Original Article

# Management Outcomes of Abruptio Placentae at Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria

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**ABSTRACT**
**BACKGROUND:** The objective of this study is to determine incidence, risk factors and management outcomes of abruptio placentae (AP) and comparing them with cases without AP who delivered within the same period.
**METHODS:** A 10 year retrospective study of AP managed at Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria, between January 2001 and December 2010 was undertaken. Proforma was initially used for data collection before transfer to Epi-info 2008 software. Test of associations were evaluated and $P<0.05$ was considered significant.
**RESULTS:** Sixty nine cases out of a total delivery of 8,811 were seen, giving an incidence of 0.8%. The mean age and parity of women with AP were $30.8 \pm 0.9$ years and $4.1 \pm 0.6$ respectively and majority (78.3%) of cases were unbooked ($p=0.0019$).
Grand multiparity and age =35 years were significant risk factors ($p<0.05$). Fifty two (75.4%) cases were delivered by caesarean section (c/s) ($P=0.0000$). The sex ratio was 160 ($p=0.0134$).
The overall maternal mortality ratio during the study period was 987 per 100,000 live births with AP contributing 3.8% of the maternal deaths while perinatal mortality rate was 52.2%.
**CONCLUSION:** A significant number of cases have high perinatal mortality. Unbooked, high parity, advanced maternal age and previous c/s scar were significant aetiological risk factors.
**KEYWORDS**: Abruptio placentae, risk factors, Nnewi, Nigeria

**Date Accepted for publication:** 21st July, 2013
NigerJMed 2013: 234-238


## INTRODUCTION

Abruptio placentae is a major cause of perinatal and maternal morbidity and mortality globally, and of more serious concern in the developing world[1,2,3]. It complicates about 0.5-3.5% of pregnancies[4]. However, an incidence of 0.44%[5] has been reported in Enugu, in south east Nigeria while 6.5% has been reported in Sudan[2].

The causes of placental abruption are often difficult to ascertain, but there are a number of predisposing factors[6]. These include previous placental abruption, previous caesarean section scar, trauma, advanced maternal age, hypertensive disorders and multiple gestations. Other risk factors include premature rupture of the membranes (PROM), grand multiparity, polyhydramnios, thrombophilias, intrauterine infections, maternal smoking and diabetes mellitus [2,3,4,6,7,8].

Abruptio placentae typically presents with bleeding per vaginam, abdominal pain and tenderness, uterine contractions, fetal distress and or fetal demise[6,7,8,9]. The diagnosis is often clinical thereby limiting the use of ultrasound in the diagnosis[3,6,9]. However, it is confirmed by the demonstration of a retroplacental clot indenting the placenta with an ultrasound or following the delivery of the placenta[5,9]. At ultrasound, early haemorrhage is hyperechoic or isoechoic, so acute haemorrhage may be confused with fibroid or a thick placenta[5,9]. However, negative findings with ultrasound examination do not exclude placental abruption[10,11].

The management depends on the grade and the gestational age at which it occurs [3,9,10,11]. In grade 0, the clinical features are absent and the diagnosis is made after inspection of placenta following delivery. In grade 1, the vaginal bleeding is slight and the maternal blood pressure, fibrinogen levels are unaffected and the fetal heart sound is good. However, in grade 2, there is mild to moderate vaginal bleeding, uterine tenderness is always present and shock is absent. In grade 3, the vaginal bleeding is moderate to severe and there is marked uterine tenderness, pronounced shock, present or absent coagulation defect and fetal death is the rule[11]. Apart from the grading system, abruptio placentae could be revealed, concealed or mixed in type[11]. In revealed type, the maternal risk is proportionate to the visible blood loss and maternal death is rare. In concealed type, the following complications may occur either singly or in combination. This include: haemorrhage, shock, blood coagulation disorders,oliguria and anuria, postpartum haemorrhage and puerperal sepsis[11]. When a posteriorly sited placenta abrupts, the ultrasound diagnosis may be quite difficult.

In Nnewi, Nigeria, there is paucity of studies on antepartum haemorrhage caused by abruptio placentae despite its attendant morbidity and mortality. Against this backdrop, this study aims to determine the incidence, risk factors, clinical presentations, management options and outcomes of abruptio placentae at Nnamdi Azikiwe University, Teaching Hospital (NAUTH), Nnewi , South-east Nigeria.

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## MATERIALS AND METHODS

This was a retrospective case-controlled study of all the women with abruptio placentae seen at Nnamdi Azikiwe University Teaching (NAUTH), Nnewi, South- East Nigeria between 1st January 2001 and 31st December 2010. One control per case was randomly selected from the remaining births by selecting the case just after the abruptio placentae from the birth record. NAUTH is a tertiary hospital that serves as a referral center for many cases from Anambra State and neighbouring states such as Enugu, Abia, Delta, Imo, Ebonyi and Rivers States. Some are referred from private hospitals, health centers, and maternity homes around. The booking antenatal clinic (ANC) holds weekly (from Mondays to Fridays) under the supervision of nurses and doctors. NAUTH also has facility for neonatal intensive care, and is equipped for the effective management of various cases of Abruptio placentae. Nnewi is a semi-urban town and the headquarters of Nnewi North Local Government Area of Anambra State, South-east Nigeria. The occupation of the people is mainly trading. Nnewi also has a handful of professionals as staff in the numerous financial and health care institutions. The people are predominantly Christians with a few traditionalists. The average delivery per year is about 1, 100.

A thorough scrutiny of the delivery records of the obstetric unit as well the records of the Medical Records Department and special care baby unit (SCBU) of the hospital was done to identify these patients by checking on their names, case file numbers and their diagnosis at presentation in the labour ward and subsequent management of their babies if admitted in SCBU. Their case files were subsequently retrieved and studied. The data extracted from the case files were age, parity, booking status, gestational age at presentation, risk factors, clinical symptoms and signs, mode of delivery, and the outcome of the baby (at delivery or within one week of life, or admission in the special care baby unit) and the mother.

The proforma was initially used for data collection which was transferred to data sheet before entering them into the Epi-info software. The total deliveries and live births for the period including the total maternal deaths were also determined. The perinatal outcome of the babies was also determined by noting the APGAR scores at delivery and the condition of the babies on or before one week of admission in the SCBU or condition at discharge. If more than one outcome was found in a multiple pregnancy, the worst outcome was used in the analysis. The diagnosis of abruptio placentae was made clinically or with the aid of ultrasound and confirmed by the demonstration of retroplacental blood clots. We excluded cases of uterine rupture or other cases of vaginal bleeding in pregnancy other than abruptio placentae.

The descriptive statistics was used in calculating percentages, mean and standard deviation. The odds ratios were calculated to identify the relationship between abruptio placentae and some of the potential risk factors. The adjusted (corrected) odds ratios (OR) were calculated using the Mantel-Haenszel method, and a P value of <0.05 was considered as significant at 95% confidence interval (CI). The student's T-test was also done where applicable. Data analysis was done using Epi info 2008 (v 3.5.1; Epi Info, Centers for Disease Control and Prevention, Atlanta, GA).

## RESULTS

The total of 69 cases, each of control and study groups which fulfilled the inclusion criteria, was identified. During the ten year study period, there were 8,811 deliveries hence the incidence rate of abruptio placentae as 0.8% or 1 in 128 deliveries. The mean age of the patients was 30.8 ± 0.9 years for the study group and 29.1 ± 0.5 years for the control group. In the study group, 21 (36.8%) of the patients were 35 years and older while only 6 of the control were =35 years, and the difference was statistically significance (OR=4.41, CI 1.53-13.30, P=0.0018).

Majority, 33 (47.8%) of the women in the study group were grand multiparous while only 8 (11.6%) patients in the controls were grandmultiparous. The difference was statistically significant (OR=6.99, CI 2.72-18.54, P=0.0000). Fifteen (21.7%) patients of the study group were multiparous. The nulliparas were 12 (17.4%). The parity of the mothers ranged from 0 to 8 with a mean parity of 4.1±0.6. This is shown in Table I.

**Table I**

**The parity distribution of women with abruptio placentae**

| Parity | Frequency | Percentage |
|---|---|---|
| 0 | 12 | 17.4 |
| 1 | 9 | 13.1 |
| 2-4 | 15 | 21.7 |
| .. | 33 | 47.8 |
| Total | 69 | 100.0 |

The unbooked patients were 54 (78.3%) in the study group but 37 (53.6%) in the control group and the difference was statistically significance (OR=3.17, CI 1.42-7.14, P=0.0019). The gestational age at presentation ranged from 28 to 42 weeks. The majority, 42 (60.8%) of the study group and 56 (81.2%) of the

control group were term.

As shown in Table II, the majority, 63 (32.3%) presented with bleeding per vaginam, followed by abdominal pain 16 (24.6%), and uterine contraction 12 (18.5%). Many patients presented with more than one symptom. The common clinical signs as also shown in table II were pallor, (27.6%) and maternal tachycardia (26.7%).

**Table II : CLINICAL SYMPTOMS AND SIGNS AT PRESENTATION**

**Symptoms at presentation**

| Symptoms | Frequency | Percentage |
|---|---|---|
| Bleeding per vaginam | 63 | 32.3 |
| Abdominal pain | 48 | 24.6 |
| Uterine contraction | 36 | 18.5 |
| Reduced fetal movement | 27 | 13.8 |
| Absent fetal movement | 15 | 7.7 |
| Vomiting | 6 | 3.1 |
| Total | 195* | 100.0 |

**Clinical Signs at Presentation**

| Signs | Frequency | Percentage |
|---|---|---|
| Pallor | 29 | 27.6 |
| Maternal tachycardia | 28 | 26.7 |
| Absent Fetal Heart Sound | 16 | 15.2 |
| Tense abdomen | 12 | 11.4 |
| Abdominal tenderness | 11 | 10.4 |
| Hypertension | 9 | 8.6 |
| Total | 105** | 100.0 |

* Many patients had more than one symptom.

**Some women had more than one clinical sign.

The common identified risk factors such as grand multiparity (39.3%), advanced maternal age (age =35 years) (25%) and previous caesarean section scar (17.4%) were all found to be statistically significant ($p<0.05$). This is shown in Table III.

Caesarean section was the mode of delivery in 52 (75.4%) of the study cases but 19(27.5%) in the control. This difference was statistically significant (OR=8.05, CI 3.53- 18.63, P=0.0000). Up to 91.5% live births in the study group were achieved by caesarean section. The perinatal outcome in relation to the status at presentation, mode of delivery and admission at the special care baby unit is shown in fig 1.

**Table III**

**Common risk factors seen in patients with abruptio placentae**

| *Risk factor | Study Group (n=69) | Control Group (n=69) | O.R. | 95% CI | P. Value |
|---|---|---|---|---|---|
| Grand multiparity | 33 | 8 | 6.99 | (2.72-18.54) | 0.0000 |
| Age e35 years | 21 | 6 | 4.41 | (1.53-13.30) | 0.0018 |
| Previous Caesarean Section | 12 | 3 | 4.63 | (1.13-21.86) | 0.0142 |
| Hypertension (chronic) | 6 | 7 | 0.84 | (0.23-3.00) | 0.7715 |
| Pre-eclampsia/eclampsia | 6 | 8 | 0.73 | (0.21-2.48) | 0.5742 |
| Previous termination of pregnancy | 6 | 8 | 0.73 | (0.21-2.48) | 0.5742 |

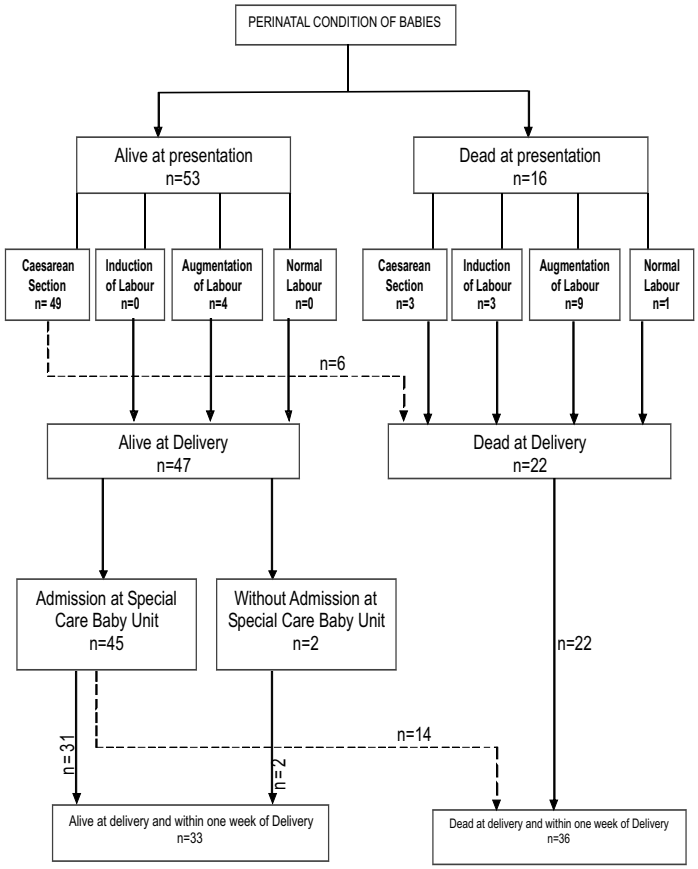
**OR = Odds Ratio; CI= Confidence Interval**

* Many women had more than one risk factor.

The mean birth weight was 2.7 ± 0.3kg for the study group and 2.9 ± 0.5kg in the control. The difference was not statistically significant ($p>0.05$). Forty-five (65.2%) babies of the study group had normal birth weight (2.50 3.59kg), while 24 (34.8%) had low birth weight (1.50-2.49kg). The sex ratio of babies was 160 in the study group and 100 in the control group. This difference was statistically significant (OR=1.60, CI 1.08- 2.37, P=0.0134).

There were three maternal deaths accounting for 4.3% case fatality rate. There was no recorded maternal deaths in the controls (OR=undefined, P=0.0744). The total number of live births during the study period was 8,006 while the total maternal deaths was 79.The overall maternal mortality ratio during the study period was 987 per 100,000 live births with abruptio placentae contributing 3.8% of the maternal deaths. All the maternal deaths occurred in the unbooked patients from hypovolaemic shock. There was only one maternal death in the control.

There were 36 and seven perinatal deaths in study and control groups respectively giving a perinatal mortality rate of 52.2% and 10.1% respectively(OR=9.66, CI 3.61- 26.90, P=0.0000). Of the 47 babies in cases of abruption that were alive at delivery, 14 (29.8%) babies died within one week of life. This is illustrated in fig 1.




## DISCUSSION

An incidence of 0.8% or 1 in 128 deliveries for abruptio placentae in our center is similar to 0.7% reported in Israel but higher than 0.44% and 0.48% observed in Enugu[5] and Abakaliki[12] respectively both in the southeast of Nigeria. Also lower figures such as 0.5%, 0.12%, and 0.59% have been recorded in Parkland[10], Denmark[13] and Jordan[14] respectively. However, our figure is lower than 4.4% recorded in Pakistan[1], and 6.5% in Sudan[2]. A number of factors probably may be responsible for the increase and wide variation in the incidence of abruptio placentae. This finding may be due to the status of the teaching hospital since it is a referral hospital for various hospitals and clinics in its catchment areas. This could be attested in this study where a significant number of women were unbooked.

In this review, grand multiparity was the commonest significant risk factor in patients with abruptio placentae. The other common and significant risk factors were advanced maternal age and previous caesarean section scar. This is similar to the reports of other studies[3,5,8,10,14], but differs from the study in Sudan[2] and Denmark[13]. Age may be a mirror image of the effect of parity[15]. It is known that vascular injury produced by the hypertensive disorders of pregnancy which increases with maternal age predisposes to abruptio placentae[6].

Bleeding per vaginam, abdominal pain and/or uterine contractions were the most frequently reported symptoms observed in this study. This agrees with the documentations in the literature[4,5,8,15]. The amount of vaginal bleeding sometimes does not correlate with the degree of abruption. The severity of symptoms depends on the location of the placenta, whether it is revealed or concealed, and the degree of placental separation. There is also a correlation between the degree of placental separation and the risk of stillbirth, with stillbirth occurring in most cases where there is more than 50% placental separation[2,3,4].

Interestingly, up to 52.2% of the patients were in labour at the time of presentation. This however, corroborated the observation in the literature where up to 50% of cases of abruptio placentae were in labour at the time of presentation. Typically, there is uterine hypertonus with associated high frequency and low amplitude uterine contractions[3]. In abruptio placentae, the uterus is frequently tender and may feel hard on palpation[3,6].

Most patients with abruptio placentae are delivered vaginally by either induction of labour or augmentation of labour[1] but more than 75% were delivered by caesarean section in this study. This finding was found to be statistically significant. At presentation, the larger number of the fetuses were alive, hence caesarean section was embarked upon to speed up delivery, as observed in the literature[16,17]. In this review, almost all the live births in the cases with abruptio placentae (91.5%) were delivered by caesarean section.

In cases of severe abruption with intrauterine fetal death, notwithstanding the gestational age, it is reasonable, in the absence of other contraindications, to allow the patient to have a vaginal delivery[3]. This is because the uterus typically, contracts satisfactorily with accompanied rapid progression of labour and amniotomy often augments the labour.

Although male fetal gender has not been a major spotlight of previous aetiological studies of abruptio placentae, our observation of increased male gender of the babies is in keeping with earlier reports[13]. Also, the finding of the greater number of male gender having abruptio placentae was statistically significant. The underlying mechanism of this association is not known. However, male gender is not a preventable risk factor.

The case fatality rate in this study was 4.3%. This was quite high when compared with other studies[2,5], where there was no recorded maternal death. The maternal death occurred in patients that were unbooked and they all presented late with irreversible hypovolaemic shock. However, the absence of maternal death among mothers who were booked emphasizes the need for adequate antenatal and intrapartum care.

The perinatal mortality rate observed in our study was 52.2%, and all of which were unbooked cases. This agrees with other studies[5,8] but higher than the reports from Sudan[2]. Also, it was observed that out of 47 babies in cases with abruptio placentae that were alive at delivery, up to 29.8% of them died within one week of life. Rapid intervention, provision of adequate resuscitative facilities and improvement of our neonatal facility shall reduce the perinatal mortality.

## CONCLUSION

The incidence of abruptio placentae is high in our centre and a significant number of cases were unbooked with associated high perinatal mortality. High parity, advanced maternal age and previous caesarean section scar were the statistically significant aetiological risk factors. Good antenatal and intrapartum care would minimize the maternal and fetal catastrophes. There should be timely referral of all cases of abruptio placentae to the tertiary centre with intensive maternal and neonatal care facilities.


## ACKNOWLEDGEMENT

We thank all the doctors and other hospital staff who participated in the management of the patients. We are grateful to the Medical Record Department of the hospital for releasing the case files of the patients studied.

**DECLARATION OF INTEREST:** The authors have no conflict of interest in performing the research. The authors alone are responsible for the contents and writing of the paper. They have conducted this study in the course of their service in the hospital and have not received funds from any organization.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