
The maternal data is shown in table 4 and it showed that the maximum patients had mixed type of abruptio (46.4%) whereas 28.2 % had concealed abruptio and 25.5% had revealed type of abruptio. Maximum number (68; 61.8%) of patients were terminated by LSCS and 36 (32.7%) delivered vaginally. There were 5.5 % forceps deliveries.

Table 4: Analysis of Maternal Data

Mean Duration of Labour (in hours)		5.18±2.96
Type of Delivery	LSCS	68(61.8)
	Normal Vaginal Delivery	36(32.7)
	Forceps Delivery	06(5.5)
Type of Abruptio	Concealed	31(28.2)
	Revealed	28(25.5)
	Mixed	51(46.4)
Mean Retro Placental Clot(gm)		130.2±85.56
Mean Hb on Admission		10.18±1.35

The most common maternal complication was DIC, which was seen in 27 patients (24.54%) followed by PPH (16; 14.54%). Out of the 15 patients with operative interference, in 11 cases Blynch sutures were taken and in 4 cases, obstetric hysterectomy was performed. Out of 110 cases, about 78.18 % required blood transfusion, (Figure 2).

Figure 2: Analysis of Maternal Complications (N=110)



Maximum number 82 (74.6 %) were live births and 28 i.e. 25.5 % were stillbirths, (Table 5).Of all live births, 29 (26.4%) required care in TCU while 5 (4.5%) required NICU admission and intensive care. Out of the live births, there were 4 early neonatal deaths and 2 late neonatal deaths. Out of the neonatal deaths, 2 died of asphyxia, 2 due to prematurity and 2 due to Respiratory Distress Syndrome..

Table 5: Analysis of Neonatal Data

Mean Birth Weight (kg)		1.95 ± 0.73
Mean APGAR at 1 min		3.6 ± 2.56
Mean APGAR at 5 min		6.5 ± 3.86
ICU admissions	Death	06(5.5)
	Nursery	45 (40.9)
	TCU	29 (26.4)
	NICU	05 (4.5)
Perinatal Outcome	Still Birth	28 (25.5)
	Live Birth	82 (74.6)

Discussion

Out of total 12,498 deliveries, 122 cases of accidental hemorrhage with an incidence of 0.97%. Similar incidence is reported by other authors (5, 12, and 18). The highest incidence of abruptio placenta was in the age group of 20-25 years (42.7%) which is consistent with the study conducted by Suseela et al⁽¹⁹⁾. The multiparity has been shown to be associated with abruptio placenta and incidence was 59.1%, in primigravida 39.1% and in grand multipara incidence was 1.8%. This result is correlated with

the previous studies⁽¹⁹⁻²¹⁾. Most of the patients (51.3%) presented with clinical findings of abruptio between 33.1 to 37 weeks of gestation which is closely similar to the study done by Singh et al⁽¹⁸⁾.

The most common associated conditions/risk factor was preeclampsia (60; 54.54%) which is similar to the other studies^(18,19,22). However, in a study conducted by Suseela et al⁽¹⁹⁾ the incidence of preeclampsia was found to be more i.e.76% while in Devi et al⁽⁵⁾ and Jabeen et al⁽²³⁾ the incidence of pre-eclampsia was lower i.e. 22.3% and 13.20 % respectively. In study conducted by Singh et al⁽¹⁸⁾ and Dars et al⁽²²⁾ the incidence of anemia as risk factor was 31.37% and 38.26% respectively which is slightly higher than the present study (13.63%). Incidence of polyhydramnios as high risk factor and is quite variable in various studies^(5,19,24). The incidence of polyhydramnios as risk factor in present study was 5.5% which is less than reported by Suseela et al study⁽¹⁹⁾. Multiple pregnancies were seen in 1.81% cases, this is correlated well with earlier studies^(5, 18). The incidence of trauma was seen in 11.8% cases which is higher than reported in previous studies^(18,19,22,23). Larger number of patients with an association with trauma may be due to our hospital being a tertiary care institute. In our study the incidence of mixed type was 46.36% which was similar to the study by Singh et al⁽¹⁸⁾.

The hypertonic uterus was most commonly found in 93.6% of patients. Bleeding per vaginum was the most common presenting complaint in most studies^(12,20,21,24) and which is reported higher than that found in our study. Pain in abdomen/ uterine tenderness was the next most frequent presenting complaint (77.27%) which is similar to the observations made in Coleman et al⁽¹²⁾ and Mukherji et al⁽²⁴⁾. The fetal distress was 50% which was higher than in Coleman et al⁽¹²⁾ and Mukherji et al⁽²⁴⁾. In the previous studies^(12, 19, 21) more patients presented with absent FHS whereas in our study it was quite low i.e. 25.45%.

The rates of Caesarean section vary widely in many studies^(5,12,20-23,25,26) and which is ranging

from 21 % (5) to 83% (12). The Caesarean section rate in the present study was 61.8%.The most common maternal complication was found to be DIC (24.54%) cases which is similar to other studies^(21, 24). The incidence of PPH was 14.54% which was similar to that of Jabeen et al⁽²³⁾ (14.5%). The incidence of shock and ARF was 10% and 5.4% respectively which is similar the earlier studies^(12, 21-23). Out of the 15 patients with operative interference, in 11 cases Blynch sutures were taken and in 4 cases, obstetric hysterectomies were performed. Out of 110 cases, about 78.18 % required blood transfusion. There was no maternal mortality in our study. Similar results were noted in prior studies^(5, 22, and 25).

5 (4.54%) babies were transferred in NICU and 29 (26.36%) babies transferred in TCU due to low APGAR score. The perinatal mortality in the present study was 29.09%. This is slightly lower than the results noted in studies by Devi et al⁽⁵⁾ and Patel et al⁽²⁶⁾. Prematurity and low birth weight babies were the main causes for perinatal mortality with abruptio placenta.

Conclusion

Abruptio placentae are an obstetric emergency which requires prompt intervention and management. It is most commonly associated with high risk factors, mainly preeclampsia and anemia. Early ANC registration, regular ANC follow up visits can help detect and treat the high risk factors thereby reducing the risk of accidental hemorrhage.

As seen in present study, early intervention is the key to reduce maternal and perinatal morbidity and mortality. Availability of adequately trained staff, ICU and NICU facilities, well equipped operation theatres, blood and blood products, infrastructure is of utmost importance for active management of a patient with abruptio. Therefore tertiary care centres are an ideal setup to manage such patients.

Declarations

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Conflict of interest: none declared

Ethical approval: The study was approved by the Institutional Ethics Committee.

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