

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20203294>

Original Research Article

Placental abruption an obstetric emergency: management and outcomes in 180 cases

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Received: 13 July 2020

Accepted: 18 July 2020

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ABSTRACT

Background: During a period of eight months, 180 cases of abruption that occurred from January 2007 to August 2007 at GMH, Nayapool, Hyderabad were analysed. Total number of deliveries during the study period of eight months were 14004. Incidence of abruption cases delivered was - 1.3%. In this series 88% were unbooked in our hospital, were referrals. Objective of this study was to study maternal fetal outcome of placental abruption.

Methods: Initial clinical assessment, investigations for maternal fetal wellbeing, expedite delivery, manage complications as per accepted protocol. In this series of cases, ARM was done in 85 cases (47.22%), ARM was done and oxytocin drip was started in 36 (20%), ARM was done and PGE1 tablet 25 mcg. was inserted in the vagina in 39 (21.66%).

Results: The bleeding was revealed in 146-81.1% and concealed in 34-18.88%. The number of cases with hypertension complicating pregnancy were 102-57%, hypotension in 16-8.88%, prolonged clotting time 13-7.22%, the number of patients who received blood transfusions were 105 (58.3%), number of patients who received fresh frozen plasma, FFP transfusions were 65-36.11%. Taken for LSCS at admission were - 46. Failure to progress after ARM or other methods of labour augmentation were 20 cases. The total number of caesarean deliveries were 66/180 - (36.66%), number of vaginal deliveries were 114 (63.33%). Perinatal outcome: the total number of intra uterine fetal deaths (IUFD) at admission were 103-57.2%. The number of still births were 7-3.8%. Live born babies were 70-38.8%. Neonatal deaths were 11-6.1% and total perinatal deaths were 121-67.2%. (IUFD at admission-103, + still births - 7, + neonatal deaths - 11=121 perinatal deaths. There were five maternal deaths in 180 cases of placental abruption, 2.7% mortality.

Conclusions: Need to consider measures to reduce the occurrence of this condition.

Keywords: Antepartum haemorrhage, Perinatal mortality, Placental abruption, Prematurity

INTRODUCTION

Placental abruption traditionally is defined as the premature separation of the implanted placenta before the delivery of the fetus. Of 66,459 deliveries, 667 (1%) were cases of placental abruption.¹ In a cohort of 27,796,465

singleton births, (USA) the prevalence rates of mild and severe abruption were 3.1 and 6.5 per 1000, respectively (overall prevalence rate, 9.6 per 1000).²

Overall, as per Downes et al, the reported incidence of abruption in the reviewed literature ranged from 0.01 to

5.1%, but the majority of studies had an incidence ranging from 0.5 to 1.0%.³

During a period of eight months, 180 cases of placental abruption occurred from January 2007 to August 2007 at GMH, Nayapool, Hyderabad. Total number of deliveries during the study period of eight months were 14004. Incidence of abruption cases delivered was - 1.3% in this study. Approximately 50 to 80% of preterm births in the setting of abruption are spontaneous (preterm labor or membrane rupture), but abruption is also considered the fourth most common cause of medically indicated preterm birth.^{4,5}

Preterm birth (<37 weeks) was one of the most frequently reported outcomes associated with abruption, more than half (55%) of excess perinatal deaths associated with abruption are attributed to preterm birth.^{2,6}

The high perinatal mortality as a result of intra uterine fetal deaths, stillbirths, neonatal deaths and also the delayed sequelae of neuro developmental deficits in children later in life, make it an obstetric emergency with immediate mortality and late consequences to both mother and the neonate.⁷⁻¹⁰

A greater attention needs to be paid to this obstetric condition. Once placental abruption occurs, the perinatal outcome may not be dependent on management alone. Hence prevention of the occurrence of abruption may be the way to move forward. The beneficial effect of folic acid supplementation in reducing abruptions is well documented. There are reports from countries that reduction in smoking had an effect on the incidence of abruption placenta.

Alcohol and cocaine consumption also would impact the occurrence. Measures aimed at reducing the hypertensive disorders of pregnancy, may have a role, as HDP is a known associated high-risk condition. ART procedures aimed at single embryo transfer would reduce twinning and multiple pregnancies with resultant reduction in obstetric complications.

METHODS

During a period of eight months, 180 cases of abruption that occurred from January 2007 to August 2007 at GMH, Nayapul, Hyderabad were analyzed. Total number of deliveries during the study period of eight months were 14004. Incidence of abruption cases delivered was 1.3%. In this series 88% were unbooked in the study hospital, but were having antenatal care elsewhere.

Inclusion criteria

- Pregnant women with antepartum bleeding associated with abdominal pain, from 28 weeks of gestation till term gestation.

Exclusion criteria

- Pregnant women with placenta previa, women with antepartum bleeding due to cancer cervix, cervical polyp, vaginal infection, pregnant women with bleeding per rectum due to piles.
- Bleeding per vaginum, not due to detachment of a placenta, but due to other causes were excluded.

Investigations

Hemoglobin, complete blood count, complete urine examination, renal function tests, liver function tests, platelet count, bedside clotting time, bleeding time, and emergency obstetric scan when feasible. Coagulation profile was done in needed cases. Diagnosis was made by clinical observations and in some cases, ultrasound examination to assess the retroplacental clot, to exclude placenta previa and fetal status.

Mode of induction, augmentation, acceleration of labour

If the cervix is effaced and dilated, even admitting a finger, artificial rupture of the membranes (ARM) would be done with a spinal needle.

Earlier decades ARM was done using a Kochers forceps. But a spinal needle is more convenient, light in weight and can perform ARM with less cervical dilatation.

ARM would hasten delivery, relieve intra uterine pressure and blood-stained liquor would confirm the diagnosis of abruption. After ARM, clear liquor does not exclude abruption, if the retro placental clot and bleeding do not communicate with amniotic fluid.

Some cases would be taken up for abdominal delivery at admission and in some who do not progress in labour and the response to labour augmentation was tardy and unsatisfactory in the next four to six-hour period, would have to be taken for C.

Authors stress the need to reassess the case response to management at half hourly intervals.

In patients with a coagulation disorder when would you operate? After infusion of blood products, the clotting parameters would be corrected, immediately a caesarean delivery can be undertaken. Simultaneous arrangements have to be in progress.

RESULTS

Presenting complaints

The bleeding was revealed in 146-81.1% and concealed in 34-18.88%. Women presented with reduced fetal movements 20, pain abdomen 11, Preterm rupture of

membranes, PROM 1, imminent symptoms of eclampsia in 2 Table 1.

Gravida, para, status

Primies - 37, second gravida - 62, third gravida - 47, fourth gravida - 22, fifth gravida - 12 Table 2.

Table 1: Presenting features of placental abruption.

Presenting complaint	Number
Bleeding PV	146
Revealed hemorrhage	146
Concealed hemorrhage	34
Reduced fetal movements	20
Pain abdomen	11
PROM	1
Imminent symptoms of eclampsia	2

Table 2: Gravida, para, status.

Gravida	No. of cases	%
Primies	37	20.55%
Second gravida	62	34.44%
Third gravida	47	26.11%
Fourth gravida	22	12.22%
Fifth gravida	12	6.66%

Table 3: Age of women with abruption.

Age in years	Number
20-25	130
26-30	30
>30	20

Table 4: Gestational age at abruption.

Gestation in weeks	Number	%
20-28	10	5.55%
28-32	40	22.22%
32-36	89	49.44%
>36	41	22.77%

Table 5: Placental abruption: associated risk factor/complication.

Associated risk factor/complication	Number	%
No of cases with high blood pressure	102	57%
Mild PIH	70	38.88%
Severe PIH	32	17.77%
Normal blood pressure	62	34.44%
Hypotension	16	8.88%
Prolonged clotting time	13	7.22%
Received blood transfusions	105	58.3%
Received FFP transfusions	65	36.11%

Age distribution

In the age group of 20-25 years there were 130 women, 26-30 years - 30 and more than 30 years - 20 women in the study Table 3.

Antenatal care

Twenty of the patients with abruption were booked cases in Government Maternity Hospital, Hyderabad, and 160 were referrals, but all of them had antenatal care in other health facilities.

Table 6: Mode of labour induction and augmentation of labour.

Method of labour induction and augmentation	Number	%
Artificial rupture of membranes ARM	85	47.22%
ARM + Oxytocin	36	20%
ARM + PGE1	39	21.66%

Table 7: Induction delivery interval.

Number of hours	Number of cases (n=180)	%
<6	116	64.44%
6-12	48	26.66%
12-18	10	5.55%
18-24	6	3.33%

Table 8: Indications for LSCS.

Indication for LSCS	N=66
LSCS at admission	46
Live fetus	23
Previous one caesarean	17
Two previous caesareans	4
Placenta praevia with abruption	2
Failure to progress after ARM + augmentation	20

Abruptio with associated preeclampsia

The number of cases with hypertension complicating pregnancy were 102-57%, severe preeclampsia in 32/180-17.77%. Normal blood pressure was recorded in 62-34.44% at admission.

Other complications

The number of women admitted with complications, hypotension in 16-8.88%, prolonged clotting time 13-7.22%, the number of patients who received blood transfusions were 105 (58.3%), number of patients who received fresh frozen plasma, FFP transfusions were 65-36.11% Table 4.

Duration of gestation when placental abruption occurred

The period of gestation when placental separation occurred was 20-28 weeks in 10 (5.55%), 28-32 weeks in 40 (22.22%), 32-36 weeks in 89 (49.44%), and more than 36 weeks in 41 (22.77%) Table 5.

Mode of induction, augmentation/acceleration of labour

In this series of cases, ARM was done in 85 cases (47.22%), ARM was done and oxytocin drip was started in 36 (20%), ARM was done and PGE1 tablet 25 mcg. was inserted in the vagina in 39 (21.66%) Table 6.

Induction delivery interval (n=180)

Induction delivery interval was less than 6 hours in 116-64.44%, 6-12 hours, in 48 (26.66%), 12-18 hours, in 10 (5.55%), 18-24 hours in 6 (3.33%) Table 7.

Route of delivery

The total number of caesarean deliveries were 66/180 - (36.66%), number of vaginal deliveries were 114 (63.33%), hysterotomy - 4 (2.22%).

Immediate LSCS

Taken for LSCS at admission were - 46. The indications for immediate LSCS were a live fetus in 23, previous one caesarean in 17, two previous caesareans in 4, placenta previa with abruption in two cases Table 8.

Failure to progress

After ARM or other methods of labour augmentation were 20 cases.

Table 9: Birth weight distribution.

Birth weight in kg	Number
Around 1 kg	24
1-1.5	53
1.6-2	44
2.1-2.5	42
2.6-3	17

Birth weight distribution

Total number of term babies were - 47 - 26.11%, preterm babies - 133 - 73.88%. Birth weight around 1 kg were 24, 1.1 n 1.5 kg were 53, 1.6 - 2 kg were 44, 2.1 - 2.5 kg were 42, 2.6 - 3 kg were 17, Table 9.

Perinatal outcome

The total number of intra uterine fetal deaths at admission were 103-57.2%. The number of still births were 7-3.8%. Live born babies were 70-38.8%. Neonatal deaths were 11-6.1% and total perinatal deaths were 121-67.2%. (IUD at admission - 103, + still births - 7, + neonatal deaths - 11=121 perinatal deaths) Table 10.

In the final analysis the number of babies survived was 59/180 = 32.77%.

Table 10: Perinatal outcome.

Fetus alive/death	Total number	Total %	Vaginal delivery no. 114	Vaginal delivery %	Caesarean No.-66	LSCS delivery %
IUD at admission	103	57.2%	76	42.2%	27	15%
Total still births	7	3.8%	3	1.6%	4	2.2%
Total live babies	70	38.8%	35	19.4%	35	19.4%
Total neonatal deaths	11	6.1%	6	3.3%	5	2.7%
Total perinatal deaths	121	67.2%	85	47.2%	36	20%
Total NICU admissions	50	27.7%	-	-	-	-

Complications

Postpartum haemorrhage had to be managed in - 7 cases (4 during LSCS), (3 during vaginal), B lynch compression sutures were applied in 4 cases. Eclampsia and imminent eclampsia were associated in 4 cases, HELLP syndrome in one case.

Post-operative burst abdomen occurred in one case; caesarean hysterectomy was not performed in any Table 11.

Maternal mortality

There were five maternal deaths in 180 cases of placental abruption, 2.7% mortality. Three of the deaths occurred in primies, two in third pregnancy.

One had antepartum eclampsia, who was unconscious at admission with IUD and clotting defect. Another was a case of preeclampsia with HELLP syndrome and clotting defect, in spite of multiple blood products transfusion and caesarean delivery, the DIC continued and hypotension

persisted. Two cases, one a third gravida, another a primi, both died undelivered within two hours of admission. Both had hypotension, IUD, and clotting defect.

One third gravida admitted with IUD, clotting defect, blood products were transfused, LSCS was done, she died 16 hours later due to ARDS, clotting defect Table 12.

Table 11: Placental abruption: complications.

Associated complication	Number
Postpartum haemorrhage	7
Eclampsia and Imminent eclampsia	4
HELLP syndrome	1
Post-operative burst abdomen	1

Table 12: Maternal mortality in placental abruption - 180 cases maternal mortality - total number of maternal deaths 5 (2.7%).

Parity	Condition at the time of admission	Measures taken	Admission death interval
G3 P2 L2 with 9 mA	H/O bleeding PV with IUD, BP 70 mm Hg systolic, clotting time - 20 min	1 unit of blood given, dopamine drip	1 hr 10 min, died undelivered
G3 P2 L2 with 9 mA	Came with bleeding PV with IUD, BP 130/90 mmHg, CT - 6min, cervix 1/2-inch-long, os 2f, clotting time - 15min	ARM + PGE1, 4 units of blood, 4 units of FFP, Emerg. LSCS done, post op hypotension, CT prolonged, lungs - basal crepts	16 hrs, cause of death shock, DIC, ARDS
Primi 28 weeks	History of bleeding PV with IUD, 80 mmHg systolic, Cx long os closed, CT - 15 min	1 unit of blood transfusion, haemaccel started O2 inhalation	2 hrs, DIC and shock died undelivered
Primi 37 weeks	Came with bleeding PV and IUD, Cx log os closed, BP 130/90 mmHg, Increased serum bilirubin, Increased Liver enzymes, CT - 10 min	6 units of blood, 4 units of FFP, Em LSCS done, couvelair uterus, post op hypotension, DIC	8 hrs, HELLP syndrome, DIC
Primi 36 weeks with antepartum eclampsia	Came with bleeding PV and convulsions, BP - 150/120 mmHg, CT - 10min, unconscious IUD 36 weeks, Cx 1/2 inch long, os 1f	ARM done, oxytocin drip given, hypotension, 2 unit of blood, 2 units of FFP given	5 hr 30 min, DIC, antepartum eclampsia, died undelivered

In a public sector hospital, the patients in the lower socio-economic strata would get admitted, difficulty and delay in procuring blood is one of the reasons, being unable to provide timely massive blood transfusions.

In this series 88% were unbooked in our hospital, but were having antenatal care elsewhere.

DISCUSSION

Majority of placental abruptions occurred after 32 weeks of gestation, 130/180 cases, 72.22%.

The maximum number of cases of severe preeclampsia, imminent and eclampsia also occur after 32 weeks of gestation. The period of gestation (n=654), gestational age was less than 28 weeks in 86 (13.14%), 28-34 weeks in 228 (34.86%) and more than 34 weeks in 340 (51.98%) cases.¹¹

Both these pathologic conditions affecting pregnancy occur in the third trimester of pregnancy leading to preterm delivery and increased perinatal mortality and maternal morbidity and mortality.

The concealed variety

In women having antepartum bleeding the diagnosis would be obvious, in those without bleeding per vaginum, the concealed variety, would complain of pain abdomen, reduced fetal movements, or may get admitted for other complaints like preterm rupture of membranes or symptoms of imminent eclampsia and during clinical examination and ultrasound, the abruption of placenta would be evident, leading to abnormalities in foetal heart rate.

Mode of induction, augmentation/acceleration of labour

ARM would hasten delivery, relieve intra uterine pressure and blood-stained liquor would confirm the diagnosis of abruption. After ARM, clear liquor does not exclude abruption, if the retro placental clot and bleeding do not communicate with amniotic fluid.

The main obstetric goal would be to expedite delivery, as the maternal complications and fetal are related to the abruption delivery interval. In this series of cases, ARM was done in 85 cases (47.22%), ARM was done and

oxytocin drip was started in 36 (20%), ARM was done and PGE1 tablet 25 mcg. was inserted in the vagina in 39 (21.66%). In our previous study, labour was induced and augmented with PGE1 vaginal tab.¹² In 49 cases of placental abruption, with vaginal delivery in 40 and C-section in 9 cases.

If the abruption to delivery interval is shortened, intra uterine hypoxia of the fetus can be minimized with better perinatal survival.

To prevent maternal complications secondary to placental abruption, renal failure, disseminated intravascular coagulation (DIC) due to depletion of the clotting factors that are utilized in the formation of the retro placental clot, hypotension due to continued bleeding, the abruption to delivery interval has to be reduced.

Induction delivery interval

Induction delivery interval would be the same as admission delivery interval. Much more significant would be abruption delivery interval which will have greater impact on the complication rate. The aim of management of any case of placental abruption would be to minimize the abruption delivery interval.

Route of delivery

Some cases would be taken up for abdominal delivery at admission and in some who do not progress in labour and the response to labour augmentation was tardy and unsatisfactory in the next four to six-hour period would have to be taken for C-section.

Authors need to reassess the case response to management at half hourly intervals.

The situations when authors would choose an abdominal delivery at admission would be when the fetus is alive with abnormal CTG patterns, if cervix is unfavorable, long cervix with closed os, the patient already in hypotension and shock, with coagulation defect, prolonged CT BT, prothrombin time and hypofibrinogenemia and evidence of reduced urine output, elevated serum creatinine, acute AKI secondary to abruption, when the hematocrit shows severe acute anemia. For CPD, abnormal presentations, previous abdominal delivery and other obstetric indications.

In patients with a coagulation disorder when would you operate ? After infusion of blood products, the clotting parameters would be corrected, immediately a caesarean delivery can be undertaken.

Should never attempt an operative delivery without correction of the clotting defect as we would face uncontrolled bleeding on the operating table and risk losing the patient.

When considering placental abruption, authors are worried about

Maternal mortality

There were five maternal deaths in 180 cases of placental abruption, 2.7% mortality.

Perinatal mortality

The total number of intra uterine fetal deaths at admission were 103-57.2%. The number of still births were 7-3.8%. Live born babies were 70-38.8%. Neonatal deaths were 11-6.1% and total perinatal deaths were 121-67.2% (IUD at admission-103, + still births -7, + neonatal deaths -11 = 121/180-67.22% perinatal deaths.

In the final analysis the number of babies survived was 59/180 = 32.77%.

In authors previously reported study, there were 72 cases (62.06%) with absent fetal heart sounds (IUD) at admission. Stillbirths were 10 (8.6%) and neonatal deaths were another 10 (8.6%).¹³

Perinatal mortality in authors previous series was 92/116 (79.3%). In the present series and authors previous study, the PNM has been high.

Mukherjee S, Mumbai, reported in 318 cases, 68% PNM. Mrinalini Mitra 2014-2015, reported a PNM of 63.79%. Chhabra SA et al in 2014 from Wardha, reported in 667 cases of placental abruption, in 211 (32.5%) perinatal deaths occurred.^{1,14,15}

Prematurity increases the PNM

In this study the preterm deliveries were 79.33%, which predisposes to enhanced PNM. Preterm deliveries 76.72% were reported in our previous study.¹³ Preterm birth (<37 weeks) the majority of studies reported between 40 and 60%.³ Spontaneous preterm births due to abruption is thought to be the result of bleeding from the separation of the placenta which irritates the uterine lining and stimulates contractions which progress into preterm labour.¹⁶

Although more than half (55%) of excess perinatal deaths associated with abruption are attributed to preterm birth, the elevated risk of perinatal mortality remains significant even after adjusting for preterm delivery and growth restriction.² Still births at admission, and neonatal deaths due to intra uterine hypoxia should account for the rest.

However, even term babies with normal birth weight have a 25-fold higher mortality with abruption.¹⁷ Approximately 10% of all preterm births and up to one third of all perinatal deaths are caused by placental abruption.^{19,20}

The increased need to perform abdominal delivery

The total number of caesarean deliveries were 66/180 – (36.66%), number of vaginal deliveries were 114 (63.33%) in the study. Of the 667 women with placental abruption, 373 (55.93%) delivered vaginally and 294 (44.07%) had C. section.¹

Placental abruption was of mixed variety in 271 (40.6%), 213 (32%) had revealed haemorrhage and 183 (27.4%) women had concealed abruption in this series.¹

In countries that reported low usage of cesarean in cases with abruption (25-40%) also typically reported higher perinatal mortality (40.4-67.9%), indicating possibly low resource settings.²¹⁻²³

Urgent transfusion of blood products

The number of patients who received blood transfusions were 105 (58.3%), number of patients who received fresh frozen plasma, FFP transfusions were 65 – 36.11%. This is one of the parameters to diagnose severe abruption.

Hypertensive disorders complicating pregnancy in abruption placenta

The number of cases with hypertension complicating pregnancy were 102-57%, severe preeclampsia in 32/102%. This is similar to our previous study 68/116, (58.62%) had preeclampsia. Saeed M, from Pakistan reported HDP-50% in abruption cases. HDP, preeclampsia and gestational hypertension, were reported in 50% and 61.2%.²²⁻²⁴

CONCLUSION

The management and maternal mortality in this study are indicative of the obstetric care in a tertiary teaching public sector hospital. The doctors are experienced to manage these complicated cases. Given better transfusion facilities the mortality can be reduced further.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Devabhaktuni P, Konkathi AK. Placental abruption an obstetric emergency: management and outcomes in 180 cases. *Int J Reprod Contracept Obstet Gynecol* 2020;9:3188-95.