



ABRUPTIO PLACENTA – CLINICAL PREPAREDNESS TO REDUCE MORBIDITY AND MORTALITY

Gynaecology

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ABSTRACT

Background – Abruption Placenta is a dreaded obstetric complication associated with high maternal and perinatal morbidity and mortality. It is diversely associated with several complications.

Patients & Methods – The study was conducted over a period of 6 months in MGMH hospital, a teaching institute of Obstetrics and Gynaecology of Osmania Medical College, the largest and highest tertiary referral centre in the state. Over 150 patients were analysed for occurrence of risk factors and clinical presentations and consequences in the mother and foetus/newborn.

Results – Commonest age at presentation was 26 – 30 years (48%). PIH emerged as the commonest risk factor in 44%. 64% presented with vaginal bleed and 14.6% had abdominal pain. The most common age at presentation was 32 – 36 weeks (36%). 36% delivered by a cesarean section whereas vaginal delivery was done in remaining cases. 21.3% had PPH, 4% had ARF, 16% required ICU admission, 10% had coagulopathy and a maternal mortality of 3.3 per 100 maternities. 37.3% had IUFD and 10.6% still births were noted. And 53.8% of live births required NICU admission.

Conclusion – A clinio-epidemiological study brings out insights to increase preparedness to deal with patients with a life threatening placental abruption.

KEYWORDS

INTRODUCTION:

Placental abruption is the most common cause of late pregnancy bleeding [1]. It refers to the abnormal separation of placenta after 24 weeks of gestation and prior to birth [2]. It complicates around 1% - 2% of pregnancies [3]. At least 50 different risk factors or risk markers for placental abruption have been reported with smoking, preeclampsia and history of previous placental abruption being the strongest. Although many risk factors or risk markers are known, the cause of placental abruption often remains unexplained [4].

Placental abruption usually presents as combination of vaginal bleeding, uterine contractions, and pain [5]. Maternal peripartum risks include obstetric hemorrhage, need for blood transfusion, emergency hysterectomy, disseminated intravascular coagulopathy (DIC), renal failure and even maternal death [6]. Fetal risks are associated with intrauterine growth restriction (IUGR), low birthweight, preterm delivery, asphyxia, stillbirth and perinatal death [7]. Placental abruption is one of the most significant causes of maternal morbidity and perinatal mortality [8].

Abruption Placenta is classified into concealed and revealed types. In concealed type the blood collects behind the placenta and there is no evidence of vaginal bleed whereas in revealed variety the blood tracks down between the membranes and the uterine wall to present through the vagina [9]. The study was conducted with a primary objective to evaluate the risk factors, presentation and potential complications that abruption placenta causes, this knowledge will ensure preparedness to encounter such situations better to reduce morbidity and mortality.

PATIENTS AND METHODS:

The study was conducted over a period of 6 months at Modern Government Maternity Hospital, Nayapool which is a teaching institute of Obstetrics and Gynaecology under Osmania Medical College. The study was taken up after due approval from the institutional ethics committee.

The study was conducted as a simple prospective observational study which included all abruptions which occurred during March 2017 to August 2017. Informed consent was obtained from all women who were diagnosed to have a placental abruption in the vernacular language. Risk factors and maternal and foetal outcomes were

measured as number of patients who fulfilled a particular criterion. Interventions made were assessed and their characteristics noted. Simple calculations were used to obtain percentages.

Diagnosis was made based on the presence of a retro-placental clot after placental delivery. Booked cases were those with minimum 3 antenatal visits. Risk factors were defined on previous records and presence of the factor at presentation. Presenting symptoms were also recorded in the case sheet. Mode of delivery was decided based on maternal and foetal condition. All patients with previous cesarean section were taken up for a repeat section. Foetal distress was an important indication for emergency cesarean section. Those with failed induction were also taken for abdominal delivery. PG E1 (Misoprostol) and oxytocin were used for induction of labour in non emergent cases. Complications in mother and neonate were recorded using standard operational definitions and terminology.

RESULTS:

Over the past 6 months, 150 cases of placental abruption were noted and the characteristics were analysed. 8623 maternities were recorded during the similar period which brings the incidence to 1.7%. Sample size was calculated using $n = \frac{Z^2 P(P-1)}{d^2}$ where Z is the Z statistic for

level of confidence (80%). P is the arithmetic mean of expected prevalence calculated from previous Indian studies (0.5) and d is the precision (0.05), where n was derived as 167 and an arbitrary value of 150 was considered for the study due to attrition attributed to lack of consenting.

Table 1 shows the demographic and obstetric characterization of the study population. Most of the women were in the age group of 26 – 30 years (48%). Only 20% were booked cases and remaining was unbooked. Order of gestation showed an almost equal distribution of primigravidas, second and third gravid patients with 10.6% who were gravid 4 and above.

Table 1: Socio-demographic characteristics

S.No.	Characteristic	No. of patients	Percentage
A.	AGE		
1	16 – 20 yrs	6	4

2	21 – 25 yrs	42	28
3	26 – 30 yrs	72	48
4	31- 35 yrs	23	15.3
5	> 35 yrs	7	4.6
B. ANTENATAL CARE			
1.	Booked cases	30	20
2.	Unbooked cases	120	80
C. ORDER OF GESTATION			
1.	Primi	37	24.6
2.	G2	52	34.6
3.	G3	45	30
4.	Grand Multi	16	10.6

Table 2 represents the risk factors as analysed in our study. PIH appeared to be significantly associated with a frequency of 44%, followed by Anaemia (34.6%). 9.3% had a previous history of placental abruption.

Table 2: Risk Factors

S.No.	Risk Factor	n	%
1	PIH	66	44
2	Anaemia	52	34.6
3	Multiple Pregnancy	12	8
4	Diabetes	6	4
5	Previous h/o abruption	14	9.3

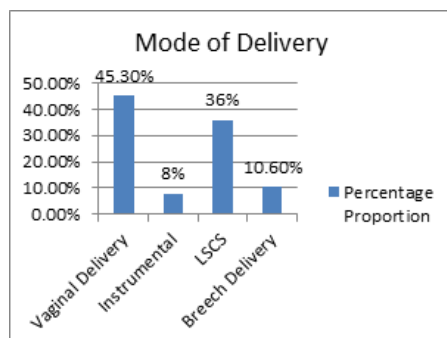
Most of them (64%) presented with bleeding P/v followed by reduced foetal movements in 16% and abdominal pain in 14.6%. The commonest gestational age at presentation appears to be 32 – 36 weeks (36%) followed by 28 – 32 weeks (29.3%)

Table 3: Presenting features

S.No.	Characteristic	n	%
A Symptom			
1	Bleeding P/v	96	64
2	Reduced foetal movements	24	16
3	Pain abdomen	22	14.6
4	PROM	8	5.3
B Gestational age at presentation			
1	24 – 28 wks	16	10.6
2	28 – 32 wks	44	29.3
3	32 – 36 wks	54	36
4	> 36wks	36	24

Mode of delivery is shown in Fig – 1, with 36% abdominal deliveries and 64% vaginal deliveries. Of the vaginal deliveries noted 45% were spontaneous, 8% were instrumental and 10% were breech deliveries.

Fig 1: Mode of Delivery



All patients were taken up for induction except those where cesarean was indicated. Artificial rupture of membranes (ARM) with oxytocin drip was the commonest mode of induction. Majority of patients took 6 – 12 hours for delivery after induction (50%). In 14 patients (9.3%), induction failed and hence they were taken for cesarean section after 24 hours. Previous cesarean section (17.3%) followed by failed induction (9.3) followed by foetal distress (8%) appeared to be the most important indications for cesarean section.

Table 4: Induction Outcomes & indications for Cesarean section

S.No.	Characteristic	n	%
A Mode of Induction			
1.	ARM	16	10.6
2.	ARM + Oxytocin	62	41.3
3.	ARM + PGE1	18	12
4.	Failed Induction	14	9.3
B Induction – Delivery Interval			
1.	< 6hrs	26	27.08
2.	6 – 12 hrs	48	50
3.	12 – 18 hrs	13	13.54
4.	18 – 24 hrs	9	9.37
C Indications for Cesarean section			
1	Fetal distress	12	8
2	Previous LSCS	26	17.3
3	Placenta previa	2	1.3
4	Failed IOL	14	9.3

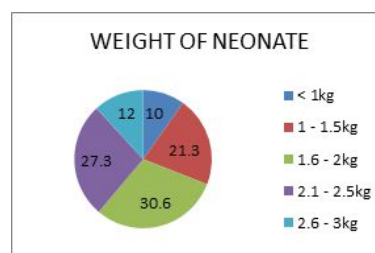
Table 5 illustrates maternal and perinatal complications associated with placental abruption. Post partum haemorrhage (PPH) appeared as the commonest immediate event in post partum period (21.3). 14.6% manifested hypovolaemic / haemorrhagic shock. 4% had findings consistent with acute renal failure. 10% showed features of coagulopathy. During cesarean section 48% showed a couvelaire uterus and 4% required a peripartum hysterectomy. 37.3% fetuses had died at the time of presentation. And 16 babies had still births (10.6%). We registered 78 live births (52%) out of which 42 required NICU admission. 5 maternal deaths were noted with a maternal mortality rate of 3.3 per 100 maternities.

Table 5: Maternal and Perinatal Complications

S.No.	Complications	n	%
A. Maternal			
1	Shock	22	14.6
2	PPH	32	21.3
3	Coagulopathy	15	10
4	Couvelaire uterus	26	48 (36)
5	Renal failure	6	4
6	ICU	24	16
7	Need for blood transfusion	78	52
8	Peripartum hysterectomy	6	4
9	Post partum anaemia	53	35.3
10	Maternal Deaths	5	3.3
B. Foetal / Neonatal Complications			
1	IUFD	56	37.3
2	Still births	16	10.6
3	Live births	78	52
4	NICU admission	42	28

Figure 2 shows the birth weight of neonates at the time of birth / delivery. Birth weights of even the dead fetuses and still born neonates have been considered.

Fig 2: Weight of neonate at birth



DISCUSSION:

Obstetric haemorrhage remains a leading cause of maternal deaths despite medical advances, in the developing world. It is an ominous diagnosis associated with adverse maternal and foetal outcomes.

We have recorded antenatal care in just 20% of all the abruption cases bringing us to an important conclusion that adequate antenatal care and patient education on health seeking behaviour in pregnancy would help in reducing the incidence of the disease. Choudhary et al have also reported similar findings with around 33% patients being booked and

around 67% unbooked cases in their epidemiological-clinical study on placental abruption [10]. Khan et al in their study have also reported 40% patients to be booked [9].

PIH emerged to be an important risk factor with 44% of all patients with abruption having PIH.

Williams et al [11], have provided evidence which strongly links the association of these factors. Our findings are in agreement with Abdella et al who reported 25.9% of patients with AP had gestational hypertension and 10% had chronic hypertension [12]. Similarly Anaemia was also shown to be present more often in women presenting with placental abruption, but it is not clear if it is an aetiological agent or a consequence of abruption [9]. Availability and proper use of blood should hence be encouraged to avoid its synergistic effect with abruption towards maternal morbidity / mortality. At the same time antenatal diagnosis and management of anaemia play a significant role to reduce morbidity and mortality.

Vaginal bleeding appeared to be the commonest presenting feature in our study which is again in consensus with the findings of Sumangala et al who reported 45% with vaginal bleed [13]. Early referral of a patient to a tertiary care centre with such presenting features could hence reduce morbidity.

36% of all neonates were delivered by a cesarean section which is in agreement with the findings of Khan et al and Chowdhary et al [9, 10]. Sumangala et al have reported higher rates of cesarean section around 58% [13]. Foetal distress appeared to be an important cause for cesarean section and this highlights the importance of continuous fetal electronic monitoring in mothers with placental abruption to ensure avoidance of foetal demise and a safe delivery of live foetus. Cesarean section would also help reduce maternal morbidity and mortality by preventing vicious coagulopathy and increasing the ease of managing atonicity.

Although vaginal delivery is generally preferred operative delivery is indispensable in cases with maternal or foetal decompensation. Studies with a lower incidence of abdominal delivery have reported lower live births [14]. Though induction is not a contraindication in abruption, decision for a cesarean should be taken at the slightest evidence of maternal or foetal compromise.

We note a high incidence of coagulopathy in our study which is in coherence with the findings of Coleman et al [15]. This emphasizes the need of availability of fresh frozen plasma and other blood components for treatment of coagulopathy at slightest evidence. Approximately 15% and 20% of our patients showed hypovolaemic shock and PPH respectively. This is in agreement with the findings of Nandone et al and Coleman et al [16, 15]. Refractory cases of atonic PPH should be managed with hysterectomy when indicated, but hysterectomy should be reserved only to cases refractory to medical and mechanical management. On these lines we report 11% cesarean hysterectomy. We report a maternal mortality of 3.3% similar to the findings of Nandone et al. Most of the maternal deaths occurred due to late referral. 4% of patients had features of acute renal failure which appears to correlate well with the findings of Shrivastava et al [17].

Perinatally 37% had intrauterine foetal deaths and 10% had still births, resulting in 52% live births which appear similar to the findings of Poovathi et al [18].

CONCLUSIONS:

Placental abruption is a cause of concern as a leading cause of obstetric related morbidity and mortality. As there is no specific management protocol applicable to all cases, individual patient approach is required. This warrants a knowledge of presentation and possible complications so that necessary interventions are taken to prevent the vicious pathogenic mechanisms to set up, which will lead to uncompensated changes leading to organ damage, death and foetal loss. A senior obstetrician should be involved in such cases to diagnose and treat abruptions at the earliest with their experience and expertise.

REFERENCES:

- [1] Sakornbut E, Leeman L, Fontaine P. Late pregnancy bleeding. *Am Fam Physician* 2007;75:1199-1206.
- [2] Lindqvist PG, Happach C. Risk and risk estimation of placental abruption. *Eur J Obstet Gynecol Reprod Biol* 2006;126:160-164.

- [3]- Ananth CV, Getahun D, Peltier MR, Smulian JC. Placental abruption in term and preterm gestations: evidence for heterogeneity in clinical pathways. *Obstet Gynecol*. 2006;107(4):785-92.
- [4]- Tikkanen M. Placental abruption: epidemiology, risk factors and consequences. *Acta Obstet Gynecol Scand* 2011;90:140-150.
- [5]- Fiori O, Verstraete L, Berkane N. Risk factors of abruption placentae among Peruvian women. *Am J Obstet Gynecol* 2007;196:e1-15.
- [6]- Tikkanen M, Gissler M, Mets'aranta M, Luukkaala T, Hiilesmaa V, Andersson S, et al. Maternal deaths in Finland: focus on placental abruption. *Acta Obstet Gynecol Scand*. 2009;88:1124-1127.
- [7]- Ananth CV, Berkowitz GS, Savitz DA, Lapinski RH. Placental abruption and adverse perinatal outcomes. *JAMA*. 1999;282:1646-51.
- [8]- Kyrklund-Blomberg NB, Gennser G, Cnattingius S. Placental abruption and perinatal death. *Paediatr Perinat Epidemiol*. 2001;15:290-7.
- [9]- Khan MI, KS Saraswathi, R Shyamala, Ibrahim Azam, MK Salman, Syeda Sakina Amtul Ali. Placental Abruption: An Obstetricians Nightmare – A Study of Risk Factors and Maternofoetal Outcomes at Two Tertiary Care Teaching Hospitals in South India. *Asian Pac. J. Health Sci*, 2017; 4(1):220-230.
- [10]- Vrunda Choudhary, Sonali Rathi Somani, Shashikanth Somani. Evaluation of Risk factors and Obstetric and Perinatal Outcome in Abruption Placenta. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* 2015;14(5)(VII):36-39.
- [11]- Williams MA, Mittendorf R, Monson RR. Chronic hypertension, cigarette smoking, and abruption placentae. *Epidemiology* 1991;2(6):450-453
- [12]- Abdella TN, Sibai BM, Hays JM Jr, Anderson GD. Relationship of hypertensive disease to abruption placentae. *Obstet Gynecol* 1984;63:365-370
- [13]- Sumangala Devi, Bindu VijayKumar, Madhuri Joshi. Feto Maternal Outcomes in Abruption Placenta. *IJSR* 2016;5(11):669-672
- [14]- Musarrat Jabeen, Fouzia Gul. Abruption Placentae: Risk factors and Perinatal outcome. *Abruption Placentae* 2014;18(4):669-676
- [15]- Jerry Coleman, Emmanuel K. Srofenyo, Eric K. Ofori, Edmund K. Brakohiapa, William K. Antwi. Maternal and Fetal Prognosis in Abruption Placentae at Korle-Bu Teaching Hospital, Ghana. *African Journal of Reproductive Health* 2014;18(4):115-122.
- [16]- Kevin Nandonde. Fetal-maternal outcomes of abruption placenta at bugando medical centre. A Dissertation submitted in partial fulfillment for the award of Master of Medicine degree in Obstetrics and Gynaecology of the Catholic University of Health and Allied Sciences 2013;1-58
- [17]- Vartika Shrivastava, Pushpa Kotur, Abhinav Jauhari. Maternal and fetal outcome among abruption placentae cases at a rural tertiary hospital in Karnataka, India: a retrospective analysis. *Int J Res Med Sci* 2014;2(4):1655-1658.
- [18]- Poovathi M., Raji. Prospective follow up study of maternal and foetal outcome in abruption placenta. *Int J Reprod Contracept Obstet Gynecol* 2016;5(6):1784-1788.