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The Study of Abruptio Placentae at Tertiary Care Center

GaneshTondge [1], Nandkishore More[2],DimpalBhakare[3]*
[1]Associate Professor and Head,[2]Assistant Professor, [3]P.G, Final Year, Department of OBGY, S.R.T.R.GMC AmbajogaiIndia
**Corresponding Author and reprint request to: Dr. DimpalBhakare, P.G, Final Year Student Department of OBGY, S.R.T.R.GMC AmbajogaiIndia 431517.*

Abstract
Background*: The overall incidence of placental abruption varies from 0.4 to 1.0% [16–18]. The rate is generally lower in case–control (0.35%) than in cohort studies (0.69%).* ***Objective:****to find out the percentage of AbruptioPlacentae, risk factors and causes of AbruptioPlacentae, maternal and Perinatal morbidities, and mortality due to Abruptioplacentae, complications of Abruptioplacentae.*
Methods*:A Prospective cross-sectional study was conducted among 100 cases of abruptioplacentae admitted in Department of Obstetrics and Gynecology of a tertiary care centre during January 2021 to June 2022.****Results:****Majority of study participants were 21-25 years age group. Majority of subjects were educated upto 5th standard. Majority of subjects were Labourer. Most of study subjects are from lower socioeconomic class. Most of the study subjects were Multipara. Majority of study participants were from 28-36 weeks of gestational age. Most of study participants received inadequate ANC care. Maximum cases presented with preeclampsia. Most of cases had a history of preeclampsia. Majority of cases found with anemia. Most of cases delivered through LSCS.*
Conclusions: *The chief risk factors identified in this study are pre-eclampsia and anemia complicating pregnancy.*
Keywords*: AbruptioPlacentae, risk factors,Maternal and Perinatal morbidities, complications*

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I. Introduction

Placental abruption, classically defined as the complete or partial separation of a normally implanted placenta before delivery of fetus, occurs in 0.4–1% of pregnancies. [1] The incidence varies slightly in different populations [2] and has been increasing in some studies [3] but not all [2]. Incidence appears to be increasing probably due to increase in prevalence of risk factors. At least 50 different risk factors or risk markers for placental abruption have been reported with preeclampsia, polyhydrominos, poor nutrition,and history of previous placental abruption being the strongest.

Although many risk factors or risk markers are known, the cause of placental abruption often remains unexplained. Placental abruption is one of the most significant causes of maternal morbidity and mortalityalsoperinatal morbidity and mortality [4,5]. Both maternal and perinatal risks associated with placental abruption depend on the severity of abruption.

Types of abruptions based on whether external bleeding is present or not.

Revealed – Following separation of the placenta, blood insinuates downwards between the membranes and the deciduous. Ultimately blood comes out of the cervical canal to be visible externally. This is the most common type.

Concealed- When the blood is retained inside the cavity and not visible externally. This is rare only.
Mixed- Here, it is partly revealed and partly concealed. Usually, one variety predominates over the other. This is quite common.

Geoffrey Sher and Statland (1985) proposed the Grade 1-Corresponds to those cases in which the diagnosis of abruption placenta is made retrospectively. Most of the retroplacental clot volume was about 150 ml, fetuses are not at risk and there is a favorable perinatal outcome. Grade 2-Includes classical features of antepartum hemorrhage and fetus is live. Retroplacental clot volume 150-500ml. 27% of them had clots larger than 500ml .92% of fetuses had abnormal heart rate patterns. Perinatal mortality is high, especially if delivered vaginally. A palpable rigid uterus represents a significant high-risk situation for the fetus. Grade 3- Grade2 +fetal demise and further divided based on the absence or presence of coagulopathy. Grade 3a- without coagulopathy.Grade 3b –

with coagulopathy, virtually all maternal mortalities occur in this group. Careful management of hemodynamic status and the renal status of the patient is necessary for the good maternal outcome.
Maternal peripartum risks include obstetric hemorrhage, need for blood transfusion, emergency hysterectomy, disseminated intravascular coagulopathy (DIC), renal failure and even maternal death [6]. Fetal risks are associated with intrauterine growth restriction (IUGR), low birthweight, preterm delivery, asphyxia, sudden IUD, stillbirth and perinatal death [7]. Fetal survivaldepends not only on the severity of the abruption but also onthe gestational age [8].
Very few studies conducted in Maharashtra regardingstudy of abruption placentae at tertiary care center. Hence this study was conducted to find out the percentage of AbruptioPlacentae, risk factors and causes of AbruptioPlacentae, maternal and Perinatal morbidities, and mortality due to Abruptioplacentae, complications of Abruptioplacentae.

II. Materials and Methods:

A Prospective cross-sectional study was conducted among all cases of antepartumhaemorrhage, confirmed as abruption admitted in Department of Obstetrics and Gynecology of a tertiary care centre during January 2021 to June 2022. Based on the inclusion and exclusion criteria, the subjects were selected.

Inclusion criteria:
All cases of antepartumhaemorrhage, confirmed as placental abruption during the course of delivery.

Exclusion criteria:
All cases of antepartumhaemorrhage, confirmed with other than placental abruption like

- Placenta previa
- Genital tract trauma
- Lesions of genital tract
- Not willing to participate

Approval for the study:
Written approval from Institutional Ethics committee was obtained beforehand. Written approval of OBGY and other related department was obtained. After obtaining informed verbal consent from all patients with the definitive diagnosisabruptioplacentaecases admitted to OBGY ward of tertiary care centre such cases were included in the study.
Sample size = 100
Sampling technique: Convenient sampling technique used for data collection.

Methods of Data Collection and Questionnaire-
Predesigned and pretested questionnaire was used to record the necessary information. Questionnaires included general information, such as age, sex, Medical history- chief complain, past history, general examination, systemic examination.
As antepartum hemorrhage patients would be admitted as emergencies, placental abruption suspected depending on clinical features of vaginal bleeding, uterine tenderness, hypertonic uterus and diagnosis confirmed by retroplacental clots. After initial resuscitation with fluids, blood and blood products, mode of delivery decided depending upon maternal and fetal risk factors. History (regarding age, obstetric details and maternal high-risk factors like PIH, GDM, polyhydramnios), complete obstetrical examination, laboratory reports, delivery details etc.
Menstrual history: LMP, EDD, Obstetrics history-marriage duration, parity,Mode of delivery, maternal complications, Type of antepartumhemorrhage , No ANC visits, Gestational age at the time of admission, Mode of delivery, Maternal Outcome, Maternal complications. All the procedures and investigations conducted under direct guidance and supervision of pg guide.Proforma of abruptioplacentae notes maintained.
Statistical analysis: The data were entered in Microsoft Excel and data analysis was done by using SPSS demo version no 21 for windows. The analysis was performed by using percentages in frequency tables and correlation of Placenta abruption $p<0.05$ was considered as level of significance using the Chi-square test.

Results:
Majority of study participants were from 21-25 years age group i.e., 30 followed by 26-30,>35, 31-35 and 18-20 years age group29,18,14 and 9 cases respectively.
Majority of subjects were in educated group of primary(1^{st}-5th) std contributing 55 (55%) followed by secondary level (6^{th}-10^{th}) std contributing 30 (30%) and lastly higher level(above 10^{th}) std contributing 15 (15%) respectively.

Majority of subjects were Labourer contributing 39 (39%) followed by Farmer28 (28%), Home Maker23 (23%), Employed5 (5%), Saleswoman3 (3%) and shop keeper2 (2%) respectively
Most of study subjects are from lowersocioeconomic class (III, IV, V) contributing 85 (85%) followed by higher socioeconomic class(I,II) contributing 15 (15%).
Above table shows that,most of the study subjects were Multipara contributing 55 (55%) and Primipara 45 (45%).

Table 1: Distribution of study subjects according to parity (n=100)

Parity	Frequency	Percentage
Primipara	45	45
Multipara	55	55
Total	100	100

Above table shows that, majority of study participants were from 28-36 weeks of gestational age contributing 60 (60%) followed by ≥37 weeks 25 (25%) and <28 weeks 15(15%) respectively.

Table 2: Distribution of study participants as per gestational age (in weeks)

Gestational age (weeks)	Frequency	Percentage
<28 Weeks	15	15%
28-36 Weeks	60	60%
≥37 Weeks	25	25%
Total	100	100%

Above Figure shows that, most of study participants received inadequate ANC care as 78 (78%) cases with <4 visits whereas, 22 (22%) cases with ≥4 visits

Table 3: Distribution of study subjects as per ANC visits (N=100)

ANC visits*	**Frequency**	**Percentage**
<4 visits	**78**	**78%**
≥4 visits	**22**	**22%**
Total	**100**	**100**

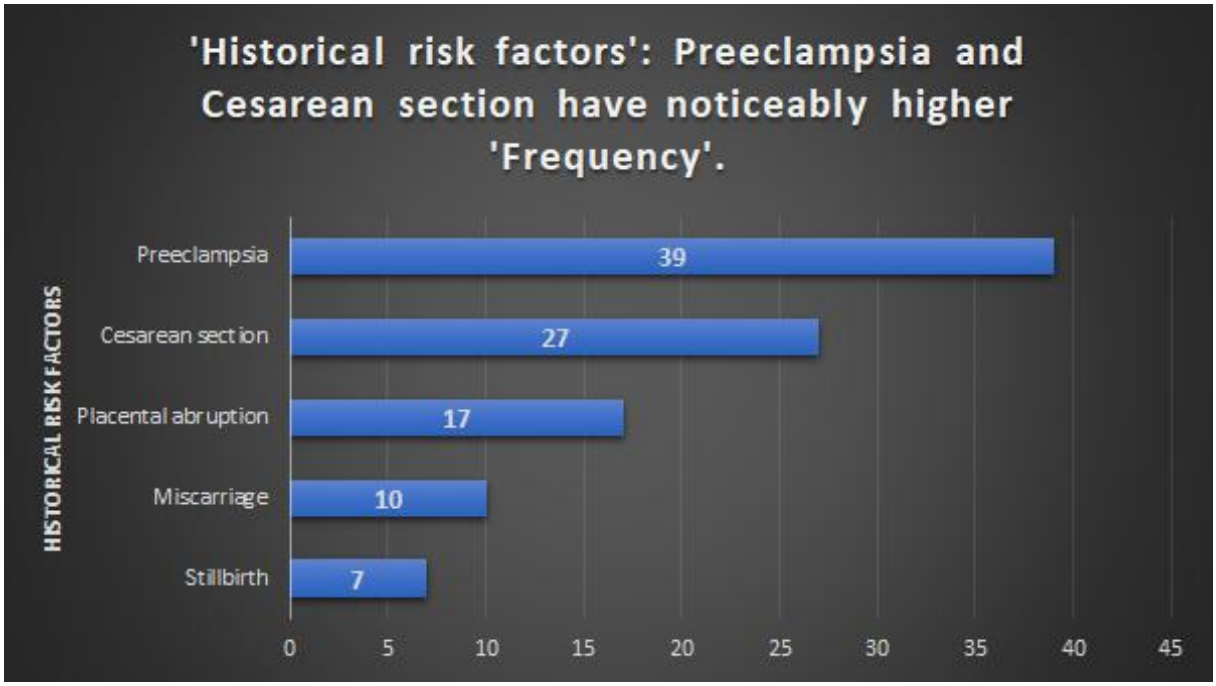
ANC visits: Antenatal visits ,<4 visits- Irregular or no visits, ≥4 visits: Regular visits
Majority of cases presented with preeclampsia 64, followed bypolyhydramnios 10, multiple gestation 08, placenta previa 06, premature rupture of membranes 04 and oligohydramnios01.

Table 4: Pregnancy-associated risk factors for placental abruption (N=100)

Pregnancy-associated risk factors	**Frequency**	**Percentage**
Preeclampsia	**64**	**64%**
Premature rupture of membranes	**04**	**4%**
Polyhydramnios	**10**	**10%**
Oligohydramnios	**01**	**1%**
Placenta previa	**06**	**6%**
Multiple gestation	**08**	**8%**

Majority of cases had a history of preeclampsia 39 followed by caesarean section 27, placental abruption 17, miscarriage 10 and 7 cases reported stillbirth.

Figure 1: Historical risk factors for placental abruption (N=100)



Majority of cases found with anemia 39, followed by HTN 37, Trauma12, DM 7 and uterine anomaly 5.

Table 5: Maternal risk factors for placental abruption (N=100)

Maternal risk factors	Frequency	Percentage
Hypertension	**37**	**37%**
Trauma	**12**	**12%**
Diabetes mellitus	**7**	**7%**
Anemia	**39**	**39%**
Uterine anomaly	**5**	**5%**

Majority of cases delivered through LSCS 76 followed by NVD22 and AD 2.

Table 6: Distribution of cases as per mode of delivery (N=100)

Mode of delivery	Frequency	Percentage
LSCS	**76**	**76%**
NVD	**22**	**22%**
AD	**2**	**2%**
Total	**100**	**100**

LSCS: Lower segment caesereansection,NVD- Normal vaginal delivery, AD-Assisted delivery

Prematurity was most common complication with32, followed by fetal demise 18, PPH 15, DIC 12, ARF 10, hysterectomy6 and maternal death 2.

Normal live births were seen in 47 cases followed by Prematurity 33,NICU Admission30, Still birth 18, Birth asphyxia 16 and Meconium aspiration 3.

III. Discussion:

Majority of study participants were from 21-25 years age group i.e., 30 followed by 26-30,>35, 31-35 and 18-20 years age group with 29,18,14 and 9 cases respectively.

Advanced maternal age and multiparity have been associated with an increased risk for placental abruption. However, they often are interrelated, and studies have produced inconsistent results. Although some studies have found women of advanced maternal age (but not parity) to be at an increased risk for abruption [9] others have demonstrated that parity plays an important role in the etiology of placental abruption [10].

Majority of subjects were educated till (1^{st}-5^{th})std contributing 55(55%) followed by 30 (30%) upto secondary level (6^{th}-10^{th}) std and 15 cases (15%) upto higher level (above 10^{th})respectively.Similar result found in the study of Baumann P[1].

Majority of subjects were Labourer contributing 39 (39%) followed by farmers28 (28%), homemaker23 (23%), employed5 (5%), saleswoman3(3%) and shopkeeper 2 (2%) respectively.Similar result reported by Ananth CV [2].

Most of study subjects are from lower socioeconomic class (III,IV, V) contributing 85 (85%) followed by 15 (15%) in higher classes (I, II).Similar result observed in the study of Williams MA [11].

Most of the study subjects were Multipara contributing 55 (55%) and Primipara 45 (45%). demonstrated that parity plays an important role in the etiology of placental abruption [10,11].

On the contrary, the U.S. Perinatal Collaborative Project performed from 1959 to 1966 and a population-based study failed to show a relationship between placental abruption and either maternal age or parity [12]

In 1996, Ananth and colleagues demonstrated by using population-based cohort data from Nova Scotia, Canada that young, multiparous women (aged 20–24 years and parity of 3 or higher) were at a 3.2-fold increased risk for abruptioplacentae compared with nulliparous women aged 25–29 years [13] However, neither maternal age nor parity were independent risk factors for abruption.

Majority of study participants were from 28-36 weeks of gestational age contributing 60 (60%) followed by ≥37 weeks 25 (25%) and <28 weeks 15(15%) respectively.Similar result reported in the study of Williams MA [11].

Most of study participants received inadequate ANC care as 78 (78%) cases with <4 visits whereas, 22(22%) cases with ≥4 visits. Similar result reported byBodelon C [6].

Majority of cases presented with preeclampsia 64, followed by polyhydramnion10, multiple gestation8, placenta previa 6, premature rupture of membranes 4 and oligohydramnion1. Approximately 4–12% of patients with preterm premature rupture of the membranes (PPROM) before 37 weeks gestation develop placental abruption. [14]. The risk increases with decreasing gestational age at membrane rupture. In some women with PPROM, sudden reduction of uterine volume may lead to placental abruption. In contrast, women exposed to prolonged PPROM are at increased risk of developing abruption if the time from membrane rupture to delivery exceeds 24 hours [15]. Among women with placenta previa, the risk was three- to fourfold, and among women with uterine bleeding >28 weeks the risk was 12- to 19-fold. If uterine bleeding occurred at <28 weeks, the risk for placental abruption was 2-fold.

Majority of cases had a history of preeclampsia 39 followed by caesarean section 27, placental abruption 17, miscarriage 10 and 7 cases reported stillbirth. Pre pregnancy risk factors for placental abruption includeprevious cesarean section and uterine anomaly [16]. Furthermore, the risk for placental abruption is increasedin the next pregnancy following adverse pregnancy outcomes,including delivery of a small-for-gestational-age newborn, preterm birth, transient hypertension in pregnancy, preeclampsia or stillbirth [17].

Majority of cases found with anemia 39, followed by HTN 37,Trauma 12 , DM 7, uterine anomaly 5. It has long been recognized that many patients with placental abruption also exhibit chronic hypertension or PIH. Although this is true for abruption overall, it appears that the more severe or higher grades have the strongest association with hypertension [18] Attention has focused on the arterial or afferent segment of the placental circulation to determine if pathologic changes could be attributed to hypertension.

Majority of cases delivered through LSCS 76 followed by NVD22 and AD 2.Similar result found in the study of Ananth CV [19].

Prematuritywas most common complication 32 cases, followed by fetal demise 18,PPH 15, DIC 12, ARF 10,hysterectomy 6 and maternal death 2 cases respectively. Placental abruption is a complication in 0.5–1% of all pregnancies. It is associated with such immediate adverse maternal outcomes as severe obstetric hemorrhage, emergency hysterectomy, disseminated intravascular coagulation, renal failure, and even maternal death.

At least 50 risk factors for placental abruption, related to maternal behavior and pregnancy-associated risks, have been identified, the most important being smoking, preeclampsia, and a history of placental abruption. The etiology of placental abruption is not fully understood but it appears that the syndromes of ischemic placental diseases include the related conditions of placental abruption, preeclampsia, and intrauterine growth restriction.

Normal live births were seen in 47 cases followed by Prematurity 33, NICU Admission30, Still birth 18, Birth asphyxia 16 and Meconium aspiration 3. Increasing multiplicity .the risk of placental abruption increases, but associated perinatal mortality decreases. Discordant growth of twins is a risk factor for placental abruption [20].

IV. Conclusion:

Placental abruption represents a set of potentially serious obstetric emergency, which has a great impact on maternal and neonatal mortality and morbidity and are one of the major risk factors for a preterm delivery. The chief risk factors identified in this study are pre-eclampsia and anemia complicating pregnancy. So, if these risk factors are identified at an early stage by adequate antenatal care and treated appropriately, the incidence of abruption and hence the maternal and perinatal mortality/morbidity can be reduced in our community.

There is no reliable prediction for the timing in pregnancy at which placental abruption may happen. The condition predisposing it should be carefully evaluated and actively managed to reduce the incidence. Early recognition and prompt delivery in cases in which fetus is mature, and in stable cases remote from term, conservative management to enable steroid administration, and timely referral to tertiary care centers, which includes facilities for the care of premature infants and liberal use of the caesarean section with blood transfusion facilities reduces both the maternal and perinatal morbidity and mortality.

Health education among communities and regular antenatal check-up specially BP measurements, urine albuminHb measurement can reduce the number of pregnancies by proper family planning procedures, increasing birth spacing, improvement of nutritional status and hence reduce the incidence of anemia. It is essential to strengthening the emergency transport facilities from the periphery to tertiary center as a correct intervention at the appropriate time in these patients is crucial to bring out a good outcome of pregnancy.

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