

A STUDY OF FETOMATERNAL OUTCOME IN ABRUPTIO PLACENTAE

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Abstract

Amis and objectives: The present study was conducted to find out incidence of abruption placenta cases, risk factors associated with abruption placenta and fetomaternal outcome in RDBP Jaipuria hospital associated with RUHS CMS, Jaipur.

Material and methods: A Prospective observational study was conducted at Tertiary care hospital (Government RDBP Jaipuria Hospital attached with RUHS CMS, Jaipur) during one year study period.

Results: 40 (70.68%) babies were live births, 11 (18.96%) babies were dead (IUDF), while 6 (10.34%) were stillborn and 7 (12.07%) expired in their early neonatal period. This concludes perinatal mortality rate of 22.41% in our study period. 19 (32.76%) patients developed PPH, 16 (27.59%) patient encountered hemorrhagic shock, 9 (15.52%) patients developed DIC, 15 (25.86%) patients had prolonged hospital stay, 8 (13.79%) had puerperal sepsis, 5 (8.6%) patients required ICU admission, 4 (6.89%) required ventilatory support and 2 (3.45%) cases complicated with Renal failure. There was one maternal mortality in our study duration.

Conclusion: Placental abruption has a profound impact on both maternal and perinatal complications including PPH, shock, DIC, renal failure, couvelaire uterus with severe birth asphyxia and perinatal death.

Keywords: maternal, perinatal, complications, sepsis, placental abruption

INTRODUCTION

Placental abruption remains a major cause of massive obstetric haemorrhage and significant cause of maternal and neonatal morbidity and mortality.¹ It is defined as partial or complete separation of normally implanted placenta after 28 weeks of gestation, prior to delivery of the fetus.² It occurs due to rupture of spiral arteries in uterus and causes

bleeding which leads to haematoma formation in decidua basalis and separation of placenta from the uterine wall.

Vaginal bleeding with painful uterine contractions during second half of pregnancy is a classical symptom of placental abruption.³ The uterus is generally hard and tender on palpation. Signs and symptoms of shock may be present in severe cases. Abruption placentae is essentially a clinical diagnosis determined by the above features and is confirmed by finding of retroplacental clots after delivery.⁴

The incidence of abruption placentae varies from 0.5% to 1.0% worldwide.⁵ In India, it ranges from 2.5% to 3.8%.⁶ In many countries the rate of placental abruption has been increasing, perhaps due to advancing maternal age and increasing cesarean section rates. The incidence appears to be increasing probably due to increase in prevalence of the risk factors for the disorder.

Placental abruption complicates about 1% of pregnancies and is a leading cause of vaginal bleeding in the latter half of pregnancy.⁷ Maternal effects of abruption depend primarily on the severity, whereas its effects on fetus depend on both its severity and gestational age at which it occurs.⁸ Abruption placentae is a major cause of maternal and perinatal morbidity and mortality. Maternal complications include hemorrhagic shock which is caused by blood loss. Signs of shock are out of proportion of estimated blood loss, disseminated intravascular coagulation due to consumption of coagulation factors, renal failure due to hypovolumic hypoperfusion of the kidneys and fibrin deposits and it can be either Acute tubular necrosis (reversible) or Renal cortical necrosis (irreversible), ischemic necrosis of distal organs e.g. hepatic, adrenal and pituitary, uterine apoplexy or Couvelaire uterus leading to postpartum haemorrhage caused by uterine atony, coagulation failure and puerperal sepsis caused by anaemia, low socioeconomic strata, increased handling while referring from peripheral centres to tertiary care centres.⁹ Recurrence rates are about 5-17% after the first episode & about 25% after the second, each successive episode is usually more severe than the last. Maternal mortality is 2-8% contributed by hemorrhagic shock, coagulopathies and renal failure.

The perinatal mortality is approximately 20-fold higher in comparison to pregnancies without abruption. Abruption involving more than 50% of the placental surface is frequently associated with fetal death. Although placental abruption is an important cause of spontaneous preterm birth, it is also often an indication for iatrogenic preterm delivery. Premature separation of the placenta before delivery may deprive the fetus of oxygen and nutrition, leading to long term handicap among survivors. Fetal complications include hypoxia, anaemia, growth restriction, prematurity, neurodevelopmental problems and fetal death.¹⁰

The present study was conducted to find out incidence of abruption placenta cases, risk factors associated with abruption placentae and fetomaternal outcome in RDBP Jaipuria hospital associated with RUHS CMS, Jaipur.

MATERIALS AND METHODS

Study Design:

A Prospective observational study was conducted at Tertiary care hospital (Government

RDBP Jaipuria Hospital attached with RUHS CMS, Jaipur) during one year study period.

Source of Data:

All cases of pregnant women with 28 weeks of gestation and more who were admitted to Department of Obstetrics & Gynaecology in RDBP Jaipuria hospital associated with RUHS CMS, Jaipur with signs and symptoms suggestive of abruption.

Inclusion Criteria

All pregnant women after 28 weeks of gestation with or without complains of bleeding per vaginum and diagnosed as abruption placentae during the course of delivery.

Exclusion Criteria

Placenta previa

Genital tract trauma

Lesions of genital tract (Polyps. Malignancy, etc.)

Method of Collection of Data:

Approval was taken from institutional ethics committee and then study was started. Before recruiting the eligible patient in the study, informed and written consent was taken from the patient or patients relatives if patient was not in the position to give informed consent. Study participants were assured of their anonymity. The data was collected using a piloted proforma meeting the objectives of the study by means of thorough history taking, detailed examination, relative investigations and observation of the patients during course of delivery and post-partum period. The general physical, systemic and obstetrical examination was carried out. Relevant investigations, such as laboratory tests and imaging were performed and feto-maternal outcomes were recorded.

Investigations required:

Blood group Rh typing

Complete Hemogram, PBF

Complete coagulation profile including PT, APTT, platelet count, fibrinogen, fibrin degradation products, Ddimer

RBS RFT LFT LDH

HIV Reactive/Non-reactive VDRL Reactive/Non-reactive

HBsAg Positive/Negative

Urine complete microscopy

Urine culture sensitivity

USG/DOPPLER- To rule out placenta previa and to confirm placental location, presence of retroplacental haematoma and fetal viability/jeopardy

Others- serum electrolytes

Statistical Analysis:

Data thus collected were entered in Microsoft excel software and analysed and analyzed using the SPSS (Statistical Package for the Social Science; SPSS Inc. Chicago, IL, USA) version 20.0. The results were expressed as number and percentage for all the qualitative variables.

RESULTS

This study was conducted in RDBP Jaipuria hospital associated with RUHS CMS, Jaipur,

Rajasthan over a period of 1 year. Total number of deliveries in the study period was 5567 and total cases of abruptio placentae which fulfilled the inclusion criteria during study period were 58. Incidence of Abruptio placentae was 1.04%.

Maximum participants were in age group 21-25 years (60.35%) followed by 26-30 years (17.24%), ≤ 20 years (12.07%), 31-35 years (6.89%) and minimum were of >35 -year age group (3.45%). In this study majority of the cases were unbooked (70.69%) and only 29.31% were booked. (68.96%) cases in this study were from rural residence and 18 (31.04%) were from urban residence. Maximum 60.35% participants were from lower socioeconomic group followed by 25.86% were from lower socioeconomic group and minimum 13.79% were from upper socioeconomic group. 82.76% cases were Hindu and 17.24% were Muslims in our study. Maximum 70.69% cases were immunized and 17.24% were unimmunized while 12.07% were partly immunized in this study. 60.35% cases were referred and 39.65% cases were non referred in our study.

Approximately two third (63.79%) of the participants were multipara and 36.21% were Primipara in this study. Half of the cases (50%) were of G2-G4, 36.21% cases were of G1 and 13.79% were of G5 or more. Our study showed that 63.79% cases were Multiparous, 89.65% cases were Anaemic, 34.49% were Tobacco Chewers, Hypertensive disorders were observed in 25.86% cases while 22.41% cases were with h/o abruption in previous pregnancy, 13.79% cases were Smokers, and abruption was associated with PROM in 5.17% cases, Polyhydramnios associated with 3.45% cases, H/o Trauma was noted in 1.72% and Eclampsia was associated with 1.72% of cases.

Majority (62.07%) of the patients were admitted at 33- 36 weeks of gestation, 25.86% were at 28-32 weeks and 12.07% were admitted at >36 weeks of gestational age.

Majority of the patients 40 (68.96%) were moderately anaemic, 7 (12.07%) cases were mildly anaemic while 5 (8.63%) cases were severely anaemic. Only 6 (10.34%) patients had no anaemia.

Majority 77.6% of the patients required blood and blood products. 48.28% patients required 1 unit blood, 18.97% patients required 2-3 units of blood, 10.35% patients required more than 3-unit blood transfusions. While FFP and Platelets were transfused to 22.4% patients.

TABLE NO. 1: DISTRIBUTION OF CASES ACCORDING TO MODE OF DELIVERY

Mode of delivery	No. of cases	Percentage
Vaginal delivery	33	56.90%
LSCS	23	39.66%
Instrumental delivery (Outlet forceps / Ventouse)	1	1.72%
Peripartum Obstetric Hysterectomy	1	1.72%
Total	58	100%

Majority (56.90%) of the cases delivered vaginally, 39.66% patients delivered by LSCS, 1.72% patients underwent Peripartum obstetric hysterectomy, while 1.72% patient were delivered by ventouse application.

TABLE NO. 2: DISTRIBUTION ACCORDING TO FETAL OUTCOME

Fetal outcome	No. of cases	Percentage
Alive	41	70.68%
IUFD	11	18.96%
Stillbirth	6	10.34%
Early neonatal death	7	12.07%
Total perinatal death	13	22.41%

40 (70.68%) babies were live births, 11 (18.96%) babies were dead (IUFD), while 6 (10.34%) were stillborn and 7 (12.07%) expired in their early neonatal period. This concludes perinatal mortality rate of 22.41% in our study period.

TABLE NO. 3: DISTRIBUTION ACCORDING TO BIRTH WEIGHT

Weight in Kg.	No. of cases	Percentage
< 2 Kg	16	27.58%
2-2.4 Kg	21	36.21%
2.5-2.9 Kg	13	22.42%
≥3.0 Kg	8	13.79%

37 (63.79%) babies born with birth weight less than 2.5 kg, 13 (22.42%) babies were 2.5-2.9 kg, while 8 (13.79%) babies were born with birth weight ≥3.0 kg.

TABLE NO.4: DISTRIBUTION OF THE CASES ACCORDING TO MATERNAL COMPLICATIONS AND MORBIDITY

Type	No. of cases	Percentage
PPH	19	32.76%
Shock	16	27.59%
DIC	9	15.52%
Puerperal sepsis	8	13.79%
Mechanical ventilation	4	6.89%
Renal failure	2	3.45%
ICU admission required	5	8.60%
Prolonged hospital stay	15	25.86%
Maternal Mortality	1	1.72%

19 (32.76%) patients developed PPH, 16 (27.59%) patient encountered hemorrhagic shock, 9 (15.52%) patients developed DIC, 15 (25.86%) patients had prolonged hospital stay, 8 (13.79%) had puerperal sepsis, 5 (8.6%) patients required ICU admission, 4 (6.89%) required ventilatory support and 2 (3.45%) cases complicated with Renal failure. There was one maternal mortality in our study duration.

DISCUSSION

Abruptio Placentae remains a major cause of maternal and perinatal morbidity and mortality in developing countries. There has been a significant progress in perinatal

medicine during the last few decades e.g. advanced ultrasound equipments, delicate methods to assess fetal wellbeing. Our study was conducted in RDBP Jaipuria hospital associated with RUHS CMS, Jaipur, Rajasthan to ascertain the various risk factors, maternal complications and fetal outcome due to abruptio placentae.

Incidence of Abruptio placentae was 1.04% in our study. It corresponds with various studies reported previously and fits in overall incidence rate of abruptio placentae (0.5 – 1.5%) as in study of Mohapatra S et al (0.66%),¹¹ Desai N et al (0.80%),¹² Poovathi M et al (0.69%),¹³ Mrinalini mitra et al (0.98%),¹⁴ Alka et al (0.9%),¹⁵ Janakiram P et al (0.74%)¹⁶ while Mukherjee S et al (4.4%)¹⁷ reported higher incidence rates compared to our study. Higher incidence rates were explained because of lower socioeconomic status, poor nutritional status and ignorance about antenatal care. Renuka P et al¹⁸ reported incidence of abruption placentae as 1.64% as they included all patients with varying degree of abruption at any gestational age. Different incidence rates from different studies could be explained by different inclusion criteria, differences in study population, study designs and diagnostic criteria's.

Our study showed a higher incidence (60.35%) in 21-25 years age group. Similar observations were made by Krishna P et al (50%)¹⁹ while 26-30 year age group in Choudhary V et al (45.97%),²⁰ Poovathi M et al (58.82%).¹³ Higher incidence in younger obstetric population rather than advanced age was observed because of majority of the patients belonged to rural and backward areas of western Rajasthan, where marriages at an early age are quite common, predisposing women to give too early, too many and too frequent births. Elderly and multiparous patients from rural areas do not report to higher centres and they are managed at home. While Choudhary V et al²⁰ and Poovathi M et al¹³ showed higher incidence in 26 – 30 years age group patients.

Anaemia is considered a high-risk factor in abruptio placentae. Anaemia itself may cause altered fetoplacental angiogenesis in early pregnancy which could result in defective placental structures formation (villi and blood vessels) and resulting in abruption at earlier gestational age. Majority (89.65%) of the patients in our study group were anaemic, Similar observations were made by other studies Choudhary V et al (57.26%)²⁰ and Mukharjee S et al (96.2%)¹⁷ while 45% in study of Sumangala Devi et al²¹ and 37% in study of Vaghela V et al.²² The higher incidence of anaemia could be explained by blood loss due to abruption or due to preexisting nutritional deficiency (common in this country) superimposed by abruption. As majority of patients were from rural areas and poor socioeconomic strata.

Hypertension has been an important associated risk factor for Abruptio placentae. Hypertensive vasculopathy can affect placental vasculature which may succumb to sudden rise in blood pressure. Our study showed 25.86% patients with associated hypertensive disorders. Similar observations were made by Vaghela V et al (36.25%), Sumangala Devi et al (24.3%)²² and Choudhary V et al (31.45%).²⁰ In our study exact number of hypertensive patients could have been higher but may have been masked by relatively lower blood pressure due to bleeding subsequent to abruption. Other studies which showed higher incidence of hypertension associated with abruption ie. Poovthi M (71.4%).¹³ This study showed that majority of cases were in 26-30 years age group, higher maternal age is

itself a risk factor for PIH.

The presentation of abruption placentae could be variable. Most women with placental abruption present with sudden onset of abdominal pain, vaginal bleeding and uterine tenderness with fetal heart abnormalities. Blood from retroplacental hematoma may extravasate into myometrium causing pain and irritable tender uterus (prostaglandin release). In our study group majority (63.79%) of patients presented with pain abdomen with bleeding per vaginum. Similar observations were made by Desai N et al (64%),¹² Sumangala Devi et al (42%)²² and Renuka P et al²³ 61.48% and Mukharjee S et al (90.5%).¹⁷ While 17.24% patients presented with only pain abdomen with no bleeding per vaginum (concealed haemorrhage), Similar observations were made by Sumangala Devi et al (14%)²² and Desai N et al (28%).¹² 12.08% presented with only bleeding per vaginum at the time of admission in our study. Similar observations were made by Sumangala Devi et al (45%)²² and Desai N et al (8%).¹²

In our study a significant number of patients (77.6%) required blood transfusions. 48.28% patients required 1 unit blood, 18.97% patients required 2-3 units of blood, 10.35% patients required more than 3-unit blood transfusions. Similar observations were made by Desai N et al (1 unit, 2-3 units, >3 units in 8%, 60%, 32% respectively),¹² Mukharjee S et al (1 unit, 2-3 units, >3 units in 6.6%, 70.8%, 22.6% respectively).¹⁷

Abruptio placentae itself along with multiple risk factors like birth asphyxia, low birth weight, prematurity and neonatal sepsis are significant causes for fetal and perinatal morbidity and mortality. In our study 70.68% babies were live born. Similar observations were made by Subramaniyan V et al (71.9%)²⁵ and Desai N et al (60%).¹² 18.96% delivered as IUD in our study and 34% in study of Desai N et al,¹² Mukharjee S et al (56.6%)¹⁷ showed higher rates of IUD, which could be explained by ignorance about antenatal care, severe abruption and delay in taking the decision to come to a referral hospital. 10.34% babies were delivered as still birth, Similar observations were made by Desai N et al¹² (6%), Mukharjee S et al (11.3%).¹⁷ Coleman J et al²⁴ reported 57% stillbirths. This was explained by majority (58%) of patients admitted in severe abruption with compromised fetus (grade 3) which suggests delays in taking decision to come to hospital and institutional delays may also be partly responsible for high perinatal mortality. 12.07% expired in their early neonatal period while 8% in study of Coleman et al⁶³ and 10% in study of Desai N et al.¹² Perinatal mortality rate of 22.41% in our study period. Similar observations were made by Desai N et al (16%),¹² Poovthi M et al (28%)¹³ and Sumangala Devi et al (32.8%).²² Higher perinatal mortality rates have been observed by Subramaniyan V et al (49.2%).²⁵ Increased perinatal mortality was seen with preterm gestations. Prematurity was a major cause for early neonatal deaths, other causes include birth asphyxia (respiratory distress), low birth weight, neonatal sepsis, hyaline membrane disease. Early detection, prompt management by expert obstetricians, skilled paediatricians and availability of blood & blood components at our centre are the key factors in reducing fetal and perinatal mortality in our study group.

Abruptio placentae is associated with serious maternal complications. Complications were more common with concealed and mixed types. In our study most common

maternal complication observed was post-partum haemorrhage (32.76%) as a result of uterine atony, coagulation failure and puerperal sepsis. Similar observations were made by Choudhary V et al (22.59%),²⁰ Subramaniyan V et al (18.7%),²⁵ Coleman J et al (20%).²⁴ Our study showed that shock due to blood loss following abruptio was observed in 27.59% cases. Similar observations were made by Subramaniyan V et al (9.3%),²⁵ Choudhary V et al (12.9%),²⁰ Coleman et al (24%). DIC caused by consumption of coagulation factors. In our study it was observed in 15.52% cases. Similar observations were made by Subramaniyan V et al,²⁵ Choudhary V et al,²⁰ Coleman et al (15-21%). 8.6% required ICU admission for management of DIC, shock, renal failure and PPH in agreement with Subramaniyan V et al (9.3%)²⁵ while 1% in study of Desai N et al.¹² Mechanical ventilation was required in 6.89% cases in our study and 9.3 % in study of Subramaniyan V et al²⁵ and 1.61% in study of Choudhary V et al.²⁰ 13.79% had puerperal sepsis in our study and 4.7% in study of Mukharjee S et al.¹⁷

Renal failure either because of hypovolumic hypoperfusion of the kidneys or fibrin deposits. It can be Acute tubular necrosis (reversible) or Renal cortical necrosis (irreversible). In our study it was observed in 3.45% cases, that is lower than the rates observed in various other studies (7.5% in study of Mukharjee S et al,¹⁷ 10.48% in study of Choudhary V et al.²⁰ And 12.5% in study of Subramaniyan V et al²⁵) which could be attributed to timely intervention and shock management in cases of severe abruptio placentae.

There was only one maternal mortality during the study period (1.72%). Lower maternal mortality can be attributed to improved obstetric care, timely interventions and availability of blood and blood components.

Conclusion

To conclude, Abruptio placentae is a potentially serious medical and obstetric emergency associated with alarmingly high rates of maternal and fetal morbidity – mortality, especially in our country. Increased frequency is noted in women from low socioeconomic strata, no antenatal checkups and poor nutritional status. Maternal anaemia, multiparity, unbooked status, rural residence, h/o abruptio in previous pregnancies and hypertensive disorders are important risk factors for abruptio placentae. Unfortunately, neither accurate prediction nor prevention of abruptio placentae is possible in majority of the cases at the present time.

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