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Original Article

Abruptio placentae: Epidemiology and pregnancy outcome in a low-resource setting

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Abstract

Background: Abruptio placentae are a life-threatening obstetric emergency associated with high maternal, foetal and neonatal morbidity and mortality.

Aim: The aim of this study is to determine the modes of presentation, management and pregnancy outcome of pregnancies complicated by abruptio placentae at a tertiary health facility.

Methods: A descriptive study (retrospective) of women managed for abruptio placentae over a period of 3 years. The inclusion criteria were diagnosis of abruptio placentae (clinical or radiological), delivery at the study site and availability of the case files for review. Exclusion criteria included patients with other conditions except abruptio placentae, delivery at other facilities or failure to retrieve the case files. Data collection was from the case files of participants, and the results were represented in tables.

Results: Out of 8,931 deliveries during study , 64 had for abruptio placentae (prevalence 0.72% or 7.2/1000); however, 60 satisfied the inclusion criteria and were included in subsequent analysis. Twenty (33.3%) were above 35 years old, 14 (23.3%) were grandmultipara and the most common risk factor was hypertensive disorders (26; 43.3%). Thirty (50.0%) presented with vaginal bleeding, retroplacental clot was present at delivery in 27 (45.0%), 37 (61.7%) had emergency abdominal delivery, 51 (85.0%) had anaemia at presentation while 37 (61.6%) had blood transfusion. Forty-four (73.4%) were preterm (mean gestational age 35 ± 2.9 weeks) and neonatal survival was 50.0%; among survivors, 25 (83.3%) required neonatal intensive care due to perinatal asphyxia. Perinatal mortality was 50% (500/1,000), but no maternal death among study participants.

Conclusion: Abruptio placentae remain a potential cause of maternal, foetal and neonatal complications; however, emergency caesarean delivery appears to improve neonatal survival in complicated cases with live foetuses.

Keywords: Abruptio placentae, antepartum haemorrhage, obstetric emergency, obstetric haemorrhage

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INTRODUCTION

Abruptio placentae are the premature separation of a normally located placenta after viability but before the delivery of the foetus.[1,2] It is a major cause of massive obstetric haemorrhage,[3] contributes significantly to perinatal morbidity and mortality and it is the most common cause of intrapartum foetal death.[1,4] Abruptio placentae remain a significant cause

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of maternal mortality[5] especially in low-resource settings despite available obstetric services due to late presentation at healthcare facilities, the need for multiple transfusion which may not be readily available and other complications.[6] Neonatal complications may extend into childhood as many survivors develop other complications including neurological deficit within the 1st year of life.[1,7]

Usually, women with abruptio placentae arrive at the health facility after complications have set in; this challenges the effectiveness of the emergency obstetric service delivery at the hospital. The challenges include accurate diagnosis, effective resuscitation, halting the progression of the complications, safe delivery of the foetus as well as maternal and neonatal postpartum care. Therefore, evaluation of the outcome of abruptio placentae seek to audit health facility emergency obstetric service delivery, identifies management gaps, emphasises health facility complication-readiness as well as advocacy toward early presentation by patients and prompt referral by health personnel. This study is aimed to determine the modes of presentation, management and pregnancy outcome of pregnancies complicated by abruptio placentae at a tertiary health facility.

MATERIALS AND METHODS

This was a descriptive study (retrospective) of all women managed for abruptio placentae at a tertiary centre in North Central Nigeria. The case records of all women with abruptio placentae delivered at the study site over a 3-year period were retrieved and desired information was retrieved. The information included maternal age, parity, presenting complaints, mode of delivery, presence of retroplacental clot at delivery of placenta, the need for blood transfusion as well as foetal and maternal outcome. Data were presented in tables with frequency and percentages.

The inclusion criteria were diagnosis of abruptio placentae (clinical or radiological), delivery at the study site and availability of the case files for review. Exclusion criteria included patients with other conditions except abruptio placentae, delivery at other facilities or failure to retrieve the case files. Institutional ethical approval was obtained to gain access to the data, and the data were used only for the purpose of the study. Data analysis was with SPSS version 20.0 (IMB, Armonk, NY, USA), and the results were represented in tables.

RESULTS

Out of 8,931 deliveries during study, 64 had for abruptio placentae (prevalence 0.72% or 7.2/1000); 60 satisfied the inclusion criteria and were included in subsequent analysis while four were excluded. Figure 1 represents a flowchart for the mothers and babies. Maternal age range was 20–38 years (mean 31 ± 8.96),20 (33.3%) were >35 years, 14 (23.3%) were grandmultipara (parity >5) while hypertensive disorders (26; 43.3%) was the most common risk factor especially chronic hypertension (10;38.5%) as shown in Table 1. The mean gestational age at presentation was 35 ± 2.99 weeks, 44 (73.4%) were preterm, systolic blood pressure was ≥160 mmHg in 30 (50.0%), 37 (61.6%) required blood transfusion among these, 13 (35.1%) had three or more units of blood transfused [Table 2]. From Table 3, 23 (38.3%) women had vaginal delivery, of these number, 1 (4.3%) had a live baby whereas 37 (61.7%) women who had abdominal delivery while 29 (78.4%) of them had live babies. Among the 60 babies, 25 (41.7%) were males while 35 (58.2%) were females; 30 (50.0%) babies survived, among the survivors, 25 (83.3%) were admitted into neonatal intensive care on account of perinatal asphyxia and they all survived. Maternal complications recorded include anaemia (42; 70.0%) and primary postpartum haemorrhage (25; 41.7%); however, there was no maternal death from abruptio placentae during the study .

DISCUSSION

From this study, the incidence of abruptio placentae was 0.67% (6.72/1000 deliveries), it was most common among

Table 1: Maternal biosocial and risk factor for abruptio placentae

Parameter	Frequency (%)
Maternal age	
20-24	5 (8.3)
25-29	13 (21.7)
30-35	22 (36.7)
>35	20 (33.3)
Parity	
0	4 (6.7)
1	20 (33.3)
2-4	22 (36.7)
≥5	14 (23.3)
Occupation	
Farming	2 (3.3)
Artisan	4 (6.7)
Homemaker	5 (8.3)
Civil servant	9 (15.0)
Student	13 (21.7)
Trading	27 (45.0)
Risk factor	
Rupture of membrane	1 (1.7)
Abdominal trauma	2 (3.3)
Multiple pregnancy	2 (3.3)
Previous abruption placenta	3 (5.0)
Grand multiparity	6 (10.0)
Advanced maternal age (>35 years)	20 (33.3)
Hypertensive disorders	26 (43.3)
Pregnancy induced	5 (19.2)
Chronic HTN + superimposed preeclampsia	5 (19.2)
Preeclampsia	6 (23.1)
Chronic HTN	10 (38.5)

HTN: Hypertension

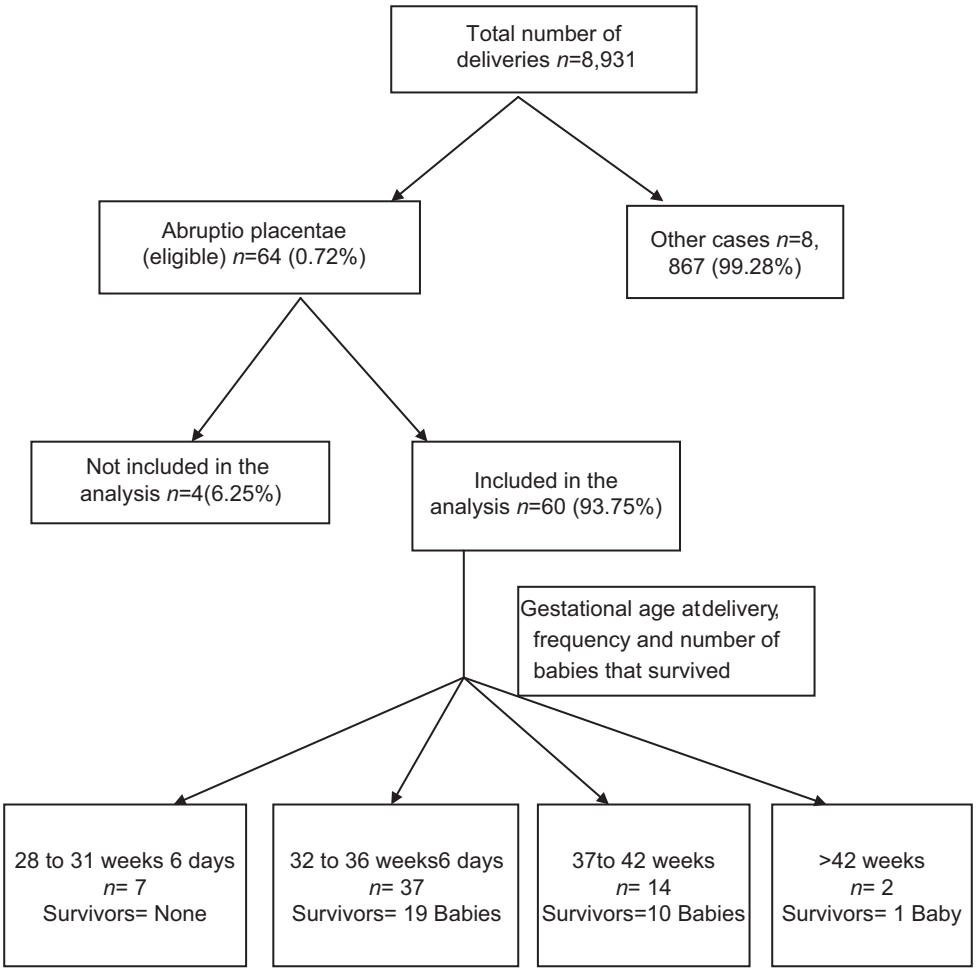

Figure 1: Flowchart of mother's recruitment and the neonatal survival

women >35 years old, hypertension was the most common risk factor, presentation was mainly preterm and majority had blood transfusion. Emergency caesarean delivery was associated with better neonatal survival; retroplacental clot was found at delivery in almost half of the participants while half of the babies survived although majority had perinatal asphyxia requiring neonatal intensive care. Maternal complications included anaemia and primary postpartum haemorrhage; however, there was no maternal death during the study.

Abruptio placentae is a significant cause of third trimester bleeding; it remains an important cause of maternal and neonatal morbidity and mortality globally.[1,2,8] The incidence varies although it generally complicates about 1% of pregnancies.[9] Reported incidence range from 0.3% to 4.4%;[6,8,10-14] although there is report of a rising trend in some countries, the wide variation might be linked to differences in the distribution of the risk factors especially smoking.[15] In addition, the incidence is related to the gestational age of the study participants as this is higher among preterm compared to term pregnancies further explaining the variation.[16]

The etiology of abruptio placentae is multifactorial and not fully understood;[15,17] but impaired placentation, placental insufficiency, intrauterine hypoxia and uteroplacental underperfusion are likely key causative mechanisms.[15] The bleeding in abruptio placentae is from rupture of the spiral arteries with bleeding into the decidua causing dissection of decidual-placental interface.[10,15] The haematoma causes further separation compromising the blood supply to the placenta bed; some blood may insinuate between the membrane and uterus to escape through the cervix causing vaginal bleeding otherwise it may be concealed.[15] Acute vasospasm of small vessels may precede abruption while trophoblastic invasion of spiral arteries and subsequent early vascularisation may be defective.[15]

In general, abruptio placentae remain unpredictable and largely unpreventable. However, associated risk factors include advanced maternal age, hypertensive disorders in pregnancy especially preeclampsia/eclampsia, previous abruptio placentae, high parity, polyhydramnios and smoking.[9,11,13,16,18] In this study, the most common identified risk factors were hypertensive disorders, advanced

Table 2: Details of findings at presentation and blood transfusion in abruptio placentae

Parameter	Frequency (%)
Symptom	
Bloody amniotic fluid	1 (1.7)
Ultrasound diagnosis	1 (1.7)
Non-perception of foetal movement	2 (3.3)
Dizziness	5 (8.3)
Abdominal pain	13 (21.7)
Vaginal bleeding	30 (50.0)
Multiple symptoms	8 (13.3)
Gestational age at presentation (weeks)	
28-31	7 (11.7)
32-36	37 (61.7)
37-42	14 (23.3)
>42	2 (3.3)
Systolic blood pressure (mmHg)	
<90	2 (3.3)
90-139	2 (3.3)
140-159	26 (43.3)
≥160	30 (50.0)
Diastolic blood pressure (mmHg)	
<90	22 (36.7)
90-109	26 (43.3)
≥110	12 (20.0)
Anaemia at presentation	51 (85.0)
Blood transfusion	37 (61.6)
Number of blood units transfused (*n*=37)	
2	24 (64.9)
3	3 (8.1)
≥4	10 (27.0)

Table 3: Delivery events and outcome following abruption placenta

Parameter	Frequency (%)
Mode of delivery	
Vaginal	23 (38.3)
Baby alive	1 (4.3)
Baby dead	22 (95.7)
Abdominal	37 (61.7)
Baby alive	29 (78.4)
Baby dead	8 (21.6)
Presence of retro-placenta clot	
Yes	27 (45.0)
No	33 (55.0)
Neonatal outcome	
Alive	30 (50.0)
Dead	30 (50.0)
Gender of newborn	
Male	25 (41.7)
Female	35 (58.3)
Birth weight (g)	
<2500	40 (66.7)
2500-4000	14 (23.3)
>4000	6 (10.0)
Perinatal asphyxia among survivors (*n*=30)	
Yes	25 (83.3)
No	5 (16.7)
Neonatal intensive care among survivors (*n*=30)	
Yes	25 (83.3)
No	5 (16.7)
Maternal postpartum complications	
Anaemia	42 (70.0)
Postpartum haemorrhage	25 (41.7)

maternal age and grandmultiparity. The preponderance of abruptio placentae among women above 35 years of age in this study corroborates the association with maternal age ≤20 or ≥35 years.[1,7,10] This may be related to pregnancy-induced hypertension which is more common in the same age range and is an important risk factor for abruptio placentae. In addition, high parity has been reported previously with as high as 33.3% of such women presenting with abruptio placentae.[6]

The diagnosis of abruptio placentae is mainly clinical;[9] however, asymptomatic cases occur with 19% of such cases in a report.[14] In this study, the most common presenting complaint was vaginal bleeding (50%) similar to reports of 70%[14] and 81%[13] by other researchers. Other common presenting complaints include blood stained amniotic fluid, abdominal pain, anaemia, maternal hypertension and abnormal or absent foetal heart tones.[10,13,14] The roles of obstetric ultrasonography in abruptio placentae include confirmation of foetal viability, establishing gestational age, localisation of the site of placenta implantation to exclude placenta praevia and detection of retroplacental clot. In a series, retroplacental clot was present on ultrasonography only in 19% of cases because it is a late finding thus limiting its contribution to patient management.[13]

In this study, 73.4% of cases were preterm similar to 51% by Hossain *et al.*[13] Preterm delivery is a common occurrence with abruptio placentae and is a major contributor to neonatal mortality.[1,5,7] The 50% perinatal mortality in this study compares with 58%,[6] 58.5%[10] and 65%[13] from low-resource countries unlike 10%–20% from Europe[15] and 10%–40% in parts of USA.[19] This may suggest that although abruptio placentae are universal, the foetal outcome can be modulated by the level of facilities available especially for earlier diagnosis and neonatal support. The foetal effect of abruptio placentae depend on the severity of the disease and the gestational age;[9] however, the severity is related to the proportion of the placenta surface separated and the affected part. Involvement of the central portion of the placenta has been associated with stillborn and perinatal death[12] while chances of perinatal death are likely when >45% of placenta surface is affected.[9,12] Thus, availability of facilities for detection of the portion and area of the placenta affected might allow follow-up of mild cases as well as early diagnosis and prompt intervention in severe cases.

The decision on the mode of delivery in abruptio placentae is individualised but guided by foetal viability, gestational age, onset and stage of labour as well as severity of the disease based on maternal and foetal status. Vaginal delivery has been suggested in cases of foetal demise or advanced labour with imminent delivery; abdominal

delivery is favoured with foetal/maternal compromise or onset of complications in women with mild disease initially on conservative management.[9] Researchers have reported increased risk for abdominal delivery in abruptio placentae[11,16,18] with up to 91% cesarean delivery rate in a report.[15] The association of caesarean delivery with better neonatal outcome as shown in this study strengthens an earlier report from the USA[19] which concluded that caesarean section appears to reduce neonatal death in abruptio placentae.

In low-resource countries, women with abruptio placentae are often unbooked and of low social class.[10,19] This no doubt hinders early recognition of risk factors and their modulation resulting in late presentations with significant maternal and foetal complications. The recurrence rate of 1.85% for abruptio placentae in this study was lower than 4%–12% in are port from the USA.[20] This might be due to the retrospective nature of the study and the sole dependence on hospital record without contact with affected women.

The complications observed from this study included post-partum haemorrhage (21.7%) which is comparable to 22.2% from another report.[6] Others were anaemia with a high transfusion rate of 61.6% though lower than a 91.4% rate from another study[6] with the attendant potential risks of blood transfusion including transfusion transmissible infections.[21] Other foetal complications of abruptio placentae include intrauterine growth restriction, low birth weight, low Apgar scores at birth and perinatal death.[11] There was no maternal death in this study and death was reported to be rare in abruptio placentae[15] although an author reported a 6% maternal mortality.[10] Other possible maternal complications include renal failure and disseminated intravascular coagulation with potential for maternal death although they were not encountered in this study. The strength of the study is that it provided an audit on the effectiveness of emergency obstetric services at a tertiary centre (study site); it was limited by the small sample size, its confinement to one study site and the retrospective design.

This study concludes that abruptio placentae remain a potential cause of maternal, foetal and neonatal complications; however, emergency cesarean delivery appears to improve neonatal survival in complicated cases with live foetuses.

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Conflicts of interest

There are no conflicts of interest.

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