**Cross Current International Journal of Medical and Biosciences**
*Abbreviated Key Title: Cross Current Int J Med Biosci*
**ISSN:** 2663-2446 (Print) & Open Access
**DOI:** 10.36344/ccijmb.2023.v05i02.003

Volume-5 | Issue-2 | Jul-Aug, 2023 |

**Original Research Article**

# Risk Factors and Foeto-Maternal Outcomes of Abruptio Placentae at the Rivers State University Teaching Hospital

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| **Received:** 17.06.2023 | **Accepted:** 22.07.2023 | **Published:** 19.08.2023|

***Background:*** Abruptio placentae is a dire obstetric emergency and is associated with adverse foeto-maternal outcomes. This study aimed to assess the risk factors and foeto-maternal outcomes of abruptio placentae at the Rivers State University Teaching Hospital, Port Harcourt, Nigeria. ***Methods:*** This was a descriptive cross-sectional study of all cases of abruptio placentae managed at RSUTH from 1st January 2016 to 31st December 2021. Data were analysed using IBM, Statistical Product and Service Solutions (SPSS) version 25.0 Armonk, New York. ***Results:*** Over the period reviewed, there were sixty-eight (68) cases of abruptio placentae and 14,195 deliveries recorded. The prevalence of abruptio placentae was 4.8/1000 deliveries or 0.48%. The mean (SD) age of study participants was 32.7 (4.8), 95% Confidence Interval (CI):31.5,33.9. The majority 66 (97.1%) had formal education, 65 (95.6%) were Christians and 63(92.6%) had emergency caesarean section. The risk factors identified in order of decreasing occurrence were hypertensive heart diseases (55.9%), Abdominal massage (17.6%), retroplacental fibroid (14.7%), polyhydramnios (7.4%) and Premature rupture of foetal membranes (4.4%). There was no maternal death. The most common maternal complication was the need for blood transfusion (43.9%), followed by preterm delivery (30.4%). Forty- three (60.6%) of the foetuses were males while 28(39.4%) were females. The commonest foetal complication was admission into Special Care Baby Unit (SCBU) 37(47.4%). The stillbirth rate was 5.1%. ***Conclusion:*** Abruptio placentae is not uncommon at the RSUTH and hypertensive heart disease was the most common risk factor observed. The commonest foetal and maternal complications were need for blood transfusion and admission into Special Care Baby Unit (SCBU). Knowledge of this would be helpful in the management of patient with placental abruption for improved foeto-maternal outcome.

**Keywords:** Abruptio, Antepartum Haemorrhage, Accidental bleeding, placenta, outcomes.

## INTRODUCTION

Abruptio placentae refers to the premature separation of the normally situated placenta from its attachment in the uterus after the period of foetal viability and prior to the delivery of the baby. It is associated with adverse foeto-maternal outcomes and remains a major cause of maternal morbidity and mortality [1, 2]. Abruptio placentae, also known as accidental haemorrhage is one of the major causes of antepartum haemorrhage; second to placenta praevia [3]. Antepartum haemorrhage has remained a major contributor to maternal morbidity and mortality in our setting [1, 2, 4]. Antepartum haemorrhage complicates about 3-5% of pregnancies worldwide and accounts for about 30% of maternal mortality [3, 5]. Globally, the average prevalence rate of abruptio placentae is about 1% of all pregnancies [6, 7]. In Nigeria, prevalence rates ranging from 0.3 to 1.46% have been reported [8-11]. A previous study in our centre revealed that placental abruption was the second most common cause of antepartum haemorrhage, accounting for 34.1% of cases of antepartum haemorrhage [3]. Another study done in Northern Nigeria revealed that abruptio placentae accounted for 68.8% of cases of antepartum haemorrhage [12].

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**Citation:** Felix C. C. Wekere *et al* (2023). Risk Factors and Foeto-Maternal Outcomes of Abruptio Placentae at the Rivers State University Teaching Hospital. *Cross Current Int J Med Biosci*, *5*(2), 40-46.

Although the exact aetiology of abruption placentae is not fully known, some risk factors such as a previous history of abruptio placentae, hypertensive heart diseases (preeclampsia/eclampsia, chronic hypertension pregnancy-induced hypertension), uterine fibroid coexisting with pregnancy, blunt trauma to the abdomen, abdominal massage, smoking, polyhydramnios, low socioeconomic status, advanced maternal age, multiparity and alcohol amongst others have been implicated [2, 13-15]. Adverse maternal outcomes such as postpartum haemorrhage, chorioamnionitis, disseminated intravascular coagulopathy, increased abdominal deliveries, anaemia and puerperal sepsis. Abruptio placentae has also been associated with, an increased rate of prematurity, stillbirth low birth weight [6, 16, 17]. In South Africa, abruptio placentae have been reported to be the most common cause of stillbirth [18].

This study was aimed at assessing the risk factors and foeto-maternal outcomes of abruptio placentae amongst parturients at the Rivers State University Teaching Hospital, Port Harcourt, Nigeria.

## MATERIALS AND METHODS

The study was conducted at the Rivers State University Teaching Hospital (RSUTH), Port Harcourt, Rivers State, Nigeria. RSUTH is one of the tertiary health facilities in Rivers State and located at the heart of Port Harcourt the capital of Rivers State [19]. The Hospital receives referral from within and neighbouring states. This was a cross-sectional study of all cases of placental abruption managed at the RSUTH, from 1st January 2016 to 31st December 2021. The cases were collated from the labour ward, post-natal and theatre records. The total number of deliveries during the review period was obtained from the theatre records/registers and labour ward. A study proforma was designed and used to collect data on sociodemographic/obstetric factors, risk factors, and foeto-maternal outcomes. Antepartum haemorrhage was defined as bleeding from the genital tract after the period of foetal viability. Abruptio placentae was defined as partial or total premature separation of normally situated placenta after the period of foetal viability -which is 28 weeks in our setting.

The diagnosis was made clinically (based on clinical features, risk factors and examination findings such as vaginal bleeding, abdominal pain, hypertonic uterus, and woody hard abdomen), ultrasonographic findings suggestive of abruptio placentae and during caesarean section (based on finding of retroplacental cloth in addition to antepartum haemorrhage). Data collected were entered into Microsoft Word Excel Office 2019 and exported to IBM, Statistical Product and Service Solutions (SPSS) version 25.0, Armonk, New York, for analysis. Categorical variables were summarized in frequencies and percentages while symmetrical continuous variables were summarized using mean and standard deviations with 95% confidence intervals around the point estimates. Asymmetrical continuous variables were summarised using median and range. Ethical clearance for the study was obtained from the Hospital's Research and Ethics Committee.

## RESULTS

There were 68 cases of abruptio placentae and 14,195 deliveries over the period of review. The prevalence of abruptio placenta was 4.8/1000 deliveries or 0.48%. Of the 68 cases, 65 (95.6%) were singleton pregnancies while 3 (4.4%) were twin pregnancies. The pattern of occurrence of Abruptio placentae is shown in Figure 1. The number of cases of abruptio increased from 7 in 2016 to 20 in 2018 and decreased to 4 in 2020 with a little rise to 11 in 2021 (Figure1). The sociodemographic and obstetric characteristics of the study participants are as presented in Table 1. The mean (SD) age of study participants was 32.7 (4.8), 95% Confidence Interval (CI):31.5,33.9. Over 50% had preterm delivery (delivery before 37 weeks). Majority 66 (97.1%) had formal education, and were Christians 65 (95.6%), and had emergency caesarean section 63(92.6%) (Table 1).

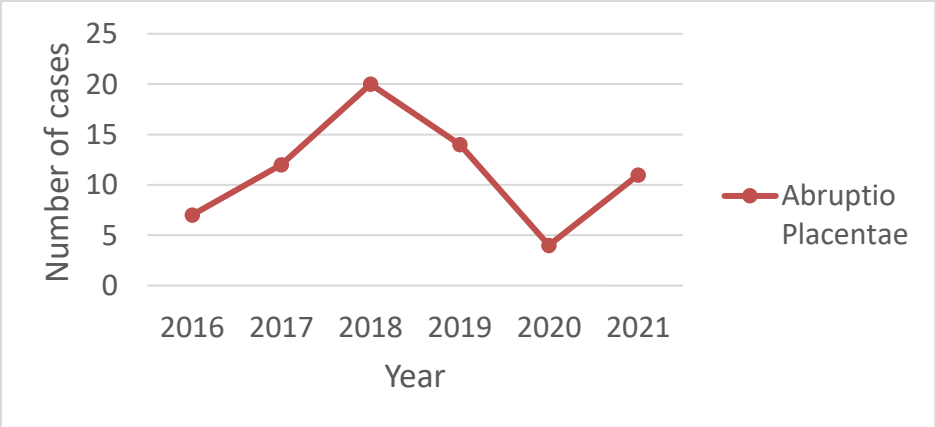


**Figure 1: Pattern of occurrence of Abruptio placentae at the RSUTH**

**Table 1: Sociodemographic/Obstetric features of the study participants**

| Variables | Number n=68 | Percentage |
|---|---|---|
| **Age (Years)** | | |
| 20-24 | 2 | 2.9 |
| 25-29 | 15 | 22.1 |
| 30-34 | 28 | 41.2 |
| 35-39 | 19 | 27.9 |
| 40-44 | 4 | 5.9 |
| Mean age 32.7 | SD# 4.8 | 95%CI+: 31.5, 33.9 |
| Gestational age (weeks) | | |
| <37 | 36 | 52.9 |
| >37 | 32 | 47.1 |
| Mean GA* 36.7 | SD 3.2 | 95%CI: 34.8,36.4 |
| **Parity** | | |
| 0 | 9 | 13.2 |
| 1 | 21 | 30.9 |
| 2-4 | 37 | 54.4 |
| ≥5 | 1 | 1.5 |
| **Educational Status** | | |
| Non-formal | 2 | 2.9 |
| Primary | 14 | 20.6 |
| Secondary | 27 | 39.7 |
| Tertiary | 25 | 36.8 |
| **Religion** | | |
| Christianity | 65 | 95.6 |
| Islam | 3 | 4.4 |
| **Mode of delivery** | | |
| Caesarean section | 63 | 92.6 |
| Spontaneous vaginal delivery | 5 | 7.4 |
| **Cadre of Surgeons** | | |
| Registrar | 2 | 2.9 |
| Senior registrar | 52 | 76.5 |
| Consultant | 14 | 20.6 |
| **Booking Status** | | |
| Booked | 56 | 82.4 |
| Unbooked | 12 | 17.6 |

#SD- Standard deviation +CI-Confidence interval *GA- Gestational age

Fifty-two (76.5%) of the surgeries were performed by senior registrars while 14 (21%) by consultants (Figure 2).

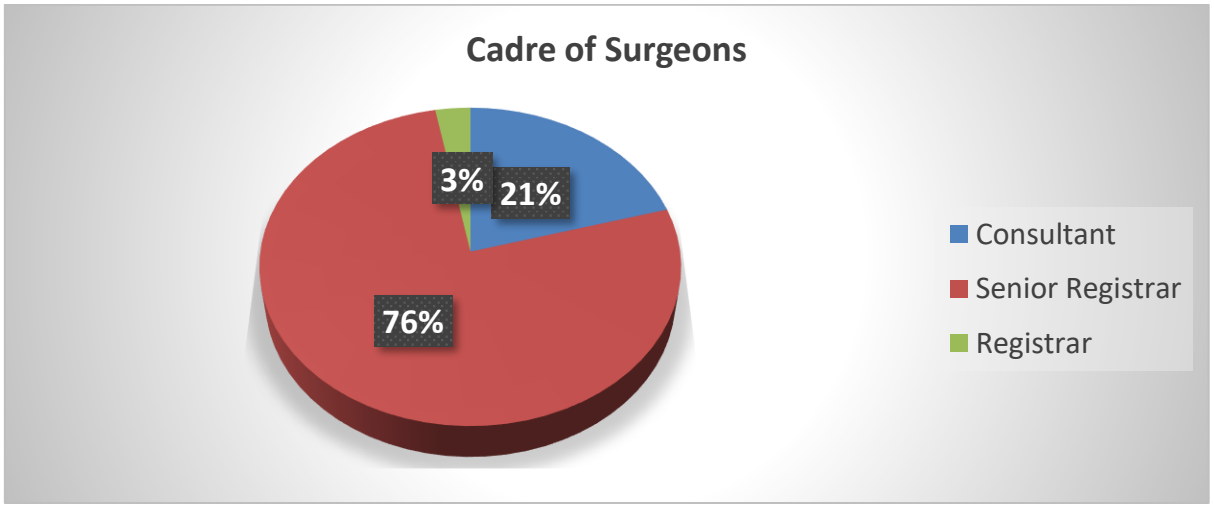


**Figure 2: Cadre of Obstetricians that performed the surgeries**

**Table 2: Risk factors for Abruptio placentae**

| Variable | Number n=68 | Percentage |
|---|---|---|
| Hypertensive heart diseases | 38 | 55.9 |
| Abdominal Massage | 12 | 17.6 |
| Polyhydramnios | 5 | 7.4 |
| Retroplacental fibroid | 10 | 14.7 |
| Premature rupture of foetal membranes (PROM) | 3 | 4.4 |

Hypertensive heart disease was the commonest risk factor and was identified in 38(55.9%) of the parturients. Others were Abdominal massage, retroplacental fibroid, polyhydramnios and PROM accounting for 17.6%, 14.7%,7.4% and 4.4% respectively (Table 2).

**Table 3: Maternal outcomes/ complications of Abruptio Placentae**

| Variable | Number n=82* | Percentage |
|---|---|---|
| Blood transfusion | 36 | 43.9 |
| Preterm delivery | 25 | 30.4 |
| Postpartum Anaemia | 13 | 15.9 |
| Postpartum haemorrhage | 5 | 6.1 |
| Puerperal sepsis | 3 | 3.7 |

*Multiple complications

The most common maternal complication was the need for blood transfusion 36(43.9%). This was followed by preterm delivery 25(32.9%). Other maternal outcomes are as presented in Table 3. More than half of study participants (52.9%) were transfused with at least 1 unit of blood (Table 4).

**Table 4: Blood transfusion among participants**

| Units of blood received | Number (n=68) | Percentage |
|---|---|---|
| None | 32 | 47.1 |
| 1 | 25 | 36.8 |
| 2 | 8 | 11.8 |
| 3 | 3 | 4.4 |

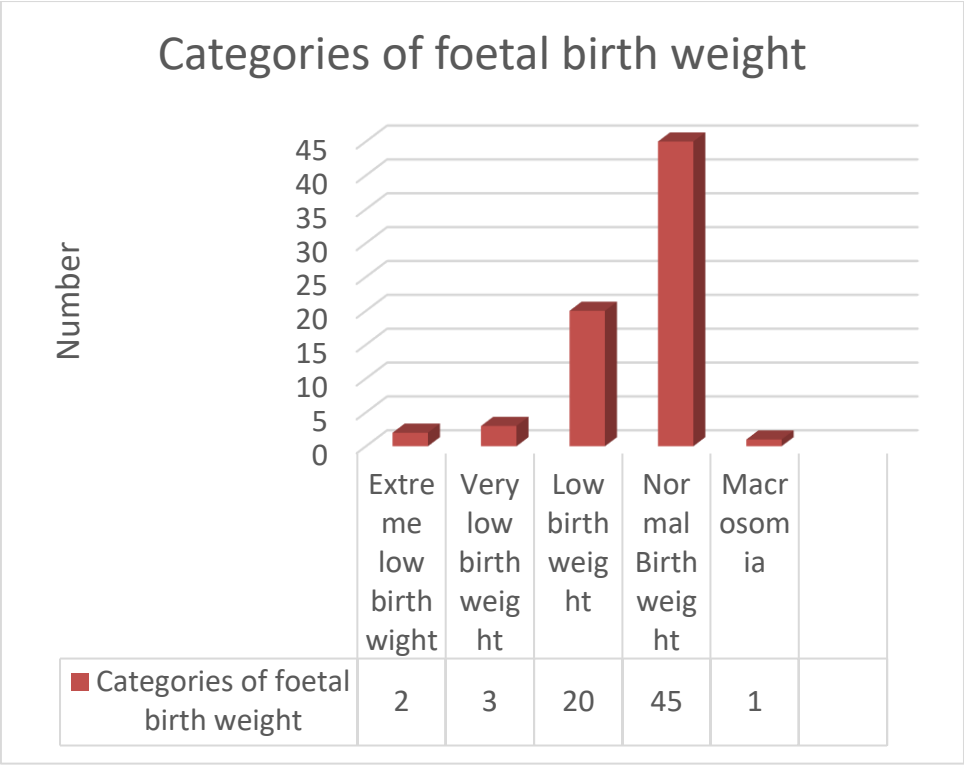


**Figure 3: Distribution of birth weight of the foetuses.**

Majority of the foetuses 45(63.4%) had normal birth weight while 26 (36.6%) had abnormal birth weight (Figure 3). There were 71 foetuses delivered (3 sets of twins). Although majority 94.4% of the foetuses were live births, 4 (5.6%) were stillbirth. Forty- three (60.6%) of the foetuses were males while 28(39.4%) were females. The foetal complications are shown in Table 5. The commonest complication was admission to SCBU 47.4%.

**Table 5: Foetal outcomes/complications**

| Variable | Number (n=78) * | Percentage |
|---|---|---|
| Birth asphyxia | 12 | 15.4 |
| SCBU# admission | 37 | 47.4 |
| Still birth | 4 | 5.1 |
| Low birth weight | 20 | 25.6 |
| Very low birth weight | 3 | 3.8 |
| Extreme low birth weight | 2 | 2.6 |

*Multiple complications/3 cases of twin pregnancy *Special Care Baby Unit

## DISCUSSION

There were 68 cases of abruptio placentae and 14195 deliveries over the review period. The prevalence of abruptio placentae at RSUTH was 0.48%. The prevalence, sociodemographic features and trend of abruptio placentae at the RSUTH have been reported [9]. In the index study we assessed the risk factors and foeto-maternal outcomes/complications of abruptio placentae at the RSUTH. The most common risk factor for abruptio placentae among the study participants was hypertensive heart disease, accounting for 55.9% of cases reviewed, corroborating the findings of previous study [20]. This was followed by abdominal massage (17.6%). Other risk factors identified in decreasing rate of occurrence were abdominal massage, retroplacental fibroid co-existing with pregnancy, polyhydramnios, and premature rupture of foetal membranes. This finding is in keeping with the findings of previous studies [8, 21, 22]. It is not surprising that abdominal massage was the second most common risk factor identified from our study since it is a common traditional practice in most communities in the study area. Although the rate of abdominal massage in current study was lower than 72.2% reported in a previous Nigerian study [13], it shows abdominal massage is one of the major risk factors for abruptio placentae in our setting. All the participants that had abdominal massages were those referred from traditional birth attendants and maternity homes. This practice of abdominal massage should be discouraged due to its adverse effects on pregnancy. As such, pregnant women should be properly counselled on the dangers of this traditional practice of massage. Majority of the participants (92.6%) had emergency caesarean section.

This corroborates findings of previous studies [1, 8, 23]. This is not surprising as emergency caesarean section is the preferred mode of delivery in cases of abruptio with live babies. However, 7.4% of the Parturients had vaginal delivery. These were cases of mild abruption in which retroplacental clots were identified after delivery of the placenta and those that had abruptio placentae with dead foetus with no life-threatening condition. Maternal complications observed in this study in decreasing order of occurrence were blood transfusion, preterm delivery, postpartum anaemia, postpartum haemorrhage and puerperal sepsis. The most common maternal complication was need for blood transfusion (43.9%). This finding corroborates those of previous study [3, 24]. A multiple blood transfusion rate of 66.7% among women with abruptio placentae in Okolobiri, Bayelsa State has been reported by Abasi *et al.* [13]. In present study it was observed that more than half of the parturients were transfused at least 1 unit of blood. Although majority of the study participants booked for antenatal care in the hospital, they presented with antepartum haemorrhage from abruptio placentae that necessitated blood transfusion either antepartum or postpartum. Preterm delivery was the second most common maternal complication. Twenty-five (30.4%) of the participants had preterm delivery, that is, delivery before 37 completed weeks. Preterm delivery is known to be associated with placental abruption. A prematurity rate of 82.1% has been reported by Matovelo *et al.* [23] in a study done in Tanzania.

Differences in methodology and definition of cases and management could account for the variation in the rate reported in current study. Cases of abruptio placentae with the foetus alive often requires immediate delivery for a better foeto-maternal outcome. About 16% of the participants had postpartum anaemia which was corrected postpartum. Majority of these study participants were those that did not receive any form of antenatal care in the hospital. Puerperal sepsis occurred in 3.7 % of cases which is similar to the findings of Adewole *et al*., [1] in Abuja Nigeria. There was no case of maternal death recorded in present study. Increased number of booked participants and perhaps early diagnosis and adequate intervention could have accounted for this finding. Majority of the foetuses 44 (61.9%) were males while 27(38.0%) were females. Male to female ratio is 1:6. The mean birth weight of the foetuses was 2.7±7.0, 95%CI: 2.5 to 2.8 kg. The mean birth weight is within the normal range in our setting and in agreement with previous study [3, 25]. The most common foetal outcome was admission into special care

baby unit (SCBU) which accounted for 47.4%. Majority of the of the foetuses were live births. Although over 90% of the foetuses were live births, 4 (5.6%) were stillbirth. This is lower than 52.9% and 41.6% reported by Siddiqui *et al.,* [26] in Karachi and Abbasi *et al.,* [27] in Pakistan respectively. Other observed adverse foetal outcomes were prematurity, low birth weight (including extreme and very low birth weight) and birth asphyxia. These findings corroborates those previous studies [28, 29].

## CONCLUSION

The prevalence of abruptio placentae at RSUTH is 0.48% and hypertensive heart diseases was the most common risk factor observed. The commonest foetal and maternal complications were need for blood transfusion and admission into SCBU. Knowledge of this would be helpful in management of patient for improved foeto-maternal outcome.

**Competing interest**

Authors have no competing interests to declare.

**Acknowledgement**

We appreciate the staff of the Department of Obstetrics and Gynaecology for their support during this study.

**Funding**

Authors funded the research.

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