

Maternal and Perinatal Uplshot in Patients with Placental Abruption- A Descriptive Observational study

¹Dr. Priya Shankar, Associate Professor, Department of Obstetrics and Gynaecology, Karnataka Institute of Medical Sciences and Research Hospital, Hubli, Karnataka, India

²Dr. Annie Jesline Dmello, Junior Resident, Department of Obstetrics and Gynaecology, Karnataka Institute of Medical Sciences and Research Hospital, Hubli, Karnataka, India

³Dr. Madhu J, Associate Professor, Department of Obstetrics and Gynaecology, Karnataka Institute of Medical Sciences and Research Hospital, Hubli, Karnataka, India

Corresponding Author: Dr. Annie Jesline Dmello, Junior Resident, Department of Obstetrics and Gynaecology, Karnataka Institute of Medical Sciences and Research Hospital, Hubli, Karnataka, India

How to citation this article: Dr. Priya Shankar, Dr. Annie Jesline Dmello, Dr. Madhu J, “Maternal and Perinatal Uplshot in Patients with Placental Abruption- A Descriptive Observational study”, IJMACR- June - 2024, Volume – 7, Issue - 3, P. No. 05 – 12.

Open Access Article: © 2024, Dr. Annie Jesline Dmello, et al. This is an open access journal and article distributed under the terms of the creative common’s attribution license (<http://creativecommons.org/licenses/by/4.0>). Which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Placental abruption, is a significant contributor of perinatal and maternal mortality and morbidity, occurs when a normally placed placenta is separated from the uterine wall, causing haemorrhage before fetal delivery. Our study aims to describe the fetal and maternal outcome in cases of placental abruption in a tertiary care centre in North Karnataka.

Aims and Objectives: To delineate the risk factors for abruption. To describe the clinical profile and hemodynamic factors of patients presenting with placental abruption. To study the pregnancy outcome – fetal and maternal with respect to complications

Materials and Methods: Tertiary care center based Prospective Observational study conducted over a span of 2 years from January 2022 to Dec 2023.

Results: We identified and treated a total of 196 cases of Placental Abruption. Total deliveries were 18655 in these 2 years, which amounts to 1.056% incidence of abruption at our centre.

1. Maximum number of patients belonged to the age group of <25 years.
2. Most commonly they were multiparous.
3. Maximum people were belonging to Gestational age of 34 -36+6 weeks.
4. Mixed abruption type is the common type in this study.
5. Majority of the cases were diagnosed clinically.

6. Maximum number of patients presented with pain abdomen and PV bleed.
7. Major cause of admission to NICU was LBW & prematurity

Keywords: Hemodynamic Factors, Thromboplastins, Polyhydramnios.

Introduction

Placental abruption, is a significant contributor of perinatal and maternal mortality and morbidity, occurs when a normally placed placenta is separated from the uterine wall, causing haemorrhage before fetal delivery. Abruption in postpartum haemorrhage occurs when haemorrhage enters the placenta's decidua basalis, forming a haematoma and increasing hydrostatic pressure; further this releases thromboplastin and causes bleeding into myometrial layers which results into a Couvelaire uterus. This can be small or continue to dissect, releasing thromboplastins and bleeding into the myometrial layers. This damage interferes with uterine contractility, leading to atony and predisposing to postpartum haemorrhage. The correlation between revealed haemorrhage and actual blood loss is poor. The detached cotyledons of the placenta are unable to transfer nutrients and gasses. The foetus is compromised because the surviving fetoplacental unit has no way to make up for the consequent loss of function.

Prior abruption, pre-eclampsia, chronic hypertension, multifetal gestation, polyhydramnios, premature rupture of the membranes are the some of the main causes of abruption. Despite being a clinical diagnosis, the development of ultrasonography has made it possible to accurately distinguish it from other causes of APH, such as placenta previa. Over the course of the last few decades, the management of shock and disseminated intravascular coagulation has yielded positive results due

to the widespread availability of blood, blood products, and coagulation factors. Our study aims to describe the fetal and maternal outcome in cases of placental abruption in a tertiary care centre in North Karnataka.

Aims and Objectives

1. To delineate the risk factors for abruption
2. To describe the clinical profile and hemodynamic factors of patients presenting with placental abruption.
3. To study the pregnancy outcome – fetal and maternal with respect to complications

Materials and Methods

Study design: Tertiary care center based Prospective Observational study.

Study population: All pregnant women who presented with signs and symptoms of abruptio placentae clinically above 28 weeks of gestation to Department of Obstetrics and Gynecology, Karnataka Institute of Medical Sciences, Hubballi. Also, the cases diagnosed retrospectively as placental abruption based on presence of retroplacental clots were included in the study.

Study duration: January 2022 to December 2023

In this study duration we collected data of all the cases of abruption placenta.

Total 196 cases were studied in detail.

Methodology: The patient's name, age, socioeconomic status, address, employment status, the duration of amenorrhea, loss of fetal movements, trauma history, any history suggestive of pregnancy-induced hypertension, past medical conditions, and the results of prior pregnancies were all thoroughly recorded.

A thorough obstetric history was compiled, covering prior births, delivery methods, and any difficulties related to hypertension, abruption, IUD use, stillbirth, or any other antepartum, intrapartum, or postpartum issues.

The patient underwent a comprehensive physical, systemic, and obstetric examination, including with pertinent laboratory testing and imaging. Neonatal outcomes were documented, including birth weight, condition, and complications.

Statistical Analysis: SPSS version 27 (2021, IBM Corporation, USA) was used for analysis of the data. The results obtained are described in the following paragraphs. Student T tests and Chi-square tests were applied according to the variables. Only the p-values < 0.005 were considered to be statistically significant.

Results

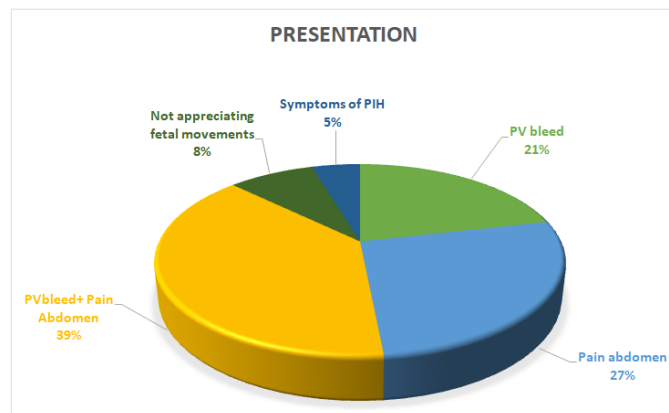
In our study, which spanned over 2 years prospectively, following results were obtained. We identified and treated a total of 196 cases of Placental Abruptio.

Total deliveries were 18655 in these 2 years, which amounts to 1.056% incidence of abruptio at our centre.

For the ease of understanding entire results are summarized in tables below.

Table 1: Demographic and obstetric parameters

	Number	%
Age(years)		
<25	77	39.29
26-30	82	41.84
31-35	27	13.78
>36	10	5.10
Parity		
Primi	64	32.65
Multi (2-3)	97	49.49
Grand Multi (>3)	35	17.86
Gestational Age (in weeks)		
28- 33+6	49	25.00
34-36+6	115	58.67
>37	32	16.33



Graph 1: Clinical Presentation

Table 2: Characteristics of abruptio

	Number	%
Type of Abruptio		
Revealed	29	14.80
Concealed	54	27.55
Mixed	113	57.65
Mode of Diagnosis		
Clinico-sonological	147	75
Retrospective	49	25
Presenting Complaint		
PV Bleed	42	21.43
Pain Abdomen	53	27.04
PV Bleed + Pain Abdomen	76	38.78
Not appreciating fetal movements	16	8.16
Symptoms of PIH	9	4.59
Mode of Delivery		
Vaginal Delivery	116	59.18
Spontaneous	77	40.31
Induced Labour	39	0.51
LSCS	79	
Emergency Laparotomy	1	29.59
Grades of Placental Abruptio		
Grade 1	115	58.67
Grade 2	23	11.73
Grade 3		

Table 3: Identifiable Risk Factor associated

Risk Factor	Number	%
Anaemia	59	30.10
HDP	64	32.65
Previous LSCS	12	6.12
GDM	7	3.57
Oligohydramnios	1	0.51
Thrombocytopenia	16	8.16
Polyhydramnios	5	2.55
Hypothyroidism	8	4.08
Twin Gestation	3	1.53
Prolonged PROM	4	2.04
Chorioamnionitis	2	1.02
No Risk Factor	15	7.65

Table 4: Haemoglobin Levels at admission

Hb level (g%)	Number	%
>11	55	28.06
9- 10.9	92	46.94
6- 8.9	31	15.82
<5.9	18	9.18

Table 5: Complications in Abruption Cases

Post partum Complication	Number	%
Severe Anaemia	42	17.72
Need for Blood Transfusion	63	26.58
Reaction to Blood Products	5	2.11
PPH	21	8.86
AKI	16	6.75
Post Partum Convulsions	5	2.11
HELLP	6	2.53
PPCM	8	3.38
Wound Infection	4	1.69
DIC	19	8.02
Cardiac arrest	2	0.84
Rupture Uterus	3	1.27
Maternal Death	4	1.69
Prolonged Hospital Stay (>7 days)	39	16.46

Table 6: Atonic PPH in Abruption cases.

Management of Atonic PPH	Number
Medical Management Only	34
Paracervical Clamps	16
Surgical Management	

B-Lynch Sutures	12
Uterine Artery Ligation	18
Internal Iliac Artery Ligation	9
Peripartum Hysterectomy	7

Table 7: Neonatal Outcome

Outcome	Number	%
Live	145	73.98
IUD	51	26.02
FSB	49	
MSB	2	
Birth weight (kg)		
<1	32	16.33
1-1.49	58	29.59
1.5-2.49	87	44.39
>2.5	19	9.69
Cause of NICU admission	62	54.39
LBW and Prematurity	14	12.28
Birth Asphyxia	37	32.46
RDS	1	0.88
Others Total	114	100

Table 8: Perinatal Overall Outcome

Perinatal Mortality in Abruption	Alive	Dead	Total
Vaginal Delivery	97	19	116
Caesarean Section	48	32	80
Total	145	51	196

Table 9: Indications for caesarean

Indications for Caesarean section	Number	%
Fetal Distress	42	52.5
Deteriorating Maternal Condition	31	38.75
Prev LSCS	4	5
Prev 2 LSCS	2	2.5
Primi with Breech	1	1.25
Total	80	100

Table 10: Perinatal Outcome with respect to grades of abruption

	Total Patients	Alive on admission	UD	Early Neonatal Death	Total Babies Survived
Vaginal Delivery	116				
Grade 1	35	34	1	3	31

Grade 2	77	66	11	4	62
Grade 3	4	0	4	0	0
Caesarean Section	80				
Grade 1	23	17	6	5	12
Grade 2	38	28	10	3	25
Grade 3	19	0	19	0	0
Total	196	145	51	15	130

Summarizing the results

1. Maximum number of patients belonged to the age group of <25 years.
2. Most commonly they were multiparous.
3. Maximum people were belonging to Gestational age of 34 -36+6 weeks.
4. Mixed abruption type is the common type in this study.
5. Majority of the cases were diagnosed clinically.
6. Maximum number of patients presented with pain abdomen and PV bleed.
7. Major cause of admission to NICU was LBW & prematurity

Discussion

This study was carried out between January 2022 to December 2023 in our institution – Karnataka Institute of Medical Sciences, Hubli, Karnataka which serves as a final referral center for most of the complicated obstetrics cases including abruption placenta. The incidence of abruption was 1.056% which is comparable with the study conducted by K Nandonde et.al in Tanzania¹ and another study on abruption by Prerak Modi et.al. in Ahmedabad, India.

Most of the mothers belonged to the age group of 26- 30 years(41.84%). This can be explained by the fact that in rural India, most common age group of marriage is 20- 25 years, and accounting to the multiparity and abruption correlation, 26-30 years could be the most common age group of presentation. Therefore, we can

establish that this age group is common due to a greater number of pregnancies in this age group. Multipara were 132 cases out of 196 cases of abruption(61.35%). However, it is interesting to note here that in a study conducted by V Lokhande et al in Maharashtra, the multipara who had abruption were only 30%². Most common gestational age noticed was 34 to 36+6 weeks which had 115 cases of abruption amounting to 58.67%. This can be explained by the fact that most of the above-mentioned risk factors like anaemia and severe pre-eclampsia are at their peak in this gestational age group³. Abruption of the placenta clinically presents in a wide range of signs and symptoms. The most common presentation was a combination of per vaginal bleeding and pain abdomen (n=76, 39%) followed by pain abdomen (n=53, 27.04%) and then PV bleeding alone (n=42, 21.43%). 16 of these patients did not appreciate fetal movements. In the order of CNS maturation, the fetal movements are first to appear somewhere around 16 weeks of gestation and also these are last to disappear in case of chronic placental compromise like chronic abruption. Therefore, we have to be more vigilant. However, gross absence of movements indicates a sudden IUD due to massive abruption.

Mixed variety of abruption was the most common type in our study (n=113, 57.65%) which comprises of both concealed and revealed type. This is comparable with other studies like those done by Adewole⁴ and Maharajan⁵. Since our institute is a tertiary care setup, the labour room is equipped with a ultrasound machine and availability of radiologist 2487 hours. Therefore, we were able to diagnose and confirm most of these cases clinico-sonologically. Out of the 196 cases of abruption, 16 cases had vaginal delivery (59.18%) out of which 77 cases were spontaneous labour onset and 39 cases were

induced⁶. However, all these cases were augmented with high dose oxytocin when contractions were inadequate.

One case had ambulance delivery and with placenta in-situ, she was brought to labour room. It was manually removed. The placenta came out easily with 400grams of retro-placental clots. However, the mother was deteriorating clinically and hemodynamically and on paracentesis frank blood was aspirated. She was then shifted for emergency laparotomy and intra-op spontaneous rupture of uterus was noted along with the picture of Couvelaire uterus. This was a case of abruption with spontaneous rupture on uterus in grand multipara(G6). There were 58 (29.59%) cases of Grade 1, 115(58.07%) cases of grade 2 and 23 (11.73%) cases of grade 3 placental abruption. These are mild, moderate and severe abruption respectively. For grade 3 fetal death is the rule.

The most common risk factor associated with abruption in our study was Hypertensive Disorder of Pregnancy. With varied spectrum of illness and pathology starting from simple gestational hypertension to status eclampticus, HDP is widely associated with Abruptio Placentae. 64 cases out of 196 cases had HDP (32.65%). Another well-known risk factor for abruption is anaemia (n=59, 30.10%). Though Government of India has implemented Anaemia Mukth Bharath and is striving very hard through periodic healthcare meetings, iron deficiency anaemia still prevails in many urban and rural pockets. This is due to lack of disease -related education among the mothers. Such areas with higher incidence of maternal anaemia have a greater incidence of abruption as well. Another risk factor prevalent in western world is smoking^{7,8}. There was a total of 4 cases of maternal death with primary cause being abruption, out of 121

maternal deaths in these 2 years; and all 4 of these cases had DIC⁹.

There were 145 livebirths out of 196 cases. 15 of these babies perished in NICU due to sepsis, very low birth-weight, and severe respiratory distress syndrome. 130 babies survived and were discharged home.

Abruptio placenta is a serious complication of pregnancy that occurs when the normally located placenta separates from the uterus before delivery¹⁰⁻¹³. Severe prenatal bleeding, multiple organ failure due to DIC, including the neonatal and maternal mortality are among the possible outcomes. Among other things, pregnancy-induced hypertension and anemia are the primary risk factors for abruption placenta. The severity of the ailment and the baby's gestational age determine the course of treatment. The morbidity and mortality rates related to abruption placenta in mothers and newborns might be decreased with early diagnosis and prompt treatment.

Conclusion

The results of our study indicate that placental abruption is more common in relatively young moms, maybe as a consequence of early marriage.

Early gestational age and multiparous women are more likely to experience abruption. The cornerstone is still clinical diagnosis.

Pregnancy-related hypertensive disorders were discovered to be a significant risk factor. Anaemia was linked to the majority of cases, either as a complication or a risk factor.

A low perinatal outcome was discovered, with the majority of cases being recent stillbirths.

Most live newborns needed to be admitted to the NICU.

Abbreviations

IUD: Intra-Uterine Death

LSCS: Lower Segment Caesarean Section

HDP: Hypertensive Disorder of Pregnancy

GDM: Gestational Diabetes Mellitus

PROM: Premature Rupture of Membranes

PPH: Postpartum Haemorrhage

AKI; Acute Kidney Injury

HELLP: Haemolysis, Elevated Liver Enzymes, Low Platelets

PPCM: Peri-Partum Cardiomyopathy

DIC: Disseminated Intravascular Coagulation

FSB: Fresh Still Birth

MSB: Macerated Still Birth

NICU: Neonatal Intensive Care Unit

References

1. Nandonde K, Matovelo D, Massinde A, Rumanyika R. Predictors of foeto-maternal outcome of patients with abruptio placenta at bugando medical centre, tanzania. *Tanzan J Health Res.* 2016;18(1).
2. Lokhande V, Jadhav K, Kadam M, Rawte S. Study of Maternal and Foetal Outcome in Abruptio Placentae. *Int J Med Sci Clin Invent.* 2021;8(01).
3. Jaiswani AK, Tripathi U, Bansal SJ, Singh V, Jaiswani K. Maternal death due to ruptured uterus consequent to abruptio placentae: 2 case reports. *Egypt J Forensic Sci.* 2021;11(1).
4. Adewole N, Isah AD, Osinachi IF. Foeto-maternal outcome of abruptio placentae at a Nigerian tertiary hospital. *African Journal of Medical and Health Sciences Full Length Research Paper.* 2019;18(3).
5. Maharjan S, Thapa M, Chaudhary B, Shakya S. Abruptio Placenta among Pregnant Women Admitted to the Department of Obstetrics and Gynaecology in a Tertiary Care Centre: A Descriptive Cross-sectional Study. *Journal of the Nepal Medical Association.* 2022;60(255).
6. Macheku GS, Philemon RN, Oneko O, Mlay PS, Masenga G, Obure J, et al. Frequency, risk factors and foeto-maternal outcomes of abruptio placentae in Northern Tanzania: A registry-based retrospective cohort study. *BMC Pregnancy Childbirth.* 2015;15(1).
7. Shobeiri F, Masoumi SZ, Jenabi E. The association between maternal smoking and placenta abruption: a meta-analysis. Vol. 30, *Journal of Maternal-Fetal and Neonatal Medicine.* 2017.
8. Schmidt P, Skelly CL, Raines DA. Placental Abruptio (Abruptio Placentae). *StatPearls Medical Journal.* 2022;
9. Anyanwu M, Mustapha C, Idoko P. A longitudinal study of incidence and pregnancy outcome of abruptio placenta at the—tertiary hospital in Gambia. *International Journal of Pregnancy & Child Birth.* 2019;5(2).
10. Khurshid W, Saifullah S, Shoaib U, Iqbal S, Ahmed B, Bibi A. Frequency of Fetomaternal Outcome of Placental Abruptio. *Medical Forum Monthly.* 2022;29(4).
11. Wassie AY, Anmut W. Prevalence of eclampsia and its maternal-fetal outcomes at gandhi memorial hospital, Addis Ababa Ethiopia, 2019: Retrospective study. *Int J Womens Health.* 2021;13.
12. Meena S, Gaikwad HS, Nath B. Plasma Homocysteine, Folic Acid and Vitamin B12 in Abruptio Placentae: A Cross-Sectional Study of Their Role and Feto-Maternal Outcome. *Cureus.* 2023.

13. Saquib S, Hamza LK, Alsayed A, Saeed F, Abbas M. Prevalence and Its Feto-Maternal Outcome in Placental Abruption: A Retrospective Study for 5 Years from Dubai Hospital. Dubai Medical Journal. 2020;3(1).