

International Journal of Clinical Obstetrics and Gynaecology



ISSN (P): 2522-6614
ISSN (E): 2522-6622
© Gynaecology Journal
www.gynaecologyjournal.com
2019; 3(3): 137-140
Received: 04-03-2019
Accepted: 06-04-2019

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Abruptio placenta: A study on the risk factors and fetomaternal outcome

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DOI: <https://doi.org/10.33545/gynae.2019.v3.i3c.272>

Abstract

Background: One of the greatest obstetric emergencies is antepartum haemorrhage, one of which is abruptio placenta. It is important as it occurs suddenly and is associated with both maternal and fetal morbidity and mortality worldwide. In developing countries, including India with poor resource setting, the situation is worse. This study is aimed to determine the risk factors for abruptio placenta and subsequent fetomaternal outcome in a tertiary care government hospital.

Methods: A prospective observational study was conducted at department of obstetrics and gynaecology, GMERS Medical College and Hospital, Ahmedabad. All patients admitted with antepartum haemorrhage in third trimester were examined and analysed, and only those patients diagnosed with abruptio placenta clinically and/or sonographically were included in the study. The maternal complications and fetal outcome were analyzed in detail.

Results: In the study period, 46 women were diagnosed with abruptio placenta. Incidence of abruptio placenta came out to be 1.09% at our institute. It is more common in the women of age group 25- 35 years and 39.1% cases were strongly associated with gestational hypertension. The incidence is increased to 69.5% in multigravida patients. Live birth rate was 63.1 % and still birth was 36.9%. Postpartum haemorrhage (19.5%), acute renal failure (17.3%), disseminated intravascular coagulation (13%.0) is the most common complication occurring in abruption. The most common indication for cesarean section was fetal distress (50.0%).

Conclusion: Abruptio placenta is associated with poor maternal and especially poor fetal outcome. Gestational hypertension is strongly associated with abruption. There is need to spread awareness regarding taking adequate antenatal care so that the associated risk factors could be diagnosed early and treated adequately. Prompt resuscitative measures and expedition of delivery process after abruption favours good fetomaternal prognosis.

Keywords: Abruptio placenta, risk factors, maternal morbidity, perinatal outcome

Introduction

“Riding asunder of placentae [1]”, meaning abruptio placenta in Latin, refers to placental detachment after 28 weeks of gestation until delivery. It occurs in about 0.38 – 1% of singleton births [2]. There is no exact cause which can be pinpointed as an etiological factor but there are several predisposing factors associated with it [3].

It is associated with maternal hypertension, multiparity, multiple gestation, maternal trauma, previous history of abruption and sudden decompression of uterus [4]. Hypertensive disorders of pregnancy are associated with 2.5%- 17.9% of placental separation [5].

In development world, rates as high as 4.5% have been reported [6]. It is a major cause of maternal haemorrhagic shock, disseminated intravascular coagulation, renal failure, post- partum haemorrhage and maternal death [7].

Postpartum haemorrhage is very common ranging from 3.0 -18.3% [8].

Maternal mortality noted by various authors ranges between 0.57% (Purandare 4) to 2.1% (Parikh 9). Fetal mortality ranges from 48% (Estamann 4) to 73.5% (Purandare 4). Over 50% of all perinatal deaths related with abruptio placenta in pregnancy are accompanied with premature delivery [10].

The maternal and fetal survival and prognosis depends upon timely diagnosis and effective prompt intervention. With better availability of blood, blood products and coagulation factors, maternal complications like shock and disseminated intravascular coagulation can be managed effectively. Increased use of cesarean section has also resulted in relatively better pregnancy outcome.

Methods: A prospective observational study was conducted at Department of obstetrics and Gynaecology, GMERS Medical College and Hospital, Ahmedabad, India over a period of July 2018

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To April 2019. All women presenting with antepartum haemorrhage beyond 28 weeks of gestation were thoroughly examined and detailed history taken. 48 pregnant women were diagnosed with abruptio placenta clinically and/or sonographically. Abruptio was suspected clinically as they presented with features of vaginal bleeding, uterine tenderness and hypertonic uterus. Post-delivery presence of retro placental clots supported the diagnosis.

Age, parity, gestational age and clinical presentation of women were noted.

Fetal wellbeing was assessed with ultrasonography and admission non stress test was done. All routine antenatal investigations along with coagulation profile, liver and renal function tests were done.

After initial resuscitative management, depending upon the maternal and fetal condition, mode of delivery was decided. Labour was monitored as per our department protocol. Partograph was drawn. Active management of third stage of

labour was done. Retro placental clots were measured in a kidney tray corresponding to 500ml of blood. Vigilant postpartum monitoring was carried out.

Mode of delivery, requirement of blood components, intensive care unit (ICU) admissions were noted. Maternal complications studied were postpartum haemorrhage, disseminated intravascular coagulation, acute renal failure, haemorrhagic shock, puerperal sepsis and postoperative need for ventilatory support.

Fetal outcome were studied in the form of prematurity, APG AR score, perinatal mortality (intra- uterine deaths, still birth) and admission to NICU.

Results

Total number of deliveries in our institute from July 2018 to April 2019 was 4193. The number of abruptio placenta cases were 46 in that period. Therefore, the incidence of abruptio placenta was 1.09% at our hospital.

Table 1: Obstetric parameters

Age (years)	No. of cases (n = 46)	Percentage (%)
<25	14	30.4%
25-35	22	47.8%
>35	11	23.9%
Parity		
Primigravida	14	30.4%
Multigravida (2-3)	25	54.3%
>4	7	15.2%
Gestational age (weeks)		
28-32	7	15.3%
33-36	15	32.6%
>37	24	52.2%
Haemoglobin level on admission (gm %)		
<6	16	34.8%
6-8	24	52.2%
>8	6	13.0%

In our study, most of the abruptio placenta patients belonged to the age group of 25-35 years (47.8%). The mean age in our study population was 27.3 yrs.

Most of the patients were unbooked (57.3%), not taking routine antenatal care and belonged to the low socioeconomic status (72.4%). The incidence of abruptio placenta was higher in multiparous women (54.3%) and in term pregnancies. The mean period of gestational age was 38.2±1.3 weeks.

The haemoglobin level of majority of patients was below 8gm% (86.9%)

Table 2: Relation with risk factors

Relation with risk factors	No. of cases (n=46)	Percentage (%)
Chronic hypertension	9	19.5%
Pre-eclampsia eclampsia	18	39.1%
Multiple pregnancy	1	2.1%
Previous history oabruption	5	10.8%
Polyhydramnios	3	6.5%
Idiopathic	5	10.8%

In our study, abruptio placenta was mostly associated with pre-eclampsia/ eclampsia (39.1%) and chronic hypertension (19.5%). In five cases, no apparent cause was found. Although, smoking and alcohol consumption attributes to abruptio, but in our study group, none of them were smokers and took alcohol.

Table 3: Maternal complications

Maternal complications	No. of cases (n=46)	Percentage (%)
Postpartum haemorrhage	9	19.5%
Disseminated intravascular coagulation	6	13.0%
Acute renal failure	8	17.3%
Puerperal sepsis	2	4.3%
Mechanical ventilation	4	8.6%
Haemorrhagic shock	3	6.5%
Obstetric hysterectomy	2	4.3%
Maternal mortality	1	2.1%

In the current study, the most important complication associated with abruptio was postpartum haemorrhage (19.5%) followed by acute renal failure (17.3%). In five cases, postpartum haemorrhage was managed by uterotonics and uterine packing. Obstetric hysterectomy was done in ^[2] women (4.3%) in whom atonic postpartum haemorrhage did not respond to conservative medical and surgical methods. 13.0% of the women developed disseminated intravascular coagulation. There was one death in our study which was due to disseminated intravascular coagulation. 17.3% of the women developed acute renal failure of which 5 % required dialysis and rest recovered spontaneously after volume replacement and delivery. Post cesarean, 8.6% patients needed ventilator support (maximum for 48 hours).

Table 4: Blood and blood products requirement

Blood and blood products (in units)	No. of cases (n=46)	Percentage (%)
Packed cell volume ≤ 3	28	60.8%
Packed cell volume >3	18	39.2%
Blood products	14	30.4%

Abruptio placenta causes large amount of blood loss in very less time. So, in our hospital blood replacement is the most important modality of management in patient diagnosed with abruption. 60.8% needed [3], or less units of packed cell volume while 39.2% needed [4], or more packed cell volume. Blood products (fresh frozen plasma, platelet, cryoprecipitate) were required in 30.4% cases due to altered coagulation profile.

Table 5: Mode of delivery

Mode of delivery	No. of cases (n = 46)	Percentage (%)
Vaginal	24	52.2%
LSCS	20	43.5%
Instrumental	2	4.3%

Due to obstetric and maternal complications, 4(8.6%) patients needed immediate cesarean delivery [breech (1), haemorrhagic shock (1), previous 2 cesareansection (2)]. In the remaining 42 cases which were induced, 52.2% had vaginal delivery and 34.8% had cesarean section. Most common indication of cesarean section was fetal distress (56.3%), nonprogress of labor (25.0%) and deteriorating maternal condition (18.8%). Intraoperatively, couvelaire uterus was observed in 2 cases.

Table 6: Fetal outcome

Fetal outcome	No. of cases (n= 46)	Percentage (%)
A) Alive	29	63.1%
▪ APGAR at 1minute (<7)	12	26.1%
▪ APGAR at 5 minute (<7)	5	10.8%
▪ NICU admission	6	13.0%
B) Intra uterine death/ still birth	17	36.9%

In our study, out of 46 cases, 29 neonates were delivered live. 36.9% neonates had poor APGAR score and 13% needed NICU admission [14]. women were diagnosed with intrauterine death on admission and [3], were stillborn [4], babies died in the early neonatal period due to delayed complications in NICU such as prematurity, sepsis, birth asphyxia and anaemia.

Discussion

Abruptio placenta remains a major cause of perinatal mortality and morbidity globally especially in the developing world. The incidence of abruptio placenta in our institute is 1.09% which corresponds to the incidence of 0.3-2 % reported by others [11]. The incidence in developing countries ranges between 2-6%. This difference could be due to the difference in study design, study population and diagnostic criteria.

In our study, mean age of study population was 27.3% which is comparable to 28.04±6.03% reported by Nandonde *et al* [12]. It is prevalent in younger obstetric population in contrast to advanced age due to marriage at a younger age. Most of the patients were multigravida (69.5%), Jabeen *et al*. [2] also observed an increased incidence in multigravida (42.3%). Mean gestational age was 38.2±1.3 weeks in our study which goes with the findings of other studies in which abruptio placenta is mostly documented in term pregnancy [13].

The high risk factors present in the patients included in our study were, chronic hypertension (19.5%), preeclampsia/ eclampsia (39.1%), recurrent abruption (10.8%) and idiopathic (10.8%). Previous studies also reported increased risk of abruptio placenta with chronic hypertension [14], pre-eclampsia and eclampsia [15].

Pitaphrom *et al*. [16] reported hypertension in 31% cases.

In the current study, the incidence of cesarean section was 43.5% and vaginal delivery was 52.2%. Jabeen *et al*. [2] in his study showed incidence of cesarean to be as low as 7.94%. It was due to the fact that most of the babies were already dead and many patients were in advanced labour. In the study of Nanadonde *et al*. [12] 47.4% cases were delivered vaginally and 51.6% cases by cesarean delivery.

In our study, abruptio placenta was complicated by postpartum haemorrhage (19.5%), acute renal failure (17.3%) and disseminated intravascular coagulation (13.0%). As observed by Pitaphrom *et al*. among maternal complications, postpartum haemorrhage was the commonest followed by sepsis, shock, Disseminated intravascular coagulation and acute renal failure. In study observed by Nandonde *et al*. [12] the incidence of acute renal failure was 31.6%, disseminated intravascular coagulation was 3.5% and postpartum haemorrhage was in 36.8% cases.

In the present study, obstetric hysterectomy was performed in 4.3% cases which can be compared to the study done by Iram *et al*. [17] who reported an incidence of 1.9%. The incidence of maternal death in our study was 2.1% which is similar to 1.32% found in Jabeen *et al*. [2] Mortality was much higher (4.7%) as compared to other studies in the study done by Seema *et al*. [18] Mortality rate was less in our study due to prompt availability of blood and blood products for immediate resuscitation.

Maximum number of women received less than or equal to [3], packed cell volume (60.8%) and blood products were needed in 30.4% cases. In the study by Nandonde *et al*. [12] blood transfusion was required in 69.5% cases of abruptio placenta.

It has been reported previously that the magnitude of still birth is dependent on the degree of placental separation, particularly when it exceeds 50% [19]. In our study, fetal mortality (36.9%) seems to be due to abruption itself. The same high mortality rate was observed by Abari RM *et al*. [20] and Kramer MS *et al*. [21]

Conclusion

Abruptio placenta represents a potentially serious obstetric problem that compromises fetal viability and morbidity, and also maternal health and wellbeing. The frequency of abruptio placenta is more in women belonging to low socio-economic status and without regular antenatal checkup. Our results provide clinicians important information about the risk factors to be considered while counselling women during antenatal care.

Improved attendance to antenatal care and identification of high risk factors, timely diagnosis and prompt interventional active management is necessary. Early identification of gestational hypertension which is a major risk factor and its proper treatment may help to reduce the incidence. Abruptio placenta should be managed Improve datten dance to antenatal care and identification of high risk factors, timely diagnosis and prompt interventional active management is necessary. Early identification of gestational hypertension which is a major risk factor and its proper treatment may help to reduce the incidence. Abruptio placenta should be managed

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