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Original Research Article

Maternal and perinatal outcome in abruption placenta in tertiary care center: a record based case series study

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ABSTRACT

Background: Abruptio placenta is premature separation of the normally implanted placenta before delivery. It is one of the leading causes of maternal morbidity and neonatal morbidity and mortality, more so because of the difficulty to predict the acute event. It occurs in approximately one in 80 deliveries and remains a significant cause of perinatal mortality and morbidity. Objective of the study was to study maternal and perinatal outcome in cases of abruption.
Methods: 42 cases of pregnant women who presented with abruption placenta to HSK hospital and Research Centre, S. Nijalingappa Medical College, a tertiary care centre at Bagalkot, from January 2022 to December 2022. Maternal and perinatal characteristics were retrieved from the case papers.
Results: Among 42 cases of abruption 70% delivered vaginally and 30% underwent caesarean section. 84% had preterm delivery. 66% were still born. 21% were case of severe anaemia and required blood transfusion. 1 had maternal mortality.
Conclusions: The availability of advanced emergency obstetric care across greater number of referral hospitals has been responsible for decreasing the morbidity and mortality associated with many obstetric conditions. However, the challenge with abruptio placenta is the difficulty of predicting this condition, and hence appropriate management. As of now, early referral to tertiary care centres, better availability of blood and blood products and early interventions have the potential to limit adverse maternal and perinatal outcomes. Research regarding predictors of placental abruption can help in improving maternal and perinatal outcome.

Keywords: Abruptio Placenta, Maternal, Morbidity, Mortality

INTRODUCTION

Abruptio placenta is premature separation of the normally implanted placenta before delivery. It is one of the leading causes of maternal morbidity and neonatal morbidity and mortality, more so because of the difficulty to predict the acute event.[1] It occurs in approximately one in 80 deliveries and remains a significant cause of perinatal mortality and morbidity.[2] Abruptio placenta begins with rupture of a decidual spiral artery leading to hemorrhage into the decidua basalis and formation of retroplacental hematoma. Predisposing factors are preeclampsia (which has impaired trophoblastic invasion with atherosis), inflammation or infection. Abruption is classified as total or partial depending on separation of placenta. Haemorrhage can be concealed - as a retroplacental clot or revealed- manifesting as acute onset bleeding P/V.[3] It can be nontraumatic i.e spontaneous with minimal foetal blood loss or Traumatic abruption-as in external trauma leading to placental tears or fractures resulting significant in foetal blood loss. Although Abruption is an acute event requiring immediate delivery in maternal and/or foetal interest,

chronic abruption has been described when placental separation is not followed by delivery. When oligohydramnios co-exists with this condition, it is called as chronic abruption –oligohydramnios sequence (CAOS).[4]

Clinical features of abruption are sudden onset of abdominal pain, vaginal bleeding, maternal tachycardia, uterine tenderness, hypertonus, non-reassuring foetal status.

Maternal complications are haemorrhage, need for blood transfusion, DIC, acute kidney injury, pulmonary oedema, need for obstetric hysterectomy, Sheehan's syndrome, postpartum anaemia.[1]

Severe abruption is associated with a high risk of postpartum haemorrhage (PPH) which can progress to severe disseminated intravascular coagulation (DIC).[5,6] Therefore, it is necessary to manage such deliveries at referral medical institutions that are equipped with sufficient blood products and emergency transfusion protocols.[7,8]

Perinatal complications are prematurity, low birth weight, birth asphyxia, need for NICU admission, intrauterine foetal demise, neonatal death.[1]

The prognosis depends on when the patient presents to the hospital. If the bleeding continues, both maternal and foetal lives are at stake. Partial placental separation is associated with low mortality compared to full separation; however, in both cases, without an emergent caesarean section/ urgent delivery, foetal demise may occur. The condition accounts for 5 to 8% of maternal deaths.[9]

Treatment options include immediate delivery versus expectant management, depending upon maternofoetal clinical condition, gestational age and amount of associated haemorrhage.

We preferred to do this retrospective analysis of abruption placenta cases admitted in the hospital to study the maternal and perinatal outcome.

METHODS

A total of 42 cases of pregnant women who presented with abruption placenta to our HSK Hospital and Research Centre, S. Nijalingappa Medical College and Research Center, a tertiary care centre at Bagalkot, from January 2022 to December 2022. The following parameters were retrieved from the case papers: Maternal characteristics – age, gravidity, period of gestation at presentation, co-existing Preeclampsia, presence of oligohydramnios, duration of time between onset of symptoms to admission, admission to delivery interval, mode of delivery, indication for caesarean section, presence and size of retroplacental clot, complications like shock, disseminated intravascular coagulation, acute renal failure, congestive cardiac failure, central venous thrombosis, and any intensive care unit admissions. Investigations done were documented. Need for blood and blood product transfusions. Perinatal characteristics – Gestational age at delivery, status at birth, birth weight, Apgar score, NICU admissions, postnatal morbidity and mortality were documented.

Statistical analysis

Data was entered in excel sheet -percentages and proportions calculated.

RESULTS

Among 42 cases of abruptio placenta, 1 was 19-year-old, 37 were between 21-30 years, with most of them between 20-25 years old, and 4 were more than 30 years old. 26% were primigravida and 74% were multigravida, in which most of them were third gravida and one was a grand multigravida. 21% (9) presented with hemoglobin below 7gm% on admission, of which 8 required more than 1 unit of packed red blood cells and 4 required more than one component. Out of all the cases, 29 presented with a hemoglobin of 7-10.9gm% and 4 presented with >11gm%.

Of total 42 cases 11 presented with thrombocytopenia, of which 8 required more than one component transfusion.

Table 1: Hematological investigation.

Variables	No	%
Haemoglobin		
<7	9	21.4
7.1-10.9	29	69.04
>11	4	9.52
Platelets		
<1,00,000	2	4.76
1,00,000-1,50,000	9	23.8
>1,50,000	31	71.4
LFT		
Derranged	3	7.14
Normal	39	92.8
RFT		
DERRANGED	1	2.38
NORMAL	41	97.6

Onset of symptoms to admission (SA) interval <4 hours in 26 cases, 4-8hrs in 15 cases and >8hrs in 1 case. The incidence of IUFD was 13 cases in <4 hours SA interval (50%), 11 cases in 4-8 hours (73%) and 100% in >8 hours.

30% (13) were early preterm (<32wog) of which 4 were live at birth, 52% (22) were late preterm (32-37wog) of which 7 were live at birth and 16% (7) were term (>37wog) and 2 were livebirths. Amongst all the cases, 33 had a retroplacental clot of >100gms in whom 28 had IUFD.

29 (70%) cases delivered vaginally of which 13 required induction for delivery and 13 (30%) underwent LSCS. Of

these the indications were, 5 for previous Caesarean sections, 5 for abruption with poor bishop score, 2 for non-reassuring fetal status and 1 for non-progression of labor.

Table 2: Factors affecting perinatal outcome versus status at birth.

Parameter under evaluation	Most common observation	status at birth	
		Live	Dead
Symptoms to admission interval	<4 hours	26 13	13
Retroplacental clot	>100 grams	33 5	28
Gestational age	32-37 weeks	22 7	15
Admission to delivery interval	2-6 hours	20 4	16
Birth weight (grams)	1000-2000	22 8	14

The maternal morbidities observed in our series were 2 cases with chronic hypertension superimposed with severe Preeclampsia, 3 cases of HELLP syndrome, 1 with postpartum eclampsia and 2 required ICU management.

Table 3: Complications and Blood transfusion.

Variables	No	%
Complications		
HELLP Syndrome	3	7.14
CCF	1	2.38
ICU Admission	2	4.76
ARF	1	2.38
Postpartum Eclampsia	1	2.38
Severe Anaemia	9	21.4
Severe PE	13	30.9
Blood transfusion		
PCV	31	31
RDP	2	2
FFP	9	21.4

Of the 2 cases requiring ICU management, 1 was third gravida presented after 4 hours of onset of vaginal bleed with hemoglobin of 5gm%, platelet 88000 and intrauterine fetal demise. She delivered vaginally 8 hours after induction, had 490gms of retroplacental clot, was transfused 5 units of packed red blood cells. She developed acute kidney injury and was managed with hemodialysis. She was sent home on day 42 with advice for continuing intermittent dialysis. However, patient presented with pulmonary edema on follow-up and died after a week of re-admission on day 70.

The second patient was third gravida who presented 3 hours after onset of symptoms with 8gm% hemoglobin, 1,00000 platelet and intrauterine fetal demise. She had precipitate labor with 340gms of retroplacental clot. She had colporrhexis and collapsed postpartum. Exploration and repair was done under General Anesthesia. She required inotropic support with mechanical ventilation, 4 units packed red blood cells and 5 units fresh frozen plasma, ICU admission for 5 days and was discharged on day 12.

Regarding the neonatal outcome in our series, amongst the 42 cases, 66.6% (28) were stillborn. Of 14 live born fetuses, 23.8% required NICU admission and resuscitation, of which 2 had early neonatal death.

Table 4: Perinatal outcome.

Variables	No	%
Alive/Dead		
Alive	14	33.3
Dead	28	66.6
Birth Weight		
<1000gms	7	16.6
1000-2000	22	52.3
>2000gms	13	30.9

DISCUSSION

The present study was undertaken in a tertiary care hospital in North Karnataka, predominantly catering to rural, socio-economically challenged population. In our study, we found that abruptio placenta was common among multigravida and between age group of 21 to 25 years. Most women had no documented pre-eclampsia. Late preterm deliveries were more. In contrast, Khan et al in their study at Karachi with 205 cases of abruption, found a significant association of Abruption with advanced maternal age, PIH, gestational age, and parity.10This difference may be due to the different populations and characteristics of the study areas.

The majority of our patients presented within 4 hours after the onset of symptoms, and delivered within 6 hours of admission. This might have been protective to the mother and the baby as the longer the duration of abruption, the higher the possibility of stillbirth or birth asphyxia in the neonate, and greater the haematological and other complications in the mother.[1]

As expected, the incidence of stillbirth was high when retroplacental clot was >100 grams. Other factors associated with poor neonatal outcome were lower gestational age at delivery and time from onset of symptoms to admission/ delivery. In a study conducted by Elkafrawi D and team among African American women, it was reported that lower gestational age at delivery was the most important risk factor for poor neonatal outcome in women with placental abruption. Poor maternal outcome correlated with HELLP syndrome, crack/cocaine use and previous caesarean section.[11]

We did not note a similar association with previous caesarean section and cocaine use in our population is extremely rare.

Most common indication for caesarean section were abruption with poor bishop score followed by non-reassuring foetal status. All cases of stillbirth were associated with intrauterine foetal demise before admission and we also had two cases of neonatal deaths, associated with early prematurity.

Ananth and co-workers have defined severe placental abruption as displaying one or more of the following: maternal sequelae that includes DIC, Shock, transfusion, hysterectomy, renal failure or death, fetal complications such as non-reassuring foetal status, growth restriction or death, neonatal outcomes that include death, preterm delivery or growth restriction. Using this definition, 92.8% of our cases can be classified as having severe abruption.

The study conducted by Devabhaktuni P et al with total of 180 cases showed that preeclampsia leading to abruption was 57%.[11] In contrast our study showed that abruptio and preeclampsia association was 30%. Another study done with 62 cases of placental abruption found association of 39%.[13]

Saquib S et al in 2020 showed that in study of 92 cases the mode of delivery was 78% of caesarean section and 22% delivered vaginally, where as our study showed vaginal delivery of 70% and caesarean section of 30%.[14]

Downes et al in 2017 published that neonate in pregnancies complicated by abruption required resuscitation more often, had increased number of NICU admissions, longer duration of stay, increased incidences of respiratory distress syndrome, apnoea, asphyxia, stillbirth, morbidity.[15]

Limitations

The limitations of this study are that it was retrospective and included a small number of participants from a single hospital. The findings hence cannot be generalised to the broader population.

CONCLUSION

The availability of advanced emergency obstetric care across greater number of referral hospitals has been responsible for decreasing the morbidity and mortality associated with many obstetric conditions. However, the challenge with abruptio placenta is the difficulty of predicting this condition, and hence appropriate management. As of now, early referral to tertiary care centres, better availability of blood and blood products and early interventions have the potential to limit adverse maternal and perinatal outcomes. Research regarding predictors of placental abruption can help in improving maternal and perinatal outcome and mortality. In our study also, we found that abruption lead to the increased number of NICU admissions, stillbirths, increased neonatal mortality and morbidity.

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