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Original Research Article

A clinical study of abruptio placentae and its maternal and perinatal outcome in tertiary care centre

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Abstract

Introduction: Abruptio placenta is the complete or partial separation of the normally implanted placenta before delivery of the fetus. It is one of the commonest causes of antepartum hemorrhage affecting maternal and fetal outcomes. Early detection and timely intervention of abruptio placenta in daily clinical practice are important to improve maternal and perinatal outcomes. The objective of the study was to find out the prevalence of abruptio placenta among the pregnant women admitted to the Department of Obstetrics and Gynaecology in a tertiary care centre.

Methods: A cross-sectional study was done among the pregnant women admitted to the Department of Obstetrics and Gynaecology in a tertiary care centre where data from medical records was taken after taking ethical approval from the Institutional Review Committee. Demographic details of the patients including age and parity were recorded. Convenience sampling was done.

Results: The results of my studies are summarized as follows:Overall incidence of Antepartum hemorrhage is 3.6% with abruptio placenta about 1.2. Hypertension is the most common etiology recognized in all studies.The incidence in our study is 54.8%.

Conclusions: The prevalence of abruptio placenta among pregnancies was similar to the studies done in similar settings.

Keywords: Abruptio placenta, epidemiology, fetal outcome, incidence, maternal outcome

Introduction

Abruptio placentae or accidental hemorrhage is one of obstetrical emergencies. Many study has been conducted regarding its etiology and effectiveness of its management. It has wide variation in its incidence ranging from 1:60 -1:250 (30). The etiology of placental abruption is not known in majority of cases. With the better availability of blood and blood products and coagulation factors, the management of shock and DIC has produced good results over last few decades.The present study is done to know the impact of this disorder and the effect of various parameters on the outcome.

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Aims and Objectives

To study the incidence and risk factors of patients presenting with abruptio placenta. To study the outcome of pregnancy in terms of maternal and perinatal morbidity and mortality in those patients.

Review of literature overview definition

The separation of placenta from its site of implantation before delivery has been variously called abruption placenta,The term premature separation of Normally implanted placenta is most descriptive because it differentiates placenta that separates prematurely but that is implanted some distance beyond the cervical internal os from placenta previa, one that is implanted over the cervical internalos.30 The Latin word abruption placentae, "rending as under of the placenta," denotes a sudden accident

Incidence

There has been a wide variation in the incidence of abruption as reported from various studies. At Parkland hospital, the incidence of abruption was 1 in 290 from 1988 to 1999. From 1988 through 1999, it decreased to1in155.Morgan *et al* reported an incidence of 0.7% during 1988-1992.In a case-control study done by Dafallah, Saad E.Babikir, Hayder during 1997- 2002 the incidence of abruption was 6.5% when the total number of cases studied was15,620. Saftlas and colleagues used the National Hospital Discharge Survey and found that incidence of abruption in 1987 was 11.5/1000 deliveries.

Etiology of abruptio placentae

Causes and risk factors

The exact cause of placental abruption remains unclear even after extensive research (7,8) The risk factors may be categorized into medical, social and obstetric risk factors(9). Risk factors are classified into preventable factors such as smoking and cocaine use and non-preventable such as trauma (9).

Multiparity and advanced maternal age

The incidence of placental abruption was higher in women less than 25 years when compared to women between 25 to 29 years in a study by Ananth *et al* (11). Tikannen *et al* found that placental abruption in women 35 years or older was attributed to high parity irrespective of gestational age.Inc (12)

Hypertensive disease

Evidence has shown that placental abruption occurs in 1.5% of pregnant women with pre-eclampsia and that its frequency is not affected by duration of the hypertension and presence or absence of proteinuria (15) Seventy-five percent of patients with placental abruption had hypertensive disorders and severe pre-eclampsia accounted for 44.8% of the 96 women. Smokers with severe pre- eclampsia are also more likely to develop placental abruption(17)

Previous history of placental abruption

Another important risk factor is a history of a previous abruption. After one episode the recurrence rate is 11% and increases to 25% after two episodes (23)

Trauma

Approximately 6% of trauma cases are associated with placental abruption but if the trauma ismajor the incidence could increase to 20-25% (18).

Premature rupture of membranes and chorioamnionitis

It is suggested that 4-12% of patients with premature rupture of membranes before 37 weeks gestation develop placental abruption (24) Studies have found the incidence of placental abruption to be 4.8% in women that had intrauterine infection, in contrast to 0.8% in women

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that had no intrauterine infection (28). A sudden reduction in the uterine volume following the rupture of membranes is the suspected mechanism that leads to placental abruption (23)

Polyhydramnios

Polyhydramnios has been described as a risk factor for placental abruption (28).The theory to support this factor is the sudden decompression of the uterus following the rapid loss of amniotic fluid after the rupture of membranes.

Multiple gestation

Multiple gestation was found to be associated with abruption placentae in various studies. Coyle *et al* reported that in 10 cases of abruption among 443 cases of multiple gestation. Ashar *et al* found one case of multiple gestation among 422 cases of abruption.

Cigarette smoking and cocaine use

The relative risk of placental abruption varies from 1. 5- 2.5 in women who smoke (20). Paternal smoking as a risk factor could be explained by passive exposure of the pregnant woman (21).The risk of placental abruption is increased by 40% for each year of smoking prior to pregnancy (27).

Sex of the off spring

Karegard M and Krohn M found an increased incidence of abruption placenta in pregnancies with male offspring. Increased incidence in male fetus is related to high levels of maternal stress related adrenal androgens.(39)

Maternal genetic disease/Immune disorders

Inherited or acquired thrombophilias were found to be associated with abruption and infarction.(31) According to Ananth CV *et al*(32) several thrombophilic mutations have been identified in women with serious complications of pregnancy, including abruption placentae and fetal growth restriction as well as severe pre-eclampsia and still birth.

Folic acid deficiency

Hibbard B.M and Hibbard E.D *et al*(33) found that folate deficiency was important in placental abruption but Pritchard J.A(41) in 1970, Naeye R.L(33) found no such correlation. Hibbard B.M and Jeffcoate T.N.A in 1966 found abnormal morphology in the bone marrow in 63% and folic acid deficiency in 97.5% and concluded that folate deficiency was important etiologic factor.(33)

Uterine anomalies and tumours

There is a controversial relationship between uterine anomalies and the risk of abruption. Two studies found a relationship between uterine anomalies and abruption.(36,37)While a third study found that uterine anomalies were rare among abruption cases.

External cephalic version

Hibbard B.M and Hibbard E.D 35 in 1963 found a correlation between external cephalic version and abruption placenta.

Clinical features

Clinically, the patients with severe abruption presents with vaginal bleeding, a tonically contracted uterus, absent fetal heart tones, and uterine tenderness.The patient may present in shock with a rapid and weak pulse, hypotension, cold and moist skin and stupor. Vaginal bleeding is the most common symptom, but there is little relationship between the amount of visible bleeding prior to delivery and the amount of placental separation, the amount of maternal hemorrhage or thedegree of hypofibrinogenemia.

Abdominal pain is the 2nd most common symptom occurring in 35% of cases. On physical

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examination, uterine hypertonus is present in 17% of cases and the uterus is nearly always tender. 48

Gross findings

The hallmark of the clinical diagnosis of placental abruption is the: Presence of a retroplacental or any adherent clots, Hematoma, or hemorrhage of variable size, Placenta or membranes with or without depression, disruption, or compression of the maternal placental surface.The clots usually are dark, firm, and adherent, in contrast to the red, soft, nonadherent clots formed during physiologic placental separation in the third stage of labor. Couvelaire change: In instances of severe premature,separation of the placenta, widespread hemorrhages are seen throughout the uterine muscularis and serosa, with blood dissecting into the broad ligaments and under the pelvic peritoneum.This classic picture was first described by Couvelaire as uteroplacental apoplexy(48). An underlying hemorrhagic diathesis usually was involved. Grossly, there even may be fissures on the serosal surface of the uterus, with evidence of active bleeding and hemoperitoneum. Blood effusions also can occasionally be seen beneath the tubal serosa and in the substance of the ovaries, presumably from uterine bleeding through the tubes or across the serosa

Pathogenesis and pathology

Placental abruption is initiated by hemorrhage into decidua basalis. The decidua then splits leaving a thin layer adherent to the myometrium. The difference with normal separation at delivery is that the myometrium of empty uterus contracts around the maternal sinus to cause hemostasis. The blood escaping under the decidua basalis can then pursue one of the four courses.1. Dissect under the membranes eventually leading to vaginal bleeding.2 Breakthrough the membranes into the amniotic 3. Dissect under the placenta, separating it from the maternal surface.4. Infiltrate the myometrium causing uterus to contract and take on a purplish color referred as Couvelaire uterus.There may even be frank hemorrhage into the peritoneal cavity. The diapedesis of blood from the decidua into the myometrium acts like ecbolic agent and is associated with a contraction that may be well localized or diffuse and tetanic. If uterus relaxation does not occur, the uteroplacental circulation may be compromised leading to fetal hypoxemia, acidosis and possible fetal death

Diagnosis

The diagnosis of accidental hemorrhage is mainly clinical. The history and the clinical examination are the chief parameters in a pregnant woman with history of sudden onset of vaginal bleeding, pain, tenderness and a tetanically contracted uterus with or without fetal death, with or without shock. A careful speculum examination should be performed to rule out local causes of vaginal bleeding and a careful ultrasound examination should be performed to rule out placenta previa. If the cause of bleeding is still has not been found after the above procedures, then there will be diagnostic and management dilemmas. The presence of albuminuria, hypertension, thrombocytopenia, or hypofibrinogenemia certainly should heighten clinical suspicion It is in these cases that the visualization of a retroplacental hematoma by ultrasound may be helpful. A retroplacental hematoma is visualized sonographically as an anechoic collection between the placenta and uterine wall. As the hematoma becomes organized, its echogenicity may increase presenting internal echoes that may be difficult to distinguish from a degenerating leiomyoma.

Role of ultrasound

Ultrasound is almost always the first (and usually the only) imaging modality used to evaluate placental abruption

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The sonographic signs of placental abruption include

Retroplacental Hematoma (Often Poorly Echogenic)**,**Intermembranous clot in twins**,** Disruption in retroplacental circulation**,** Thickening of the placenta: often to over 5.5 cm**,**Thickening of the retroplacental myometrium: usually should be 1-2 cm unless there is a focal myometrial contraction**,** Intraplacental anechoic area
Separation and rounding of the placental edge, Intra-Amniotic echoes due to intra-amniotic hemorrhage, The detection rate of placental abruption by ultrasound has been reported,in the literature to range anywhere from 2% to 50%.(51). Retroplacental collections have a worse prognosis for fetal survival that subchorionic abruptions.(49). In approximately 60% of patients with chronic abruption, an entity called chronic abruption–oligohydramnios sequence may be seen.

Role of CT scan

The appearance of the placenta in the trauma patient is reviewed at "traumatic abruption placenta scale (TAPS)"(52)
The traumatic abruptio placenta scale (TAPS) (52) was devised to stratify placental injury findings on CT
0: normal homogeneously enhancing placenta
1: heterogeneous placenta with low-attenuation geographic areas due to normal variants
2: non-geographic contiguous or full-thickness areas of low attenuation with acute angles with myometrium
o 2a: >50% placental enhancement
o 2b: 25-50% placental enhancement
3: large perfusion defects with <25% overall residual placental enhancement

MRI

Hemorrhage due to abruption appears as an area of medium to high signal intensity on T1 and high signal intensity on a T2 weighted image, locatedbetween the placenta and uterine wall.
Classification and types of abruption

1) Concealed: In this type the blood is retained inside the uterine cavity and is not visible externally. It is likely when there is a collection behind the placenta as a retroplacental clot,but the placental margin remain adherent. It accounts for 20-25% cases.
2) Revealed Type: Blood collected due to placental separation escapes by dissecting under the membranes and is seen externally if the membranes are ruptured as blood stained liquor. It accounts for 65%-80% of cases.
3) Mixed type: This is the most common type. Where external bleeding along with concealed bleeding in uterine cavity is still present.

Classification by degree of separation

Total Abruption: Detachment of entire placenta. About 7% of cases
Partial abruption: Detachment of only part of placenta. About 93%.

Marginal Abruption
Based on the site of beelding

a) preplacental or subamniotic, in which there is blood between the placenta and the

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amnioticfluid.
b) marginal or subchorionic, in which there is blood between the placenta and the membranes
c) retroplacental, in which blood clots between the placenta and the myometrium.
d) intraplacental

Burnet Lunen's Classification:(41)

1. Mild – Retroplacental clots measuring < 30ml.
2. Moderately severe – Retroplacental clot measures between 30 –150ml.
3. Severe – Retroplacental clot measures more than 150ml.

Based on the etiology

1. **Non Traumatic Abruption:** Due to the rupture of decidual spiral artery causing hematoma which expand to disrupt more vessels and cause placental separation.
2. **Traumatic Abruption:** Inciting cause here is trauma either minor or major trauma
3. **Chronic Abruption:** Chronic abruption as explained chronic abruption-oligohydramnios sequence—CAOS. These women may have abnormally elevated serum levels of alpha-fetoprotein

Geoffrey sher (1978) clinical gradingsystem: (40)

Grade 1: Corresponds to those cases in which diagnosis of, abruption placenta is made retrospectively. Most of the retroplacental clot volume was about 150 ml. None were more than 500 ml with this small degree of abruption, fetuses are not at risk and there is favorable perinatal outcome.
Grade 2: Includes classical features of antepartum hemorrhage and fetus is live. Retroplacental clot volume 150 – 500 ml. 27% of them had clot larger than 500 ml.
Grade 3: Grade 2 + fetal demise and further divided based on absence or presence of coagulopathy.

Page's classification (1954)

Grade 0 – Clinically unrecognized before delivery and diagnosis is based on examination of placenta.
Grade 1 – They show external bleeding only or mild uterine tetany but no evidence of maternal shock/fetal distress
Grade 2 – Here there is uterine tetany, usually uterine tenderness is present, possibly with external bleeding, fetal distress /death but no evidence of maternalshock
Grade 3 – There is maternal shock or coagulation defect with uterine tetany and intrauterinedemise.

Differential diagnosis

Though diagnosed clinically, some of the conditions which mimic abruption clinically are also to be evaluated.
1. Placenta previa, 2. Uterine rupture 3. Patient in labour
Other causes: 1. Acute hydramnios 2. Degenerating fibroid 3. Rupture of uterus 4. Tonic contraction of uterus 5. Other surgical acute abdominal conditions like appendicitis

Complications
Haemorrhagic shock

Shock is defined as a state of circulatory inadequacy with poor tissue perfusion resulting in

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generalized cellular hypoxia.

Phases of shock: (54)
Early phase (Compensatory phase): Mild vasoconstriction and with the compensatory mechanism operating, BP and PR normal.

Intermediate phase (Reversible phase): The patient passes into the state of hypotension.
Late stage (Irreversible): Hypotension continues and cannot be reversed by fluid replacement. Extremities become cold and clammy because of vasoconstriction due to sympathetic stimulation. Metabolic acidosis,
coagulopathy and thrombocytopenia are associated.

Management of hemorrhagic shock

To stop the bleeding and replace the volume which has been lost. Prompt diagnosis and immediate resuscitation is essential failing which multiple organ failure develops. Restore circulating volume Crystalloids. Packed red blood cells (specific blood component), combined with normal saline, are used. dministration of oxygen to avoid metabolic acidosis Hemodynamic monitoring is aimed to maintain systolic BP > 90 and MAP > 60 mm Hg, CVP 12-15 cm H2 O and pulmonary capillary wedge pressure 14-18 mm Hg Control of hemorrhage: Specific surgical and medical treatment for control of hemorrhage should start along with the general management of shock. □□Monitoring: Clinical parameters like skin temperature, visible peripheral veins can be helpful to assess the degree of tissue perfusion. Urine output (> 30 mL/hr) is a useful guide.

Disseminated intravascular coagulation (DIC)

Causes of DIC in abruption: Massive retroplacental clot Thromboplastin liberated from the clot precipitating shock Level of fibrin degradation products (EDP) is raised. It inhibits myometrial contraction.

Acute kidneyinjury

The diagnoses of acute kidney injury signify severe placental vabruption. Clinically oliguria of less than 400ml in 24hours. Rising serum urea and creatinine levels are suggestive of acute kidney injury. The three forms of acute kidney injury are seen in cases of abruption- tubular necrosis, acute cortical necrosis and pre-renal failure.

Sheehan Syndrome: Rarely, severe intrapartum or early postpartum hemorrhage is followed by pituitary failure— Sheehan syndrome. Findings include failure of lactation, amenorrhea, breast atrophy, loss of pubic and axillary hair, hypothyroidism, and adrenal cortical insufficiency.

Peripartum Hysterectomy: Peripartum hysterectomy is associated with increased morbidity and mortality. It is performed at the time of delivery or in the immediate postpartum period. It is a lifesaving procedure that is done in severe cases of haemorrhage that are unresponsive to medical and surgical procedures.

Blood transfusion

Blood transfusion is an important morbidity associated with placental Abruption.The incidence of blood transfusion in patients with placental abruption is between 19.4% and 50%.According to RCOG blood transfusion is rate FFP:PRBC as 1:1 TO 1:1.4.

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Maternal deaths

The cause of death was mainly hypovolemic shock, renal failure, DIC, post partum hemorrhage and complications of associated hypertension, liver necrosis, subarachnoid hemorrhage etc.

Maternal long-term consequences of placental Abruption

Cardiovascular Diseases: A history of preeclampsia is associated with increased risk of both CVD- related morbidity and mortality) later in life. Given the histopathological similarities of placental abruption and preeclampsia, abruption might also have an impact on later CVD morbidity and mortality. (56,58,59)

Cancer: Both abruption and cancer are conditions in which extensive cell proliferation and neovascularization take place. Moreover, excessive alcohol consumption and smoking increase the risk of placental abruption and they also expose to cancer.Innes*et al*. reported an association between breast cancer and previous placental abruption (OR 1.8, 95% CI (1.1–3.0). They evaluated first pregnancy characteristics in women with a subsequent breast cancer diagnosis atleast a year after the pregnancy. But there are only limited studies.(60)

Perinatal Outcome: Placental abruption has been found to be an independent risk factor for perinatal mortality. The perinatal mortality can be as high as 60-64%, but in developed countries it ranges between 9-12% (61,62)

Prematurity: Placental abruption is an important cause of spontaneous preterm birth, it also causes iatrogenic preterm delivery. Approximately 5% of all preterm births are associated with abruption. Nearly half of the births complicated by abruption occur before 37 gestational weeks and approximately 14% of them occur before 32 WEEKS of gestation (63).

Asphyxia: Abruption increases the risk of birth asphyxia by depriving the fetus of oxygen. If severe, asphyxia can cause permanent damage in the brain and lead to long- term consequences. It manifests in low Apgar scores, umbilical cord, blood pH, and base excess. The risk of adverse neurological outcomes starts to rise below a pH of 7.10.

Low birthweight and intrauterine growth

Restriction:(65,69) The association between placental abruption and fetal growth restriction is strong, and growth restriction alone could be used as a risk marker for abruption.This association is likely the result of underlying chronic placental ischemic disease, which leads to oxygen and nutrient deprivation of the fetus and suppresses fetal growth. Finnish study found that 6% of births with placental abruption were growth restricted (≤-2SD) compared with 1% in non abruption births. Of the babies born after abruption,10.5% weighed <1500g compared with 0.5% of the controls.

Neonatalmor bidity: Placental abruption predisposes the surviving new born to several morbidities, including respiratory distress syndrome(RDS), apnea, intraventricular hemorrhage, anemia, cystic periventricular leucomalasia, necrotizing enterocolitis, acute kidney injury, and nosocomial infections.

Perinatal and neonatal mortality: Placental abruption is associated with substantial risks for both perinatal and neonatal mortality,which in turn are closely related to gestational age at birth. A high PNM rate related to abruption is indeed strongly linked to preterm delivery. (73)

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Stillbirth: The risk of delivering stillbirths depends on the severity of the placental abruption.Two types of placental abruption are described namely complete and partial, complete separation of the placenta carries a higher risk of fetal death than partial separation. Ananth *et al* has quoted that the risk of still births increases if the placenta separates by over50%.

Sudden infant death syndrome

Sudden infant death syndrome(SIDS) is characterized by the sudden, unexplained death of a seemingly healthy infant with the cause of death remaining unknown despite a thorough investigation including are view of the clinical history, an examination of the death scene, and a complete autopsy.Children born after placental abruption have an increased risk of SIDS. (79) Prenatal exposure to tobacco smoke,smoking in particular puts infants at increased risk because it alters recovery from hypoxia, results in impaired arousal patterns, and disrupts both autonomic function and cardiovascular reflexes. 48

Materials and Methods

Objectives

1. To determine the frequency of abruptio placentae at government
2. Vellore medical college.
3. To assess maternal risk factors common in the patients admitted with placental abruption. To determine the number of patients that had operative deliveries.
4. To assess maternal morbidity associated with placental abruption and To assess perinatal outcomes of births in women with abruptioplacentae**.**

Setting of the study

The study was done at government Vellore medical college which is a tertiary referral hospital.

Study population

The study population included all pregnant women who were diagnosed and confirmed with placental abruption A total of 62 patients were enrolled
in the study. The patients for the study were recruited from the APRIL 2021
TO SEPTEMBER 2021.

Inclusion criteria

All pregnant women with c/o bleeding, p/v after 24 weeks of gestation and diagnosed as abruption during the course of delivery. 49

Exclusion criteria

All Pregnant women over 24 weeks of gestation who were admitted with c/o bleeding p/v diagnosed as

- Placenta previa
- Genital tract trauma
- Lesions of genital tract
- Pregnant women with bleeding pv <24 wks

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Study design

This was a prospective, descriptive study of the women diagnosed with placental abruption.

Data collection

A detailed history of the patient was taken regarding demographic profile, history of trauma, history suggestive of PIH, previous medical disorders, and outcome of previous pregnancy with detailed obstetric history was taken. These patients were clinically evaluated and worked up immediately with ultrasonogram, complete hemogram,renal function test, liver function test, serum electrolytes and coagulation profile.Follow up of Maternal outcome like shock, post partum hemorrhage,acute renal failure, need for mechanical ventilation,Disseminated Intra Vascular Coagulation,etc will be recorded.Follow up of fetal/neonatal outcome like intrauterine demise, birth weights, and an Apgar score at 1 min and 5 min were recorded and compared. The abruption – delivery interval will be correlated with the maternal and perinatal outcome. 50

Outcome measures

The risk: factors that were studied in all patients were age, parity, and gestational age, socioeconomic class, hypertensive disorders, PROM, preterm labor, trauma are measured.
Maternal outcomes that were assessed in the study were: shock, DIC, renal failure, thrombocytopenia and PPH.The number of patients who required blood transfusions and the number of units of packed red cells that were transfused were assessed. The use of platelets and fresh frozen plasma was also determined. ICU admission, length of hospital stay, caesarean hysterectomy and maternal deaths were also assessed.
Perinatal outcomes: That were evaluated include birth weight, prematurity, ICU admissions and the number of still births. The APGAR score at 5 minutes was also evaluated to exclude birth asphyxia. An Apgar score of 7 and above was considered normal and a score of less than 7 was regarded as birth asphyxia. 51

Results of the study

In present series spanning from April 2021 to September 2021 for a period of 6 months
The total number of deliveries were 5166.
The total number of cases of antepartum hemorrhage was 187 (3.6%). Total number of abruptio placenta cases being 62 (1.2%).

Table 1: Incidence of accidental haemorrhage

Total No. of Deliveries 5166	5166
APH	187(3.6%)
Abruptio Placentae	62(1.2%)

Table 2: Age Distribution among cases of abruption

Age group	Frequency (n=62)	percent
<20 years	10	16.1%
21-25 years	26	41.9%
26-30 years	17	27.4%
31-35 years	4	6.5%
>35 years	5	8.1%

The highest incidence was found among 21-25 years accounting for 41.9%. Meanwhile the

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incidence below 20 years was 16.1% and that >35 was 8.1%. The youngest age at which abruption was found in this series was 17 and highest was 38yrs.

Parity Distribution

The incidence of abruption in primi 54.8% and in multi is almost 55.2%.In our study it is seen that there is no difference in incidence of abruption among primi and multigravida.

Table 3: Distribution of cases based on Weeks of gestation:

Weeks of gestation	No. of women (n=62)	Percentage
24-32	**19**	**30.6%**
32-34	**17**	**27.4%**
34-37	**9**	**14.5%**
>37	**17**	**27.4%**

In our study incidence of abruption is highest among women of gestational age 24-32wks.Incidence in term patient is 27% and that of preterm is 63%.

Table 4: Distribution of cases based on signs/symptoms of abruption

Signs/symptoms	No.of women present with complaints	Percentage	Donot have complaints	Percentage
Vaginal bleeding	47	75.8%	15	24%
Pain abdomen	49	79%	13	21%
Tense uterus	49	79%	13	21%
Absent FHS	35	56%	27	43%
Draining pv	15	24%	47	75.8%
Shock	10	16.1%	52	83.9%

Table 4 shows the most common presentation is vaginal bleeding, pain abdomen and tense uterus which was seen in 75% and 79% and 79% respectively. Though these are classical symptoms which is not present in all cases. Shock was present in 16%. 24% cases presented with PROM.

Table 5: Distribution of cases based on etiological factors:

Etiological factors	No. of women (n=62)	Percentage
Hypertensive disorders of pregnancy	34	54.8%
PROM	15	24%
P/H/O abruption	11	17.7%
Male sex	31	50%
Anemia	13	21%
Trauma	1	1.6%
Preterm labour	20	32.3%
Short cord	3	4.8%
Hydramnios	4	6.5%
Multiple pregnancy	4	6.5%
Uterine anomalies	1	1.6%
Unknown	20	32.3%

Table 5 shows various etiological factors associated with abruption. It is seen that in 54% cases, abruption is associated with hypertension. Hypertension,PROM and preterm labor are the leading contributory factors.

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Table 6: Distrution of cases based on signs of abruption to delivery interval

Duration	No. of Cases	Incidence
< 6 hrs	7	11.3%
6 – 8 hrs	51	82.3%
> 8 hrs	4	6.5%

Since our hospital is a tertiary care hospital with most cases werereferral cases there is delay in patients admission to hospital. 11.3% casesreached hospital within 6 hours. 82% cases within 6-8hours. 6.5% reachedafter 8hrs.

Table 7: Distribution of cases based on grades of abruption placentae:

Grades of abruptioplacentae	No. of women (n=62)	Percentage
Grade 0	3	4.8%
Grade 1	12	19.4%
Grade 2	7	11.3%
Grade 3	40	64.5%

Table 7 shows: In 64.5% it is Grade 3 abruption. It is because ourhospital is a tertiary care center with all cases are referral cases.

Table 8: Distribution of cases based on type of abruption

Type of abruption	No. of women (n=62)	Percentage
Mixed	36	58.06%
Concealed	10	16.1%
Revealed	18	29.0%

In the present series, maximum type of abruption was mixed type 58%. Lowest incidence was found in the concealed type.

Table 9: Distribution of cases showing mode of delivery

Mode of Delivery	Total no. of Cases(n=62)	Percentage
LSCS	52	83.9%
NVD	10	16.1%

Table 9 shows maximum number of delivery in case of abruption is by LSCS.LSCS contributes about 83%.This is done in order to reduce maternal morbidity and mortality and perinatal mortality.

Table10: Distribution of cases showing weight of Retroplacental clots

Weight of rpclots	total no. of cases(n=62	Percentage
< 100 g	20	32.2%
100 - 250 g	23	37.09%
> 250-500g	12	19.3%
>500 g	7	11.2%

The maximum incidence was found among those with 100-250g and was 37.09%. Total average is 188.Minimal amount of RP clot seen is 20g and that maximum is 750g.

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Table 11: Incidence of complications in abruptio placentae

Complication	NO. of women (n=62	Percentage
Shock	10	16.1%
Postpartum hemorrhage	23	37.1%
AKI	10	16.1%
DIC	15	24.2%
Hellp	4	6.5%
Couvelaire uterus	13	21.0%
Sepsis	4	6.5%
Rupture uterus	5	8.1%
Thrombocytopenia	9	14.5%

Table 12: Incidence Of Morbidity Associated With Abruptio Placentae: Parameter No Of Cases Percentage

Parameter	No Of Cases	Percentage
PPH Requiring Surgical Management	21	33.9%
Hysterectomy	2	3.2%
Dialysis	3	4.8%
Ionotrope Support	11	17.7%
Ventilatory Support	10	16.1%
Massive Blood Transfusion	4	6.5%
Pulmonary Edema	1	1.6%
Postpartum Depression	1	1.6%
Postpartum Paralytic Ileus	1	1.6%
SSI	2	3.2%
Maternal Death	2	3.2%

Table 11,12 The most common complication seen is postpartum hemorrhage.□□37%cases presented with postpartum hemorrhage ie 23 cases where in 21 cases we did B/L uterine artery ligation and 2 cases hysterectomy was done. • 17%cases required ionotrope support and 16% required ventilator support postdelivery. Where 4 cases required massive blood transfusion.

No of maternal death due to abruption – 2 Total maternal death during study period – 18 Death due to covid pneumonia – 3

Table 13: Incidence of abruption in relation to Total Maternal Death

Total Death	Death due to Abruption	Death due to covid pneumonia	Death due to obstetrical cause	Contribution of abruption to maternal death in percentage
18	2	3	15	13%

Perinatal outcome in abruption

Table 14: Distribution of cases based o birth weight

Birth Weight	No. of Babies	Incidence
< 2.5kg	50	**80.6%**
> 2.5	12	19.3%
Upto 1 kg	10	16%
1-1.5	19	30.6%
1.5-2.5	21	33.9%

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>2.5	12	19.4%

Table 14 shows distribution of babies born by abruption based on birth weight. Almost 80% of babies are low birth weight babies.

Table 15: Distribution of cases based on birth outcome

Birth otcome	N=62	Percentage
Alive	21	33.9%
Still born	7	11.3%
Dead born	34	54.8%

In 62 cases of abruption, total live born is 21 cases which is 33.9% Still born -11.3% Dead born-54% Case fatality rate in abruption in our study is 66%.

Table 16: Distribution of babies based on Apgar at 5min:

Apgar at 5min	No of babies n=21	Percentage
8	7	11.3%
7	11	17.7%
6	1	1.6%
5 AND LESS	2	3.2%

Though cases were delivered within 1 hour of admission we had 7 cases of abruption with still born and 2 babies with Apgar <5 at 5 min. 77

Table 17: Relationship between abruption delivery interval – maternal and perinatal mortality

Duration	No. of Cases	Maternal Mortality Rate	Perinatal death rate	
< 6 hrs.	7	-	1	14%
6 – 8 hrs	51	-	36	70%
> 8 hrs.	4	2	4	100%

This tables directly shows as abruption -delivery interval Perinatal mortality and maternal mortality increases with increase in abruption – delivery interval.

Discussion

In present series spanning from April 2021 to September 2021, the total no. of deliveries with more than 24 weeks of gestation were 5116. The total number of cases of antepartum hemorrhage was 187 (3.7%), abruption placenta being 62 (1.2%).Table shows wide variation in the incidence of antepartum hemorrhage, probably this may be due to wide variety of etiological factors operating upon them and also their variation in incidence in different socio-geographical conditions. Partly it may be due to different diagnostic criteria applied in diagnosis by different authors.The increased incidence is attributed to the fact that institution being Tertiary referral center covering vast area, many high risk cases are referred from peripheral health centers.Our study is comparable with that of various studies in literature as shown in the table.

When the age was analyzed, the highest incidence was found among 21-25 years (41.9%). This is because they forms the largest set of women who delivered in our institute. This was comparable to different studies done at different country, state and district, who also found highest incidence in same age group.

Various studies shows the incidence of abruption was highest among multipara because they formed the largest group. In our study incidence in Primi is 54% and that of multi 56%. This shows no difference in parity in our study. In all other study the incidence of abruption was

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higher in multiparous women.

Table gives incidence according to weeks of gestation by different authors. All studies shows that incidence is maximum in gestational age <37weeks. Almost in all studies abruption occurs in about 74% in preterm which is comparable to other studies. incidence is higher among preterm which accounts upto 2/3 rd of cases. In our study abruption occur in 74% cases in preterm.

The symptom which was found in most of the patients in various studies was vaginal bleeding, pain abdomen and tense uterus. These studies also shows that nearly more than half of the patients presents with absent FH at the time of admission itself. This shows that absent FH is the next most common presentation. Others ways of presentation are PROM, hypertension,shock.In our study, vaginal bleeding (75%), abdominal pain(79%), tense uterus (79%), absent FH(56%),shock (16%),hypertension(54%), PROM(24%) are the clinical presentation of our patients.

Hypertension is the most common etiology recognized in all studies.The incidence in our study is 54.8%.Other etiology like PROM, Hydramnios, multiple pregnancy, where sudden escape of liquor leads to diminished surface of uterus adjacent to placental attachment resulting in shearing of placenta. In half of the patients, etiology in not known. In the table showing various studies, shows etiology in most cases is not known.

Most of the complications in abruption occurs as a result of bleeding causing shock, ischemic necrosis of distal organs due to shock and DIC as a result of thromboplastin release into circulation. In studies compared, Atonic PPH is the most common complication followed by DIC, SHOCK and AKI.These complications are directly related to sign to abruption delivery interval, amount of RP clots and severity of abruption. In our study, as like others most common complication is PPH (37.1%), DIC IS 24.2%, AKI 16.1% AND HYSTRECTOMY (3.2%), HELLP (6.5%)

Comparison of various studies in vaginal v/s caesarean delivery

As both maternal and fetal complications increases with increased sings to delivery interval abruption is always an obstetric endangerment for both mother and fetus. In our study 83% cases were delivered by LSCS as comparable to other studies shown in the table.

Overall in abruption, perinatal mortality is much higher. In terms of case fatality rate it is almost 80%.since abruption occurs all of a sudden, with few predictors, by the time patient reaches hospital, perinatal mortality ensures. several factors like low socioeconomic status, educational status, unawareness, added precipitating factors are contributory factors, gestational age at which abruption occurs, birth weight of the baby influences better perinatal outcome. In our study, comparable to others, perinatal mortality is 66%.

Summary

The clinical study of abruptio placenta-Maternal and Fetal outcome conducted as a prospective descriptive study in Government Vellore medical college hospital, Vellore with more than 10,0000 deliveries per year.The results of my studies are summarized as follows:Overall incidence of Antepartum hemorrhage is 3.6% with abruptio placenta about 1.2%.With respect to age, maternal age between 21-25 years (41.9%).The lowest age affected was 17 years and the highes was 38 years. Incidence of among Primi is 54.8% and that of multigravida is 55.2% in our study. Among gestational age maximum incidence was found among those who were between 24-32weeks.In term pregnancy is 27% that of preterm is 63% incidence.This shows incidence decreases as gestational age advances.The predominant symptom with which the patient presented was vaginal bleeding (75%), pain abdomen (79%), tender uterus (79%). Among the signs FHS was absent in 56%, shock was present in 16.1%, hypertension (54%), and PROM in 24%.Among risk factors hypertension was present was the most common cause with 54.8% followed by PROM (24%), p/H/O abruption (17.7%),trauma in 1%, short

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cord in 4.8%, hydramnios in 6.5%, multiple pregnancy in 6.5%, and unknown etiology in 32%.Majority of them had grade 3 abruption (64.5%), followed by grade 1 (19.4%) and the least being grade 0 (4.8%) This is because of delay in referrals to our hospital.Majority of the patient in this study reported after 6 hours of onset of symptoms (82.3%) Most of them presented with mixed type of abruption (58.06%), concealed type being (16%) and revealed (29%)in this study.In 83.9% cases mode of delivery is LSCS, and 16% NVD conducted.Normal delivery conducted in patient presented with absent FHS.in terms of complications, 16% were complicated with shock with 16% requiring ionotrope and ventilatory support, 16% had renal failure, 3cases required dialysis, 24% had DIC, 6.5% with HELLP, 13% couvelaire uterus, were 4 cases required massive blood transfusion immediately, 37% had severe post partum hemorrhage, 33% B/uterine artery ligation done and in 2 cases hysterectomy was done as a life saving procedure. we also seen 5 cases of rupture uterus with abruption.Overall maternal mortality in our study is 2 cases which accounts for 13% of overall morbidity in our study.Combination of shock, acute renal failure and DIC seen are the probable cause of death.In terms of perinatal outcome 63% babies were delivered preterm with 70% babies are of low birth weight. 33% were live born, 11% still born and 54% dead born. Case fatality is 66%.

Conclusion

Placental abruption carries a significant risk for both maternal and fetal morbidity. The prevalence of placental abruption was found to be 1.2% in this study which was similar to what has been reported in the literature. Antenatal risk factors associated with this condition must be identified and the importance of antenatal care should be emphasized. In the study hypertensive disease remains an important risk factor for this condition. These risk factors can be obtained from the patient's history and can thus help in reducing the morbidity and mortality associated with this condition. Prompt diagnosis and early referral of the patients for tertiary level care can result in better outcomes in these patients. This signifies the importance of early recognition and proper referral of the patient to ensure adequate management

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