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A Study On Risk Factors And Fetomaternal Outcome In Abruptio Placenta

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ABSTRACT:
CONTEXT: Abruptio placentae can be defined as "Separation of the placenta either partially or completely from its implantation site before delivery of the baby". The clinical presentation varies from one patient to another. Vaginal bleeding, pain in abdomen, uterine tenderness, loss of fetal movements seem to be the classic symptoms. Placental abruption may be revealed or concealed. In the revealed type blood tracks between the membranes and the decidua escaping through the vagina. The less common concealed type occurs when blood collects behind the placenta without any external bleeding. This study is conducted to understand the rate of abruptio placenta in our study population, its consequence on fetal and maternal outcome and to identify the associated risk factors.
AIMS & OBJECTIVE:
- To determine the risk factors and etiological factors of abruption placenta.
- To analyze the fetal and maternal outcome of abruption placenta.

MATERIAL & METHOD: This is a prospective observational study of 50 cases of antenatal patients at Dhiraj Hospital admitted to our labour room with clinical diagnosis of abruptio placenta after 28 weeks of gestation between October 2022 and April 2024.
RESULT: Maximum number of cases (52%) of abruptio placenta in this study were between 21-25 years of age. Majority number of patients were multigravida (62%) which indicates that incidence of abruptio increases with parity and a higher incidence of abruptio placenta was present in women belonging to the gestational age between 33-36 weeks. The most common presenting sign seen in this study was vaginal bleeding, followed by pain in abdomen and a tense, tender uterus. Patients who had hypertension had a maximum rate of abruption (60%) and many of them were associated with anemia. After initial resuscitation of the patient, mode of delivery was decided depending upon the state of the mother and the fetus. Commonly seen maternal complications in this study were postpartum hemorrhage, coagulation failure and hypovolemic shock. Intrauterine fetal death and neonatal mortality due to hypoxia, prematurity, IUGR were commonly seen in abruptio placenta.
DISCUSSION & CONCLUSION: Abruptio-placenta must be included among the most dangerous obstetrical complication for both mother and fetus. Antenatal care which identifies the risk factors such as hypertension plays an important role in decreasing the incidence of abruptio placenta and improving the maternal and fetal outcome. The signs and symptoms of abruptio placenta vary depending upon the severity of bleeding and the degree of separation of the placenta. Among the maternal complications; hypertension continues to be prime cause of fetal wastage with a total perinatal mortality rate between 30% and 60%. Postpartum hemorrhage (PPH) was common followed by disseminated intravascular coagulation (DIC).Routine antenatal check-up, treatment of anemia, timely referral to advanced centers and proper management with timely cesarean section, blood transfusion and good neonatal intensive care unit will further lower the perinatal and maternal morbidity and mortality. Management is directed at identifying these risk factors at an earlier stage and correcting them will do a lot of help in reducing the incidence.

KEYWORDS: Abruptio placenta, vaginal bleeding, hypertension,PPH,intrauterine fetal death.

INTRODUCTION:

Abruptio placenta can be defined as " Separation of the placenta either partially or completely from its implantation site before delivery of the baby ". With enhancement in healthcare facilities, early diagnosis, accessibility of blood transfusion, good anesthesia, proper management of shock and other complications of pregnancy along with liberalization of caesarean section, the rate of maternal morbidity and mortality is gradually on the decline. Defective maternal vessels in the decidua basalis rupture and cause the separation, the damaged vessels cause bleeding which results in a decidual hematoma that can lead to placental separation, destruction of placental tissue and a loss of maternal- fetal surface area for nutrient and gas exchange. Although etiology isn't completely understood, it is generally multifactorial ie, impaired placentation, placental insufficiency, intrauterine hypoxia, uteroplacental under perfusion, pre-eclampsia, polyhydramnios, intrauterine growth restriction, maternal trauma, cigarette smoking, alcohol consumption, short umbilical cord, sudden decompression

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of the uterus. Additionally past prevalence of abruptio placenta, family history, measurement of uterine artery flow in early pregnancy may give useful information.

Associated Conditions with Placental Abruption
Gestational hypertensive diseases
Chronic Hypertension
Advanced maternal age
Increasing parity
Presence of multiple gestations
Polyhydramnios
Chorioamnionitis
Prolonged rupture of membranes
Trauma
Possible thrombophilias
Maternal use of recreational drugs such as cocaine
Maternal smoking
Unexplained elevation of maternal serum alpha-fetoprotein (MSAFP) levels in the second trimester

CLINICAL FEATURES

The clinical features vary from one case to another. Vaginal bleeding, abdominal pain, uterine tenderness, loss of fetal movements seem to be the classic symptoms. Physical examination includes palpation of the uterus for tenderness, consistency, frequency and duration of uterine contractions . A per-speculum examination is done to confirm site of bleeding. Digital examination of the cervix should be delayed until a sonogram is attained for placental localization and to rule out placenta previa. However, the volume and characteristics of the blood, as well as the presence of clots is estimated. Absence of vaginal bleeding does not exclude the diagnosis of placental abruption.

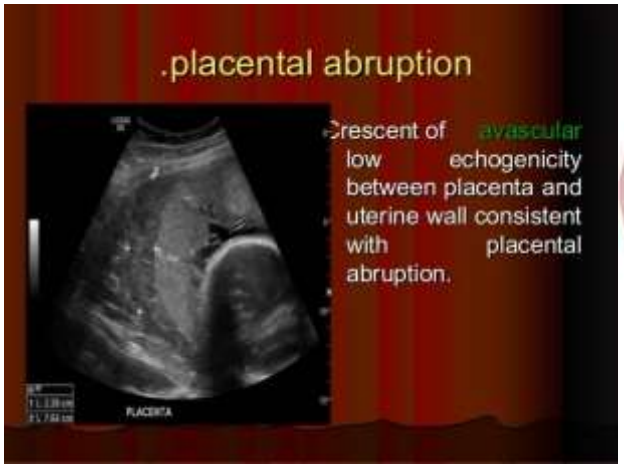

Fig 1: Crescent appearance in abruptio placenta

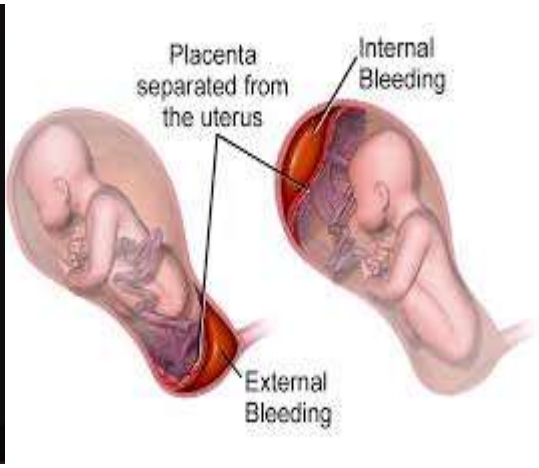

Fig 2: Revealed & Concealed types

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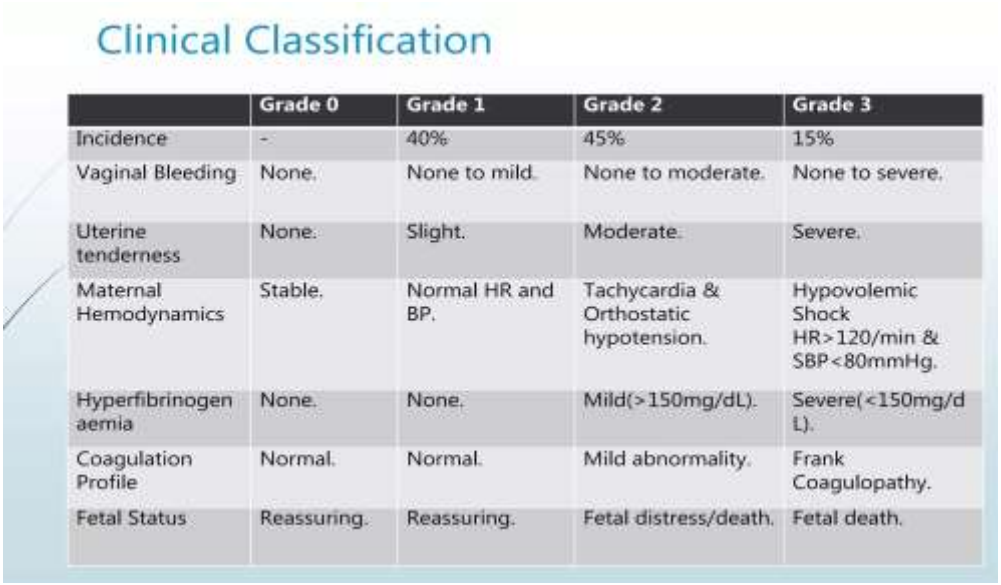
http://www.veterinaria.org
Article Received: Revised: Accepted:

Placental abruption may be revealed or concealed. In the revealed type blood tracks between the membranes and the decidua escaping through the vagina. The less common concealed type occurs when blood collects behind the placenta without any external bleeding(Oyelese and Ananth 2006)(1)

PAGE CLASSIFICATION:
Grade 0 An asymptomatic retroplacental clot seen after placental delivery.
Grade 1 Present with vaginal bleeding and mild uterine tenderness.
Grade 2 Vaginal bleeding may or may not be present but placental separation is significant enough to cause fetal compromise.
Grade 3 Vaginal bleeding may be moderate or severe but there may be significant maternal complications along with late stage of fetal compromise or fetal death.



Clinical Classification

	Grade 0	Grade 1	Grade 2	Grade 3
Incidence	-	40%	45%	15%
Vaginal Bleeding	None.	None to mild.	None to moderate.	None to severe.
Uterine tenderness	None.	Slight.	Moderate.	Severe.
Maternal Hemodynamics	Stable.	Normal HR and BP.	Tachycardia & Orthostatic hypotension.	Hypovolemic Shock HR>120/min & SBP<80mmHg.
Hyperfibrinogenaemia	None.	None.	Mild(>150mg/dL).	Severe(<150mg/dL).
Coagulation Profile	Normal.	Normal.	Mild abnormality.	Frank Coagulopathy.
Fetal Status	Reassuring.	Reassuring.	Fetal distress/death.	Fetal death.

Perinatal morbidity includes low birth weight, preterm deliveries, birth asphyxia, stillbirth, intrauterine death, neonatal deaths. Fetal survival depends on the grade of abruption as well as period of gestation. However, fetal death invariably occurs, if more than 50 % of the placental surface is involved. The perinatal mortality also depends on the maturity of the fetus and the neonatal facilities available. Both spontaneous and iatrogenic preterm deliveries are common in placental abruption.

AIMS AND OBJECTIVES:
- To determine the risk factors and etiological factors of abruptio placenta.
- To study the fetal and maternal outcome of abruptio placenta.

MATERIAL & METHOD:
Following receipt of approval from the Institutional Ethics Committee, a prospective observational study was carried out at the Obstetrics and Gynecology Department of Dhiraj Hospital to determine the prevalence, risk factors, maternal and perinatal outcome in cases presenting with abruptio placenta. Study group consists of cases admitted to our labour room with clinical diagnosis of abruption with gestational age beyond 28 weeks.
Study period: October 2022- April 2024
Study design: Observational study
Sample size: 50

INCLUSION CRITERIA:
1. Pregnant women with gestational age beyond 28 weeks with abdominal tenderness with or without complaints of bleeding per vaginum.
2. Cases with retroplacental clots diagnosed retrospectively.

EXCLUSION CRITERIA:

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Vol 25, No. 1s (2024)
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1. Cases with other causes of APH like placenta previa and other extra placental causes were excluded.
2. Rupture uterus
3. Multiple gestation
4. Placenta accreta, increta and percreta; succenturiate placenta, vasa previa .
5. Gestational age below 28 weeks
6. Associated cardiac condition
7. Cases with atypical signs and symptoms were excluded from the study after their delivery if there was no clinical evidence of abruption.

METHODOLOGY:

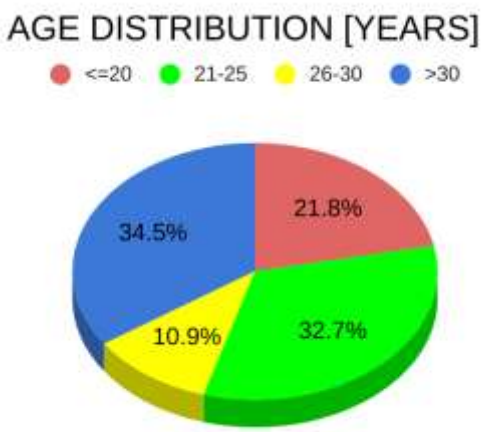
Between October 2022 and April 2024, a prospective observational study was conducted at Dhiraj Hospital lasting for 18 months after obtaining authorization from the Institutional Ethics Committee. The patient's menstrual, obstetric details, as well as their antenatal history and the total number of visits were gathered in order to produce a thorough prenatal record. A good clinical examination and an ultrasound examination was done for all the cases to arrive at an opinion and the cases diagnosed to have placental abruption were followed up for maternal and fetal outcome. Risk factors for abruptio were analyzed; a variety of standard medical procedures, including routine blood tests, coagulation profile, renal function tests and antenatal ultrasound scans, were executed during the pregnancy. The grade of abruption was identified and the severity was correlated with the maternal morbidity, mortality and fetal outcome was also measured on the basis of route of Delivery, apgar score, birth weight, prematurity or other abnormalities and the need for a neonatal intensive care unit.

RESULTS:

TABLE 1: AGE DISTRIBUTION AMONG CASES OF ABRUPTIO PLACENTA

AGE	CASES	PERCENTAGE
<=20	3	6%
21-25	26	52%
26-30	17	34%
>30	4	8%

Maximum number of cases (52%) of abruptio placenta were between 21-25 years. Next most common age group was between 26-30 years. Age at 20 years and below and those more than 30 years have nearly similar percentages .In different studies patients between 21-25 years of age were 51.48 % in Madras medical college 2012, 47.6% in Khan et al 2017 which correlates with present study.



Graph 1: Distribution of cases based on age of the patient

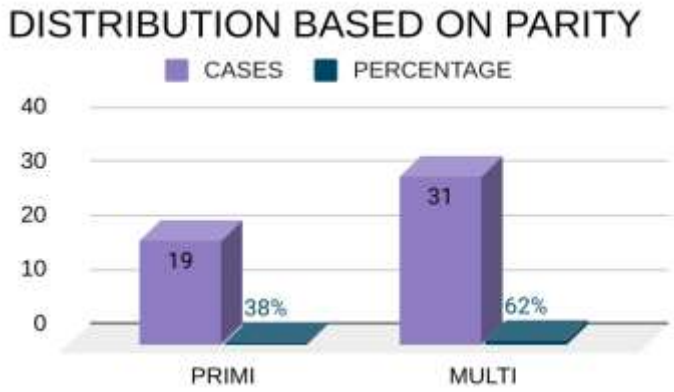
TABLE 2: DISTRIBUTION BASED ON PARITY

PARITY	CASES	PERCENTAGE
PRIMI	19	38%

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1s (2024)
http://www.veterinaria.org
Article Received: Revised: Accepted:

MULTI	31	62%

Maximum number of cases were multigravida(62%),38% women were primigravida. Study in Madras medical college 2012 shows that 61.38 % females were second para or more which indicates that incidence of abruption increases with parity.

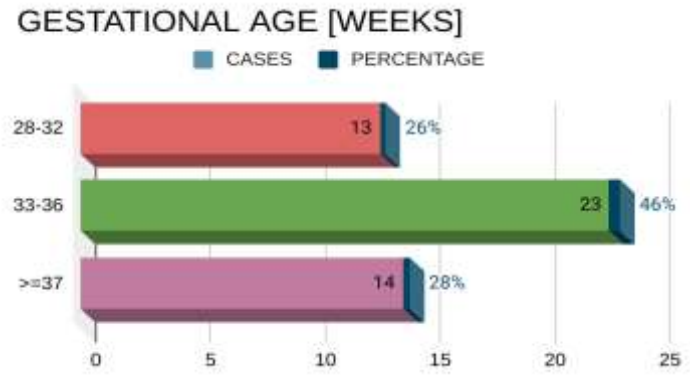


Graph 2: Distribution of cases based on parity of the patient

TABLE 3: DISTRIBUTION BASED ON GESTATIONAL AGE

GESTATIONAL AGE	CASES	PERCENTAGE
28-32	13	26%
33-36	23	46%
>=37	14	28%

In our study there was a higher incidence of abruptio placenta in women belonging to gestational age of 33 to 36 weeks.



Graph 3: Distribution of cases based on gestational age

TABLE 4: DISTRIBUTION BASED ON PRESENTING SIGNS AND SYMPTOMS

SIGNS AND SYMPTOMS	CASES	PERCENTAGE
Vaginal Bleeding	40	80%
Pain Abdomen	43	86%
Tense, Tender Uterus	25	50%
Absent Fetal Heart	5	10%
Shock	3	6%
Hypertension	30	60%

The clinical presentation was either single or a combination of above symptoms and signs. The most common presenting sign was vaginal bleeding, followed by pain in abdomen and a tense, tender uterus.

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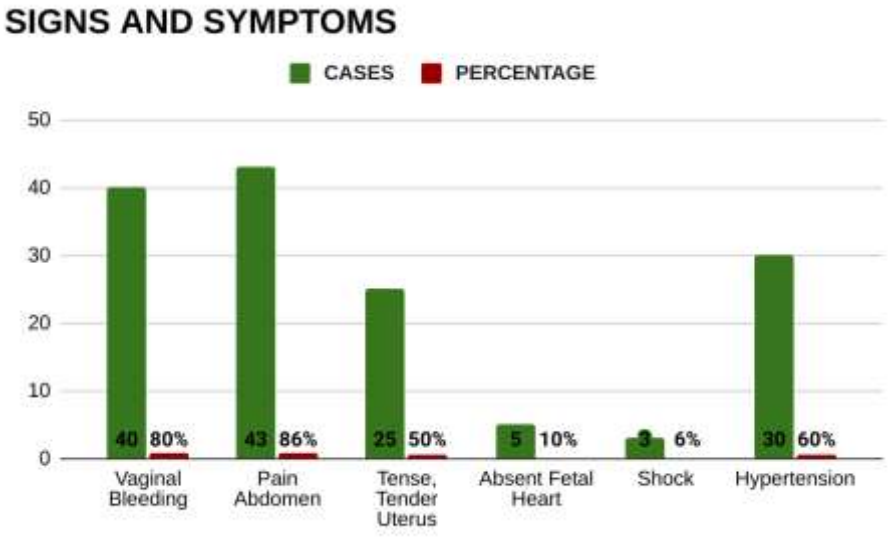
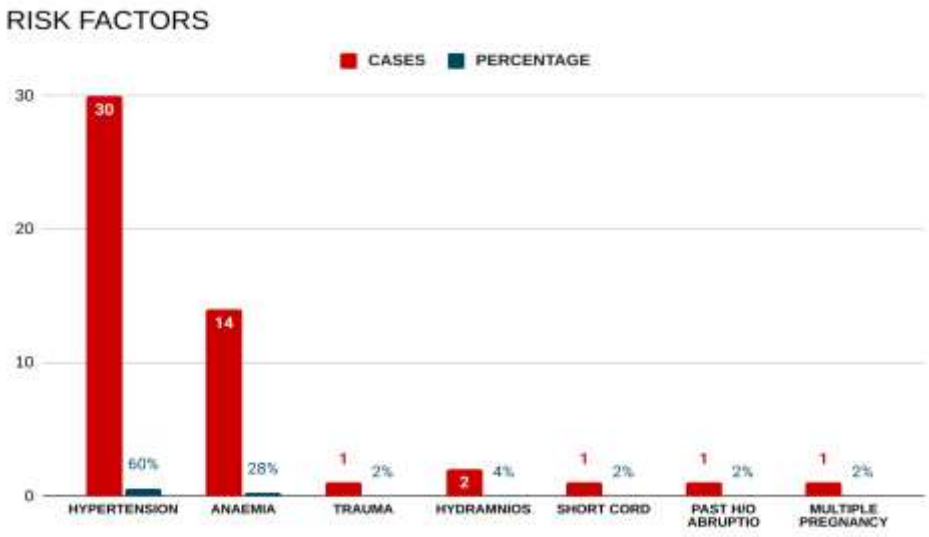


Graph 4: Graphical representation of the presenting signs and symptoms

TABLE 5: DISTRIBUTION BASED ON RISK FACTORS

RISK FACTORS	CASES	PERCENTAGE
HYPERTENSION	30	60%
ANAEMIA	14	28%
TRAUMA	1	2%
HYDRAMNIOS	2	4%
SHORT CORD	1	2%
PAST H/O ABRUPTIO	1	2%
MULTIPLE PREGNANCY	1	2%

Patients who had hypertension had maximum rate of abruption (60%) and many of them were associated with anemia. Hypertension was the etiological factor in different studies ie, 61.30% in Madras medical college 2012,35.74% in khan et al 2017,22.6% in Mukherjee and kaul al 2014,which indicates that hypertension is the most common cause of Abruptio placenta .Other causes are multiple pregnancy,trauma,hydramnios short cord, past h/o abruptio etc .



Graph 5: Graphical depiction of the risk factors contributing to placental abruption

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http://www.veterinaria.org
Article Received: Revised: Accepted:

TABLE 6: DISTRIBUTION BASED ON MODE OF DELIVERY

MODE OF DELIVERY	CASES	PERCENTAGE
VAGINAL DELIVERY	21	42%
CESAREAN SECTION	29	58%

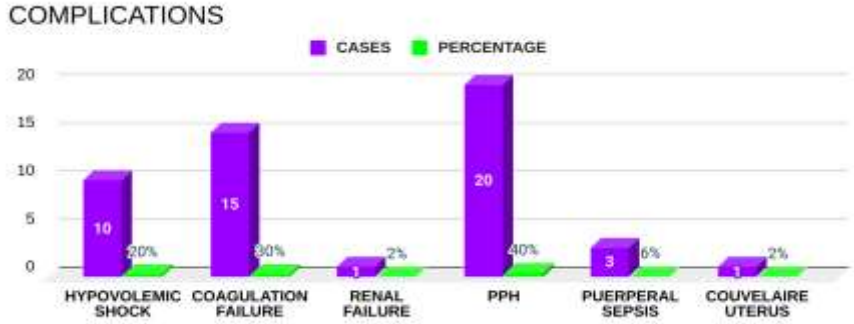
Among the 50 deliveries there were 21 vaginal deliveries and 29 caesarean deliveries. After initial resuscitation, mode of delivery was decided depending upon the state of the mother and the fetus.

Graph 6: Distribution of cases according to the mode of delivery

TABLE 7: DISTRIBUTION BASED ON MATERNAL COMPLICATIONS OF ABRUPTIO PLACENTA

COMPLICATIONS	CASES	PERCENTAGE
HYPOVOLEMIC SHOCK	10	20%
COAGULATION FAILURE	15	30%
RENAL FAILURE	1	2%
PPH	20	40%
PUERPERAL SEPSIS	3	6%
COUVELAIRE UTERUS	1	2%

Percentage wise maternal complications were PPH 40 %, coagulation failure 30%,Hypovolumic shock 20%, Puerperal sepsis 6%, ARF 2%, couvelaire uterus 2%.Compared to other studies percentage of hypovolemic shock is 37.62% in Madras medical college 2012, 25.18 % in Khan et al 2017 and Percentage of PPH are 34.65% in Madras medical college 2012 and 23.72 % in Khan et al 2017.This comparison shows that hypovolemic shock and PPH are the most common complications of Abruptio placenta. Hypovolemic shock was corrected with crystalloids, whole blood transfusion; coagulation failure was detected by coagulation tests and was corrected by fresh frozen plasma transfusion and whole blood transfusion. Postpartum hemorrhage was medically managed in most of the cases except one patient had to undergo an emergency obstetrical hysterectomy. In patients with caesarean delivery, 1 patient had couvelaire uterus.



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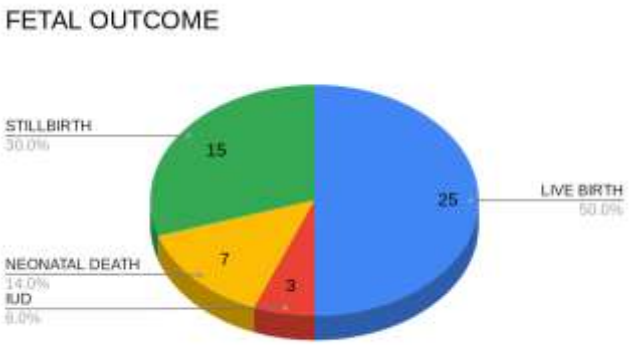
Graph 7: Distribution of the cases according to maternal complications

TABLE 8: DISTRIBUTION BASED OF FETAL OUTCOME

FETAL OUTCOME	CASES	PERCENTAGE
LIVE BIRTH	25	50
IUD	3	6%
NEONATAL DEATH	7	14%
STILLBIRTH	15	30

50% had live birth, 6% of the patients had an intrauterine fetal death and 14% of the newborns had neonatal death due to fetal complications such as hypoxia, anemia, growth restriction, prematurity, neurodevelopmental problems. Stillbirth in different studies were 61.39 in madras medical college 2012, 44.89% in Khan et al 2017,32.1% in Mukherjee and kaul et al 2017, coinciding with that of 30% seen in our study which shows that stillbirth is high in all studies.



Graph 8: Distribution of cases according to fetal outcome

DISCUSSION:

Abruptio- placenta must be included among the most dangerous obstetrical complications for both mother and fetus. The signs and symptoms of abruptio placenta vary depending upon the amount of bleeding and the degree of separation of the placenta. Abruption can occur at any trimester but commonly it occurs at 32- 36 weeks of gestation.(2) Among the maternal complications, hypertension continues to be a high cause of fetal loss with a total perinatal mortality rate between 30 and 60%. Postpartum hemorrhage(PPH) was common followed by disseminated intravascular coagulation(DIC). PPH was present in 40% of patients in this study, whereas study by Talpur NN reported PPH in 28% of cases.(3) DIC was associated with 30 % of the patients in our study, whereas Sher G observed DIC in 10- 20% of patients in his study with severe abruption and fetal demise which is similar to our study.(4) Renal failure is one of the major causes of maternal death.(5) It was reported that ARF is present in 2% of the cases and shock in 20% whereas study from Srivastava V reported 24.6% shock cases.(6) Infection was found to be in 17.5% of cases in the study by Choudhary V, in this study it's reported in 6% of the cases.(7) Regarding fetal outcome, 50% were born alive, 30% had stillbirths, 14% neonatal mortality and 6% intrauterine fetal deaths were reported. A preterm delivery can increase the fetal morbidity in cases of abruption.(8- 12)

CONCLUSION:

Our study shows that abruptio placenta still represents a potentially serious obstetric emergency that has an impact on fetal as well as maternal mortality and morbidity. Majority of cases presented with Grade 3 abruption with a resultant intrauterine death of the fetus. Increasing age has been a predisposing factor in Abruptio placenta. Most of the cases were unbooked and prevalence of abruptio was high in multiparous. The study revealed that severe preeclampsia increases the prevalence of abruptio and most of the cases were associated with anemia and hypertension. The mode of delivery varied according to maternal and fetal factors. Major maternal complication was PPH and fetal complications included hypoxia, anemia, growth restriction, prematurity, neurodevelopmental problems and fetal death. Routine prenatal check- up, treatment of anemia, timely referral to advanced centers and proper management with timely cesarean section, blood transfusion and good neonatal intensive care unit will further lower the perinatal, maternal morbidity and mortality. Management is directed at determining the risk factors at an earlier stage and correcting them to reduce the prevalence.

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Fig 3: Abruptio placenta with IUFD

Fig 4: Retroplacental clots following C-section

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