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Original Article

Frequency, Predictors and Outcomes of Placental Abruption in Rural Sindh

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Abstract

Background: Placental abruption is defined as the premature separation of the placenta from the uterus. It is relatively less common however; associated with considerable maternal and perinatal morbidity and mortality. Women of rural areas are particularly vulnerable to such pregnancy related complications.
Objective: To determine the incidence, predictors, risk factors and assess outcomes of abruption placentae among women of rural areas.
Study type, settings & duration: A descriptive cross sectional study conducted at the Department of Obstetrics and Gynecology, Shaikh Zayed Women Hospital, Larkana from February 2018 to January 2019.
Methodology: A total of 4911 deliveries occurred out of which, 141 placental abruption cases were recorded which were included in the study. Pregnant women with clinical diagnosis of abruption placenta, over 28 weeks gestation characterized by painful vaginal bleeding accompanied by hypertonus uterine contractions, tender uterus ± non-reassuring fetal heart rate/ fetal distress, fetal demise, pallor and rapid breathing with hypotension (systolic BP<90mmHg) were recruited. A valid written and informed consent was taken.
Results: A total of 141 cases of abruption placentae were recorded ~ frequency was 2.87%. Mean age of women was 32.12 ± 5.29 years and 58.87% women were of age group 21-30 years. Most cases presented with grade 2 & 3 degree of placental abruption. Maternal mortality was 23.4% and 40% neonatal/ fetal deaths noted while complete cure rate was 50%. Caesarean section was needed in 33.33% while postpartum hemorrhage was occurred in 25.53% cases. Factors associated with placental abruption were pre-eclampsia 29.79%, premature rupture of membranes 21.9% and low birth weight/ prematurity 24.1%.
Conclusion: Placental abruption is relatively frequent in the rural women. younger age, primigravida, pregnancy induced hypertension, pre-eclampsia, premature preterm rupture of membranes, low birth weight fetus, repeated caesarean section and anemia. It results in death or complications in almost half of cases with adverse neonatal outcomes in high proportions.
Key words: Placental abruption, rural, disseminated intravascular coagulation, feto-maternal outcome, postpartum hemorrhage.

Introduction

Worldwide the placental abruption (PA) is a major obstetric complication associated with an increased risk of fetal and maternal morbidity and mortality. It is defined as preterm partial or complete separation of normally situated placenta from the uterine wall *(resulting in bleeding after 20 weeks of gestations and prior to the birth of the fetus)*. PA affects a range of 0.5 to 5% of all pregnancies (minor cases may go unnoticed clinically or on ultrasound).[1,2] Postpartum maternal adverse events of PA include exaggerated risk of disseminated intravascular coagulopathy, severe maternal shock, renal failure, PPH and death. Developing countries face much burden as a quarter of all antepartum hemorrhages are caused by PA. In some countries, as much as 50% of all perinatal deaths are due to abruption placentae. Other neonatal adverse outcomes (5-65%) include low birth weight, preterm birth, intrauterine growth

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Authors Contribution

PS, MM, NB & SP conceptualized the project and did the literature search. NB & PS did the data collection. MM & PS performed the statistical analysis. Drafting, revision & writing of manuscript were done by MM, SP & NB.

restriction, birth asphyxia, fetal distress, low APGAR score, NICU admission, stillbirth.[3]

There are many identified risk factors of PA but common factors include impaired placentation, placental insufficiency, intrauterine hypoxia, uteroplacental under perfusion hypertension, transverse presentation, polyhydramnios, IUGR, both extremes of reproductive age of women (<20 years or >=35 years), maternal trauma, cigarette smoking, previous miscarriage, grand multiparity etc.[4] PA presents as painful vaginal bleeding, abdominal tenderness, abnormal uterine contractions, premature labor, maternal instability, oliguria, fetal distress and fetal death however; clinical presentation grossly varies and depends on the severity of bleeding and degree of separation of placenta. Examination of placenta reveals the diagnosis of PA which shows that color of placenta changes to violet or dark instead of pink-red. Ultrasound scan (sensitivity 52%), CT/ MRI (sensitivity 100%) are required for para-clinical diagnosis.[5]

Incidence of placental abruption in Pakistan was reported as high as 6.7%.[6] Mostly, these tend to be asymptomatic cases where the diagnosis was done by the presence of a retro-placental clot postpartum (4.5%) or sudden collapse of pregnant women with either overt or covert bleeding. This study exclusively evaluated the women coming from rural areas for detection of predictors of risk factors and assess outcomes of placental abruption in them as we receive many such cases from the rural areas of Sindh and Baluchistan however; these have not been documented before. This study will not only provide the evidence for policy-makers but also will sensitize the care providers to emphasis on addressing this issue.

Methodology

A descriptive cross sectional study conducted at the Department of Obstetrics and Gynecology, Shaikh Zayed Women Hospital, Larkana from February 2018 to January 2019. Being the largest only public sector and thoroughly equipped tertiary care center, the Institute usually receives a greater number of referral cases in addition to booked cases. The maternity unit comprises of the antenatal ward, labor ward, post-natal and post LSCS ward. During this study period, a total of 4911 deliveries occurred out of which, 141 PA cases were recorded.

Pregnant patients visiting the obstetrical unit were selected as per selection criteria after taking written informed consent from either the patient or her husband. All patients with clinical diagnosis of placental abruption over 28 weeks gestation characterized by painful vaginal bleeding accompanied by hypertonus uterine contractions, tender uterus ± non-reassuring fetal heart rate/ fetal distress, fetal demise, pallor and rapid breathing with hypotension (Systolic BP<90mmHg) were recruited in the study. Women who needed intensive care were admitted to the Obstetric ICU while babies were admitted to Neonatal ICU.

Inclusion criteria were being women of reproductive age between 20 to 35 years with gestational age > 20 weeks confirmed by early dating scan. While women with medical disorders like diabetes mellitus, heart disease, renal disease, urinary tract infections, pregnancies complicated by intrauterine fetal death, fibroid degeneration, intrauterine growth restriction and fetal distress were excluded.

Demographic and clinical data was collected on maternal age, gestational age, education, parity, BMI, prior history of abruption, clinical presentation like pain, bleeding, type of abruption like concealed or revealed amount of retro-placental clots and its size and degree of abruption associated with hypertensive disorders, mode of delivery, abruption delivery interval, maternal complications, requirement of blood transfusions, prolonged hospital stay and maternal and neonatal outcomes. The result of study was recorded in percentage and frequencies. Mean ± SD were expressed for continuous while frequencies & percentages for categorical variables. Continuous variables were grouped into categorical data then summarized as proportions and analyzed by Chi-square or Fisher's exact test. *p*-value of $\leq$0.05 was considered significant. Data analysis was done through SPSS 21 version.

The Ethical approval was obtained from Institutional Ethical Review Committee of Shaikh Zayed Women Hospital, Larkana.

Results

The frequency of abruption placenta in the current study was 2.87% among women living in rural Sindh. Mean age of women was 32.12 ± 5.29 years while more than half women (58.87%) were of age group 21-30 years. About 64% presented in gestational age 33-36 weeks while 14.8% with 28-32 weeks. More than 85% had no formal education. Twin and Triplet pregnancies were 14.1% & 2.8% respectively- others were singleton. More than two thirds (68.79%) women were of normal weight, 26.24% overweight and 4.96% were obese. Multiparty (47.52%) was also risk factor contributing to the PA (Table-1).

Table 1: Demographic data of women presenting with Placental abruption. (n = 141)

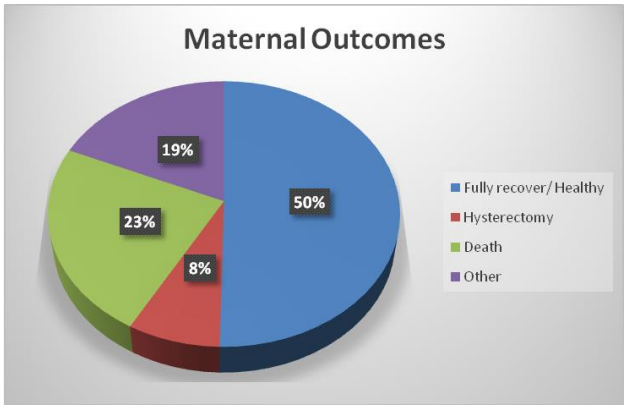
Variable	Value
Age (Years)	
(mean ± SD)	32.12 ± 5.29
21-30 n (%)	83 (58.87)
31-40	39 (27.66)
41-45	19 (13.48)
Gestational age (Weeks)	
(mean ± SD)	32.84 ± 3.03
28-32	21 (14.89)
33-36	91 (64.54)
≥ 37	29 (20.57)
Educational status n (%)	
Illiterate	121 (85.82)
Primary	20 (14.18)
Gestations n (%)	
Singleton	116 (82.27)
Twin	21 (14.19)
Triplet	4 (2.84)
Parity n (%)	
Primiparous	74 (52.48)
Multiparous	67 (47.52)
Body Mass Index (Kg/m^2) n (%)	
Normal weight	97 (68.79)
Overweight	37 (26.24)
Obese	7 (4.96)

Table 2: Characteristics, risk factors and outcomes of women with placental abruption.

Variable	*Value*
Placental Abruption n (%)	
Grade 2	115 (81.56)
Grade 3	26 (18.44)
Clinical Features n (%)	
Pain	125 (88.65)
Bleeding	131 (92.91)
Revealed	124 (87.94)
Concealed	7 (4.96)
Anaemia	121 (85.82)
Shock	11 (7.8)
Pregnancy Induced Hypertension n (%)	23 (16.31)
Pre-eclampsia n (%)	42 (29.79)
Preterm premature rupture of membranes n (%)	31 (21.99)
Low birth weight/ prematurity n (%)	34 (24.11)
Uterus leiomyoma n (%)	8 (5.67)
Previous Caesarean Section n (%)	24 (17.02)
Mode of delivery n (%)	
Normal VD	79 (56.3)
Assisted Delivery	15 (10.64)
Caesarean Section	47 (33.33)
Need for ICU admission n (%)	
Women	21 (14.89)
Neonate	34 (24.11)
Prolonged hospital stay (> five days) n (%)	59 (52.48)
Primary postpartum hemorrhage n (%)	36 (25.53)
Needed Blood Transfusion n (%)	93 (65.96)

Most pregnancies presented with Grade 2- are given in Table-2 showed results on clinical presentation, hypertensive disorders, mode of delivery, maternal complications, requirement of ICU admission, blood transfusions, prolonged hospital stay (>five days) and maternal and neonatal outcomes. Most of women (85%) were anemic and two thirds of all (65%) were transfused with blood.

Maternal mortality was 23.4% in this study while 50% cases were managed successfully. On the other hand, 29% fetuses were stillborn followed by late neonatal death of 11% more. (Figure-1 & 2) Need for a caesarean section was in 33.33% (either due to fetal distress, failed induction or those with h/o previous CS). Need for ICU admission was in 14.8% women and 24.1% neonates. PPH was noted and treated in 25.5% cases. These complications led to prolonged hospital stay in more than half of women. Majority of patients with shock, early coagulopathy and early stages of renal involvement responded well to fluid challenge, furosemide and to timely blood and component therapy. Nine women required dialysis, shifted to medicine department for same, out of which two expired due to uremic encephalopathy with poor response to dialysis.



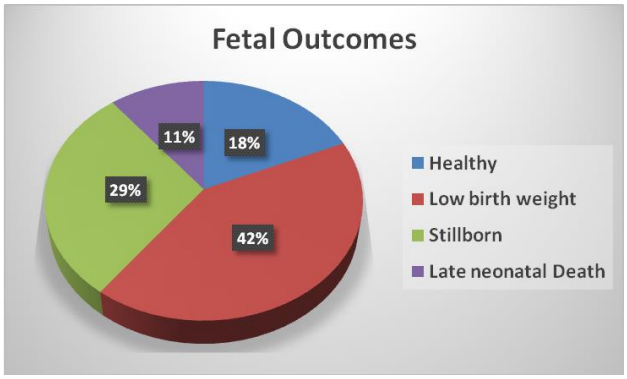


Figure 1 & 2: Outcomes of placental abruption among women presenting from rural areas.

Maternal anemia in this study might have been caused by either acute hemorrhage, or disseminated intravascular coagulation associated

with abruption placentae and/or chronic anemia due to nutritional deficiency and poor antenatal care.

Discussion

Focusing the rural patients; the current study examined/ treated total 4911 delivery cases, of which 141 women had presented with PA in a period of two years. Thus; the incidence of abruption placentae in our study is 2.87% which corresponds to the overall global incidence of placental abruption of 0.5 to 5%.[1-3] Previous local studies reported higher incidence rate of PA (up to 3.46%) taking data of >6000 patients.[1,7] Women of low socioeconomic strata and living in rural areas are worst affected by this condition.[8] Bibi S, et al., also found that rural areas women constituted the two thirds of all PA cases.[9]

Mumtaz S, et al., noted higher number of cases of PA in 3rd decade with a mean ± SD age of 28.1 ± 4.9 years.[8] Other study by Bibi S, et al., documented that 63% women with PA were of 20-35 years.[9,10] However a local study by Hashmi IB, et al. reported that PA was most common in age 15-20 years.[11] Thus; it is clear that PA can affect any age group of reproductively active women. Studies found that more cases of PA presented with mean gestational age 36 ± 6 weeks.[10] In current study, the mean gestational age was 32.84 ± 3.03 weeks.

The important risk factors noted were multigravidity, multiple gestation, anemia, PIH and pre-eclampsia, PPROM, LBW fetus and repeated caesarean section.[9] Anemia was very common while PIH was less than 10% in all contemporary studies.[10] These factors were also recorded in current study. Most of the women had a haemoglobin range of 6-10 g/dL and 65% were severely anemic with Hb level below 6 g/dL therefore; they were transfused with 2-4 Packed Cell Volume. The large-scale survey also indicated that a vast majority of pregnant women in rural areas are anemic which is due to nutrition lack as well as very little inter-pregnancy interval.[12] Memon NY, et al., found that 83% women were anemic with placental abruption of them 91% received 1-4 received blood transfusion.[13] A study from Rawalpindi indicated that the significant clinical correlation between PIH and placental abruption can be overcome by controlling BP.[14]

Women living in remote areas are highly vulnerable to complications like- anemia, coagulopathy, hysterectomy, PPH, shock, prolonged hospital stay and even feto-maternal death. Similar findings were evident in other studies from developing nations.[4-6]

Most of women in this study were having grade II and III abruption placentae and among them at least 42% had still born babies. These deliveries were performed vaginally and in one third cases through caesarean section. The higher CS rate was needed to save fetus. Researchers agree with elevated need of C-Section in placental abruption patients.[8] Range of documented CS rate in PA is from 20% to 60%.[8,9]

The incidence of PPH was 25.53% which is highest of reported from other studies.[6-9] We think that late reaching and superimposed severe anemia and coagulopathy had contributed to this higher rate. This and intractable atonic hemorrhage was managed in some cases through hysterectomy performed in 8% cases. Many of these had completed their families. 10 Intensive care admissions were necessary in 14% women and 25% neonates. Eleven women developed shock and of these, 6 could not survive due to DIC. Fetal adverse outcomes of placental abruption observed during study period were perinatal mortality 40% (including stillbirth and early neonatal death), prematurity & low birth weight 42%. These rates were in concordance with those reported by contemporary studies. Hossain N, et al., reported that the perinatal mortality rate was 66%.[1]

In this study, much higher rates of maternal (23%) and perinatal (40%) mortality was observed which is associated with AP in patients of rural areas. This study highlights the significance of this finding that in developing countries, mortality rates are particularly high.[5,9,10,12] Early detection, rapid reach to the hospital results in fewer adverse outcomes in developed nations which indeed have a lower maternal mortality.

The current study is the latest and only evidence on the rural women who suffer from placental abruption which still happens to be the gravest hemorrhagic complications of pregnancy. Illiteracy and remoteness of living along with lack of healthcare facilities are basic causes of the continued misery of rural living population. Incidence of placental abruption is still higher while predictors of adverse maternal and neonatal outcomes were anemia, multigravidas, multiple gestation, repeated CS, PPH, shock, LBW and need for ICU admission. Despite passing two decades of the 21st century, rural areas women are still prone to the risk of placental abruption.

Conflict of interest: None declared.

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