

Original Article

Evaluation of Adverse Fetal Outcomes in Patients with Abruptio Placentae

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Abstract

Objective: The aim of this study is to determine the frequency of adverse fetal outcome in women with placental abruption.

Methodology: This is a descriptive observational study conducted in the department of Obstetrics and Gynecology, CMH, Muzaffarabad from 16th February 2022 to 15th August 2022. A total of 130 women with singleton pregnancy presenting with placental abruption, 20 to 40 years of age were included. Each woman was managed as per ward protocol. All patients were under strict supervision till delivery and fetal outcomes were observed.

Results: Age range in this study was from 20 to 40 years with mean age of 28.95 ± 4.20 years. Majority of the patients 78 (60.0%) were between 20 to 30 years of age. Mean gestational age was 30.06 ± 2.69 weeks. Mean BMI was 27.32 ± 3.47 kg/m². In this study, frequency of adverse fetal outcome in women with placental abruption was found to be preterm birth 51 (39.23%), low birth weight babies 38 (29.23%), stillbirth in 10 (7.69%) and NICU admission in 55 (42.31%) patients.

Conclusion: This study concluded that frequency of adverse fetal outcome in women with placental abruption is quite high.

Keywords: Abruptio placenta, low birth weight, preterm delivery.

Cite this article as: Shabbir N, Pirzada H, Zafar S, Zia MS, Saleem M, Fatima M. Evaluation of adverse fetal outcomes in patients with Abruptio Placentae. *J Soc Obstet Gynaecol Pak.* 2024; 14(2):204-208.

Introduction

Placental abruption (also known as Abruptio placentae, Ablation placentae, and Accidental haemorrhage) is the total or incomplete detachment of a regularly placed placenta from its uterine location prior to the foetal delivery, most commonly happening during the third trimester of pregnancy.¹ Placental abruption of varying degrees happens in around 1% of all pregnancies, or 1 in every 100 births worldwide. Abruptio is related with a perinatal death rate of 119 per 1000 births, compared to a rate of 8.2 per 1000 births in the control group in the United States.² In Pakistan, placental abruption rates vary from 2.2% to 7%, with perinatal death rates ranging from 50.63% to 62.5%.³

One of the most common causes of antepartum haemorrhage, abruptio placentae, is linked with substantial obstetric consequences, including higher

risks of neonatal and maternal morbidity and death.² The haemorrhage might be disguised, exposed, or a combination of the two. The concealed form is more harmful since the amount of blood loss does not correlate with maternal vital signs and has been linked to a greater rate of foetal mortality than the exposed kind.³ Hypertensive disorders of pregnancy, multiparity, young women (20 years), advanced maternal age (>35 years), previous episode of abruptio placentae, uterine over distension (multiple pregnancy, polyhydramnios), cigarette smoking, cocaine use, uterine anomalies, and premature membrane rupture are some of the risk factors for abruptio placentae.⁴

The maternal vessels breaking away from the decidua basalis, not the foetal vessels, induce placental abruption in the great majority of instances. The primary reason is frequently unknown. Trauma that

Authorship Contribution: ^{1,2}Substantial contributions to the conception or design of the work or the acquisition, ^{3,4} Drafting the work or revising it critically for important intellectual content, ⁵Final approval of the version to be published. ⁶Active participation in methodology

Funding Source: none

Conflict of Interest: none

Received: Oct 22, 2023

Accepted: May 08, 2024

strains the uterus causes a tiny proportion of abruptions. The placenta breaks away when the uterine tissue strains suddenly because it is less elastic than the uterus. When anatomical risk factors are present, the placenta does not attach in a sufficient location, and it may not develop properly or get detached as it grows. Cocaine usage during the third trimester increases the risk of abruption by 10%. Though the exact mechanism is not known, cocaine and tobacco cause systemic vasoconstriction, which can severely restrict the placental blood supply (hypoperfusion and ischemia), or otherwise disrupt the vasculature of the placenta, causing tissue necrosis, bleeding, and therefore abruption.⁵

Abruption is an important contributor of illness and death in fetus and their mothers. Placental abruption can be complete or partial, resulting in discomfort and vaginal bleeding--the characteristics of placental abruption.⁴ The most common cause of haemorrhagic shock, DIC, and renal failure is abruptio placentae, and infant consequences include hypoxia, anaemia, growth restriction, preterm, neurological difficulties, and early mortality.^{5, 6} In one investigation, the following foetal outcomes were observed: Preterm delivery occurred in 51% of the cases, and 47% of the infants were born weighing less than 2.5 kg.⁷ Another research found that 46.9% of babies were admitted to the NICU and 46.9% were stillborn.⁸ Perinatal mortality was 75.9%, preterm was 71%, and low birth weight was 69.8%, according to Alka et al (⁸). A local study has shown the low birth weight babies in 42% and stillborn in 29%.⁹

This investigation will assist us in determining the unfavourable fetal outcome in women who have had a placental abruption. Although there is a large amount of published work on this subject, it has become sparser in the last five years. On this basis, it is urged to conduct a critical review of obstetrician and midwife training, assessment, and supervision of practice. In these circumstances, it is critical to emphasize the need of regular prenatal exams and monitoring. Based on these findings, a plan for multidisciplinary prenatal treatment in our general practice for these high-risk women may be developed to accommodate their high-risk requirements and assure safe newborns. The aim of this study is to determine the frequency of adverse fetal outcome in women with placental abruption.

Methodology

This is a descriptive observational study conducted in the department of Obstetrics and Gynecology, CMH,

Muzaffarabad from 16th February 2022 to 15th August 2022. Sample size of 130 cases has been calculated by using WHO calculator for single proportion with 95% confidence level, 8% margin of error and taking expected percentage of stillbirth as 29.0%.⁹

Inclusion Criteria

This study comprised of women with singleton pregnancy presenting with placental abruption with a gestational age of more than 24 weeks between 20 – 40 years of age including both primiparous and multiparous.

Exclusion Criteria

Women with multifetal pregnancy, medical disorders like diabetes mellitus, heart disease, renal disease and pregnancy induced hypertension, history of smoking, Polyhydramnios, history of trauma in current pregnancy and congenitally abnormal fetus were excluded.

After approval from institutional ethical review committee, total number of 130 women fulfilling the inclusion criteria were selected using non-probability, consecutive sampling. Informed consent was taken from each patient. Age, gestational age, parity, place of living, height, weight and BMI were noted. Each woman was managed as per ward protocol. All patients were under strict supervision and fetal outcomes including preterm birth, low birth weight babies, stillbirth and NICU admission were observed. This all data was recorded on a specially designed proforma (Annexure-I).

The data was analyzed using SPSS version 25.0. Age, gestational age, height, weight and BMI were presented as mean and SD. Parity (primiparous/multiparous), place of living (rural/urban) and fetal outcome (preterm birth, low birth weight babies, stillbirth and NICU admission) were presented as frequency and percentage.

Stratification was done for age, gestational age, parity, BMI and place of living (rural/urban). Post-stratification chi square was applied to see their effects on fetal outcome and p-value ≤ 0.05 was considered as significant

Results

Age range in this study was from 20 to 40 years with mean age of 28.95 ± 4.20 years. Majority of the patients 78 (60.0%) were between 20 to 30 years of age as shown in Table I. The mean gestational age of

the sample was 30.06 ± 2.69 weeks. 98 patients had a gestational age in between 25 – 32 weeks while 32 of them had more than 32 weeks. Distribution of patients according to Parity is also presented. 33 women had their first delivery while 97 patients were multiparous. The mean BMI of the population was 27.32 ± 3.47 kg/m². Out of total patients, 45 had BMI less than or equal to 25 and 85 of them had BMI more than 25 (Table I).

Age (in years)	No. of Patients	%	Mean \pm SD
20-30	78	60.0	28.95 \pm 4.20 years
31-40	52	40.0	
Total	130	100.0	
Gestational age (weeks)			
25-32 weeks	98	75.38	30.06 \pm 2.69
>32 weeks	32	24.62	
Parity			
Primiparous	33		25.38
Multiparous	97		74.62
BMI (kg/m ²)			
≤ 25	45	34.62	27.32 \pm 3.47
>25	85	65.38	

Distribution of patients according to place of living is, 77 (59.23%) patients belong to rural area and 53 (40.77%) patients were from urban area.

In this study, frequency of adverse fetal outcome in women with placental abruption was found to be preterm birth 51 (39.23%), low birth weight babies 38 (29.23%), stillbirth in 10 (7.69%) and NICU admission in 55 (42.31%) patients as shown in Table II.

Fetomaternal outcome	Frequency (%)	
	Yes	No
Stillbirth	10 (7.69%)	120 (92.31%)
Preterm delivery	51 (39.23%)	79 (60.77%)
Low birth weight babies	38 (29.23%)	92 (70.77%)
NICU admission	55 (42.31%)	75 (57.69%)

Stratification of the adverse fetal outcome with respect to age is shown in Table III. Preterm delivery occurred in 42 (53.85%) patients having fetal age of 20 – 30 weeks and in 09 (17.31%) patients' wit 31 – 40 weeks of age (p-value = 0.0001). Stillbirth also occurred in 09 (11.54%) patients with 20 – 30 weeks of age and only 01 (1.92%) patient with 31 – 40% weeks of age showing a p-value of 0.04. Stratification of the adverse

fetal outcome with respect to gestational age is shown in Table III. 36 (36.73%) patients with a gestational age of 25-32 weeks and 19 (59.37%) patients having gestational age of more than 32 weeks had been admitted in NICU showing a p-value of 0.024. Although, stillbirth has been occurred in 05 (5.10%) patients with a gestational age of 25-32 weeks and 05 (15.63%) patients having gestational age more than 32 weeks (p-value = 0.052).

Still birth has been presented in 14 (42.42%) primiparous patients and in 6 (6.19%) in multiparous patients with a p-value of 0.26. Table III have shown the stratification of the adverse fetal outcome with respect to BMI. Preterm delivery was performed in 12 (26.67%) patients having BMI less than 25 kg/m² and in 39 (45.88%) patients with a BMI of more than 25 kg/m² (p-value = 0.03).

Table III have shown the stratification of the adverse fetal outcome with respect to place of living. Low birth weight was presented in 16 (20.78%) patients in rural areas and 22 (41.51%) in urban areas with a p-value of 0.01. 25 (32.47 %) patients from rural areas and 30 (56.60%) patients from urban areas were admitted in NICU (p-value = 0.006)

Discussion

This study has been conducted to determine the frequency of adverse fetal outcome in women with placental abruption. In this study, frequency of adverse fetal outcome in women with placental abruption was found to be preterm birth 51 (39.23%), low birth weight babies 38 (29.23%), stillbirth in 10 (7.69%) and NICU admission in 55 (42.31%) patients. In a study, the adverse fetal outcomes were as follows: 51% of the cases had preterm delivery and 47% of the babies had a birth weight of less than 2.5 kg.⁷ In another study, NICU admission in 46.9% and stillborn in 46.9%.⁸ Alka et al has shown perinatal mortality in 75.9%, prematurity in 71% and low birth weight in 69.8%.⁹ A local study has shown the low birth weight babies in 42% and stillborn in 29%.¹⁰

In a retrospective study, the mean age of the subjects was 33.4 ± 6.3 years. The prevalence of abruptio placenta was 1.03%. Hypertensive disorder was the most important risk factor, seen in 53.1% of the subjects. Birth asphyxia was the major perinatal

Table III: Stratification of the adverse fetal outcome with respect to age, gestational age, parity, BMI, and place of living

Age	Stillbirth		Preterm delivery		Low birth weight		NICU Admission	
	Yes	No	Yes	No	Yes	No	Yes	No
20-30 (n=78)	09 (11.54%)	69 (88.46%)	42 (53.85%)	36 (46.15%)	25 (32.05%)	53 (67.95%)	29 (37.18%)	49 (62.82%)
31-40 (n=52)	01 (1.92%)	51 (98.08%)	09 (17.31%)	43 (82.69%)	13 (25.0%)	39 (75.0%)	26 (50.0%)	26 (50.0%)
P-value	0.044		0.0001		0.387		0.147	
Gestational age								
25-32 weeks (n=98)	05 (5.10%)	93 (94.90%)	38 (38.78%)	60 (61.22%)	29 (29.59%)	69 (70.41%)	36 (36.73%)	62 (63.27%)
>32 weeks (n=32)	05 (15.63%)	27 (84.37%)	13 (40.63%)	19 (59.37%)	09 (28.13%)	23 (71.87%)	19 (59.37%)	13 (40.63%)
P-value	0.052		0.852		0.874		0.024	
Parity								
Primiparous (n=33)	04 (12.12%)	29 (87.88%)	14 (42.42%)	19 (57.58%)	11 (33.33%)	22 (66.67%)	14 (42.42%)	19 (57.58%)
Multiparous (n=97)	06 (6.19%)	91 (93.81%)	37 (38.14%)	60 (61.86%)	27 (27.84%)	70 (72.16%)	41 (42.27%)	56 (57.73%)
P-value	0.269		0.664		0.549		0.988	
BMI								
≤25 kg/m² (n=45)	02 (4.44%)	43 (95.56%)	12 (26.67%)	33 (73.33%)	10 (22.22%)	35 (77.78%)	19 (42.22%)	26 (57.78%)
>25 kg/m² (n=85)	08 (9.41%)	77 (90.59%)	39 (45.88%)	46 (54.12%)	28 (32.94%)	57 (67.06%)	36 (42.35%)	49 (57.65%)
P-value	0.312		0.033		0.201		0.989	
Place of residence								
Rural (n=77)	05 (6.49%)	72 (93.51%)	34 (44.16%)	43 (55.84%)	16 (20.78%)	61 (79.22%)	25 (32.47%)	52 (67.53%)
Urban (n=53)	05 (9.43%)	48 (90.57%)	17 (32.08%)	36 (67.92%)	22 (41.51%)	31 (58.49%)	30 (56.60%)	23 (43.40%)
P-value	0.536		0.166		0.011		0.006	

morbidity and was found in 42.9% of the babies, whereas 46.9% were still births. The caesarean section rate was 63.3%. Forty subjects (81.6%) had blood transfusion, 17 subjects (34.7%) had postpartum hemorrhage, and 40.8% had postpartum anemia. There were two maternal deaths giving a case-specific fatality rate of 4.1% .⁹ In a recent study, total number of 4656 women was included. Among these, 138 had abruption placenta. Majority of patients were in the age group 25-30 years. Incidence was higher in multiparous. Spontaneous vaginal delivery was the mode in most patients (=74%). Major maternal complication seen was Shock, followed by postpartum hemorrhage, altered coagulation profile and renal failure. Eighty four (62.3%) women delivered alive babies while 52(37.7%) were stillborn. Out of these 86 alive born babies four died in early neonatal period due to prematurity. Overall perinatal mortality was 40.5% .¹¹

In a local study, the mean age of the patients was 35 years. 15% patients were nulliparous and 85% patients were multiparous, 20% patients had pregnancy induced hypertension, 8% patients were smokers, 32% patients had multiple gestation and 12% patients were diabetic.

72% patients had vaginal delivery and 28% patients had cesarean section. 93% patients presented with abdominal pain and 63% patients presented with vaginal bleeding. USD evidence of abruption was found in 68% patients. Fetal mortality was 70%. 37% babies born had asphyxia neonatorum.¹²

In a meta-analysis, there were 66,459 births during analysis period with 667 cases of placental abruption, 1% births, increasing trends from, 0.73% in between 1985-1987 to 1.11% in 2009-2011. In these 667 cases of placental abruption, 211 (32.5%) perinatal deaths occurred. Ratio of perinatal deaths due to placental abruption to overall perinatal deaths increased from 2.12% (8 cases) in between 1985 to 1987 (Block A) to 5.12% (37 cases) between 2009-2011 (Block I). Case fatality in cases of placental abruption has been fluctuating between 3 to 5% till 2004, contributing to around 12-15%, maternal mortality, with no fatality in last 7 years. ¹³

Another recently conducted study, out of 18,000 deliveries, 1.64% (n-296) of the patients were complicated by abruption. The mean maternal age was 22-25 years with maximum incidence in both

extremes of age. (20-25 years-64.80%, 31-35 years-28.37%). Multiparous women (83.10%) were more affected compared to primigravida (16.89%). There were 6 maternal deaths, 4 due to hypovolemic shock, 1 due to DIC, 1 due to status Eclampticus. 82.43% of patients had vaginal delivery and Cesarean section was done in 17.56% of patients. Maternal mortality rate was 2.36% Perinatal Mortality was 61%. Out of these 66.21% of the patients came with IUD, 7.43% had early neonatal deaths, 7.42% had stillbirths.¹⁴ Mangla Set al observed a total of 63.22% live births (including 2 twins) and 36.77% still births (including 3 twins). Out of these term babies were 46.45% and preterm were 53.54%. Mean birth weight was 2013.26±758.77 grams. A total of 48(30.96%) NICU admissions took place and 16(10.32%) neonates expired.¹⁵

Another study included 3,800 deliveries. The incidence of AP was 2.5% (95/3800). Among patients with AP, 49 (51.6%) delivered by Caesarean section. 3(3.2%) maternal deaths occurred. These deaths were strongly associated with the presence of maternal anaemia ($p<0.05$), and postpartum haemorrhage ($p<0.05$). The foetal adverse outcomes were prematurity 78 (82.1%), foetal distress 65 (68.4%), low birth weight 46 (48.4%) and intrauterine foetal deaths 30 (31.6%). Perinatal deaths occurred in 52 (54.7 %) of the cases, and were predicted by low birth weight ($p<0.001$), vaginal delivery ($p=0.001$), birth asphyxia ($p<0.001$), and retroplacental clot ($>700\text{ml}$) ($p<0.001$).¹⁶

Conclusion

According to the findings of this study, the frequency of adverse foetal outcomes in women with placental abruption is very substantial. It shows the need of implementing proper treatment regimens in every patient with placental abruption in order to prevent morbidity and death in both the fetus and the mother.

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