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ORIGINAL ARTICLE

Fetomaternal Outcome in Placental Abruption

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ABSTRACT

Background: Placental abruption is a major contributor to obstetrical haemorrhage and a major cause of perinatal mortality in developing countries. This has been done to an attempt to recognize this condition at an earlier stage, prevent its complications and properly manage the complications if they do occur.
Aim: To determine maternal and fetal outcome in females with placental abruption.
Methods: Hundred patients with confirmed diagnosis of placental abruption were divided in three categories according to the grade of placental abruption. Their baseline investigations including blood group, haemoglobin and coagulation profile i.e. partial thromboplastin time, activated partial thromboplastin time, serum fibrinogen and FDP's were performed and recorded for each category separately. The effect of each grade of abruption was studied on maternal and fetal outcome as well as extent of coagulation disturbance.
Results: The results of the study show that 66% babies were delivered alive and 34% were IUD/stillbirth. Gestational age at presentation was important in fetal outcome. Out of 30 babies presenting before 32 weeks of gestation 66% were IUD/stillbirth. 58% patients delivered vaginally and 42% had caesarean section. 32% patients had grade I abruption, 34% patients had grade 3 abruption. 18% patients had post-partum haemorrhage.
Conclusion: All professionals working in labour ward must be aware of the causes, presentation and complications of disease and appropriate measures taken in time can help reduce the maternal and neonatal morbidity and mortality.
Keywords: Placental abruption, maternal outcome, foetal outcome, coagulation disturbance.

INTRODUCTION

Placental abruption is defined as bleeding following premature separation of a normally situated placenta. It is a major contributor to obstetrical haemorrhage and a major cause of perinatal mortality in developing countries. The incidence of placental abruption varies from 2.87% in Pakistan.[1] It accounts for 20-25% of antepartum haemorrhages.[2] The aetiology of placental abruption is unknown, but it occurs more frequently among smokers, in hypertensive pregnancies, in pregnancies with intrauterine growth restriction, in chorioamnionitis, in instances of trauma, with advancing maternal age, with male fetal gender and in women with previous placental abruption.[3]

The pathophysiologic pathway to placental abruption is poorly understood, however, there is some evidence that uteroplacental vascular pathologic processes play a role in the occurrence of abruption placental.[4]

Placental abruption is a significant cause of maternal and neonatal morbidity and mortality. Maternal complications include haemorrhagic shock, coagulopathy and disseminated intravascular coagulation, uterine rupture, renal failure and ischemic necrosis of distal organs.[5, 6] Neonatal complications include death and neuro-developmental problems.[7]

Clinicians confronted with severe abruption and a live fetus has the dilemma of balancing unstable individual with a possible coagulopathy versus possible risks of increased mortality and severe morbidity to the fetus of delay. There is evidence that if the fetal heart pattern is normal, then delay such that the maternal status is stabilized is appropriate. However, the effects of actions of staff are unclear when the fetal heart rate pattern is severely abnormal. With the adoption of standards for decision to delivery intervals for abnormal labour, the maternal and fetal outcome has improved.[8]

This study evaluated the effects of placental abruption on maternal and fetal health as well as its studies the extent of coagulation disturbances in different grades of placental abruption. This has been done to an attempt to recognize this condition at an earlier stage, prevent its complications and properly manage the complications if they do occur. This would help in the improvement of maternal and fetal outcome in placental abruption.

The objective of the study was to determine fetal and maternal outcome in different grades of placental abruption.

MATERIALS AND METHODS

This cross sectional study was done in Department of Obstetrics & Gynaecology, Imran Idrees Teaching Hospital, Sialkot Medical College Sialkot in collaboration with Department of Paediatrics for one year (from 18th Feb 2019 to 17 Feb 2020) after approval from institutional ethical committee. Sample size of 100 cases was calculated with 95% confidence level, 8% margin of error and percentage of placental abruption i.e. 20% in females with placental abruption. All the females were included through non-probability, consecutive sampling after following selection criteria. Females of reproductive age group i.e. 18–40 years, presenting at gestational age more than 28 weeks (as determined by their last menstrual

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period date), with singleton pregnancy and episode of abdominal pain with or without evidence of vaginal bleeding were included in the study. Females having Placenta previa or fetal congenital anomalies incompatible with life were not included in the study.

After clinical evaluation 100 patients with confirmed diagnosis of placental abruption were taken. They were divided in three categories according to the grade of placental abruption. Their baseline investigations including blood group, hemoglobin and coagulation profile i.e. partial thromboplastin time, activated partial thromboplastin time, serum fibrinogen and FDP's were performed and recorded for each category separately. Fetal outcome was measured as effect of different grades of placental abruption on the fetus leading to an intra-uterine death, stillbirth or live birth. The effect of each grade of placental abruption on the fetus was recorded leading to a live birth, intra uterine death or stillbirth. Maternal outcome was assessed as effect of different grades of placental abruption on the mother with respect to the mode of delivery, degree of postpartum haemorrhage and extent of coagulation abnormalities. In each category the mode of delivery of the mother and degree of postpartum haemorrhage was noted. Coagulation abnormalities with each grade of placental abruption were studied. Coagulation disturbance was defined as the increase in partial thromboplastin time, activated partial thromboplastin time and fibrinogen degradation products and decrease and the serum fibrinogen level in different grades of placental abruption. The data was collected on a proforma. Data analysis was computer based. SPSS version 10.0 was used for analysis.

RESULTS

In this study 100 patients with a diagnosis of placental abruption were included. Only 3patients (3%) were less than 20 years of age while 82 patients (82%) were between 20 and 30 years of age. Out of these 54 patients (54%) were between the age group of 20-25 years while 28 patients (28%) were between the age group of 26-30 years. On the other hand 15 patients (15%) were above 30 years of age. With respect to gravidity 28 patients (28%) were primigravida while 72 patients were multigravidas. Out of the multigravidas, 56 patients were from gravida 2 to gravida 5 while 16 patients were more than gravida 5. Thirty patients (30%) presented between 28-32 weeks of gestation, 20 patients (20%) presented between 33-36 weeks of gestation while 50 patients (50%) had a gestational age between 37-40 weeks at presentation. Sixty six (66%) babies were delivered alive while 34 babies (34%) were IUD/stillbirths (Table 1).

Gestational age at presentation was important in the fetal outcome .Out of 30 babies presenting between 28-32 weeks of gestation, 20 were IUD/stillbirths while only 10 were alive. Amongst the 20 babies presenting between 33-36 weeks of gestation 7 were IUD/stillbirth while 13 were alive and amongst the 50 babies presenting between 37-40 weeks of gestation only 8 were IUD/stillbirth while 42 were delivered alive. The difference between 37-40 years and other gestational age groups is significant because p value ≤ 0.05. Fifty eight patients (58%) included in the study had spontaneous vaginal delivery while 42 patients (42 had caesarean section. The difference between these groups is not significant because p value > 0.05. Amongst 66 patients (66%) with alive babies, 33 patients (33%) had SVD while 33 patients (33%) had cesarean section. On the other hand amongst 34 patients (34%) with dead babies 24 patients delivered vaginally and only 10 patients had to undergo caesarean section. The difference between these groups is not significant because p value > 0.05. Out of the 100 patients, 32 patients (32%) presented with grade 1 abruption while 34 patients (34%) presented with grade 2 abruption and similar number of patients i.e. 34 (34%) presented with grade 3 abruption. The difference between these groups is not significant because p value > 0.05. 18 patients (18%) had postpartum hemorrhage which was of mild degree in 5 patients (5%), of moderate degree in 5 patients (5%) and of severe degree in 8 patients (8%). Patients with severe postpartum hemorrhage had abruption of grade 3. The difference between these groups is not significant because p value > 0.05 (Table 2)

Table 1:

	Age (years)	Frequency	%age
Age (years)	<20 years	3	3.0%
	20-25 years	54	54.0%
	26-30 years	28	28.0%
	>30 years	15	15.0%
Gravidity	Primigravida	28	28.0%
	Gravida 2-5	56	56.0%
	Gravida >5	16	16.0%
Gestational age	28-32 week	30	30.0%
	33-36 week	20	20.0%
	37-40 week	50	50.0%
Fetal outcomes	Alive	66	66.0%
	Dead	34	34.0%

Table 2: Feto-maternal outcome

Gestational age	Outcomes	Frequency	%age
28-32 week	Alive	10	10.0%
	Dead	20	20.0%
33-36week	Alive	13	13.0%
	Dead	7	4.0%
37-40 week	Alive	42	42.0%
	Dead	8	8.0%
Mode of delivery	Spontaneous vaginal delivery	58	58.0%
	Lower segment cesarean section	42	42.0%
Alive Fetus	Spontaneous vaginal delivery	33	33.0%
	Lower segment cesarean section	33	33.0%
Dead Fetus	Spontaneous vaginal delivery	24	24.0%
	Lower segment cesarean section	10	10.0%
Grades of abruption	Grade1	32	34.0%
	Grade2	34	34.0%
	Grade3	34	34.0%
Degree of Post-partum hemorrhage	Mild	5	5.0%
	Moderate	5	5.0%
	Severe	8	8.0%

Nine patients (9%) had marked coagulation disturbance with PT above 20 seconds, APTT more than 42 seconds, S. fibrinogen below 150mg/di, FDP's more than 12.0tg/dl and platelet count markedly below 150,000/mm3. All these patients had grade 3 abruption and developed DIC. Six patients (6%) of grade 2 abruption had PT and APTT slightly prolonged and S. fibrinogen slightly decreased while 8 patients (8%) had slightly raised FDP's

and low platelet count. These patients did not develop DIC (Table 3).

Table 3: Coagulation disorder in pregnant females

		Frequency	%age
Partial Thromboplastin time Normal up to 15sec	15-20sec	6	6.0%
	>20sec	9	9.0%
Activated partial thromboplastin time. Normal up to 38 sec.	38-42 sec	6	6.0%
	>42 sec	9	9.0%
S. Fibrinogen Normal 200 – 400 mg/dl	150-200 mg/dl	6	6.0%
	<150 mg/dl	9	9.0%
Fibrinogen Degradation products Normal up to 10.0 µg/dl	10.0-12.0µg/dl	6	6.0%
	>12.0 µg/dl	9	9.0%
Platelet count Normal > 150,000/mm^3	100,000 – 150,000/mm^3	8	8.0%
	<100,000/mm^3	9	9.0%

DISCUSSION

Abruptio placentae is one of the dangerous complications of pregnancy having a high maternal and perinatal mortality and morbidity. This study was conducted on 100 patients in Department of Obstetrics & Gynaecology, Imran Idrees Teaching Hospital, Sialkot Medical College Sialkot to evaluate the maternal and fetal outcome in cases of placental abruption.

The results of the study show that 3% patients were less than 20 years of age, 54% of patients were between 20 and 25 years of age while 28% of patients were between 26 and 30 years of age. 15% of patients were abo.ve 30 years of age. 28% of patients were primigravidas while 56% of patients were gravida 5 and 16% of patients were more than gravida 5 making a total of 72% multigravida patients. A study by Peter Baumann and colleagues showed that, independent of parity, women with placental abruption were significantly older than the control group. A study conducted at Kuopio University Hospital, Finland, shows that advanced maternal age is a risk factor for placental abruption[9,10].

In a study at Nishtar Hospital, Multan it was seen that 27.5% of patients were in the age range of 21-25 years, 32.5% were in 26-30 years and 40% were more than 30 years of age. Also 27.5% patients were primigravidae while 72.5% were multigravida. A study conducted at PGMI LIU-I, Peshawar showed that 73.5% of patients were more than 35 years of age and 52.9% of patients were multigravida[11].

A study at Queens University Kingston showed that placental abruption was highest in mothers over 40 years of age. In another study by Thieba B and colleagues it was seen that placental abruption was most frequent with 30 to 34 years old women (31.1%) and with multiparous ones (56.5%)". Ananth et al showed that placental abruption was slightly increased in women less than 25 years of age when compared with women ages 25 to 29 years. There was no increase in abruption with advancing maternal age. When parity was studied, they found that abruption increased steadily with increasing parity up to 30 years of age[12,13].

In this study 30% patients presented between 28-32 weeks of gestation, 20% presented between 33 36 weeks of gestation while 50% presented between 37-40 weeks of gestation. Ananth CV and colleagues report that preteen birth proportions among women with abruption were 39.6%33. A similar study conducted at Nishtar Hospital, Multan, showed that 25% were at 28-33 weeks of gestation, 35% were at 34-37 weeks of gestation and 40% had gestational age of 37-40 weeks[11].

In this study 66% babies were delivered alive while .34% babies were IUD/stillbirth. Prematurity was a very important factor in neonatal outcome. Out of 30 babies presenting between 28-32 weeks of gestation, 66% were IUD/stillbirths. Amongst 20 babies presenting between 33-36 weeks of gestation 35% were IUD/stillbirth while amongst 50 babies presenting between 37-40 weeks of gestation only 16% were IUD/stillbirth. The study at Services Hospital, Lahore showed that 30.8% babies were delivered with good Apgar score, 69.2% babies were delivered with poor Apgar score while perinatal mortality rate was 7.6%1. A study at University of Gezira, Medani, Sudan, showed a perinatal mortality rate of 20.2%. A study conducted at Robert Wood Johnson Medical School, New Burnswick showed that 55% of excess perinatal deaths with aibruption were due to prematurity. In a study at University of Texas, Galvestion, it was seen that overall neonatal survival was 84.7% while 12.0% fetuses were stillborn. A study at Nishtar Hospital, Multan showed that at the time of admission, there were 57.5% intrauterine fetal deaths and 42.5%. Fetuses were alive. Another study at PGMI, LRH, Peshawar showed that 49.36% babies were alive and 50.63% were stillbirth. 29.1% of the babies were low birth weight[11,14,15].

In this study, rate of vaginal delivery was 58% while rate of cesarean section was 42%. Amongst the 66% of patients with alive babies included in this study, 50% had cesarean section while amongst 34% of patients with dead babies only 29% had to undergo a cesarean section. The study at Services Hospital, Lahore showed the rate of cesarean section to be 84.6% as compared to the 15.4% vaginal delivery rate. A study at University of Texas, Galveston, showed that cesarean delivery was associated with a significant reduction in neonatal mortality. The study at Nishtar Hospital, Multan, showed rate of vaginal delivery to be 67.5% while that of cesarean section to be 35.5%. Thieba B and colleagues showed that in cases of placental abruption, vaginal delivery was preferred to cesarean section in 64.4% of case[11,15,16].

In this study, 32% patients presented with grade 1 abruption, 35% patients presented with grade 2 abruption and a similar number of patients i.e. 34% presented with grade 3 abruption. A similar study conducted at Sir Ganga Ram Hospital, Lahore, showed that 24% of patients had grade 0-1 degree of abruption and 75% had grade 2-3 degree of abruption". Thieba B and colleagues showed that 83.1% of patients reached grade 3 abruption with complete symptomatoloty and fetal deaths[16].

In this study 18% of patients had postpartum hemorrhage which was of mild degree in 5% of patients, of moderate degree in 5% of patients and of severe degree in 8% of patients. Patients with severe PPH had grade 3 abruption. In a study at Liverpool Women's Hospital, UK 1 out of 33 patients had PPH showing a rate of 3%". The study at Nishtar Hospital, Multan, showed 2.5% patients having PPH[12].

In this study patients with Grade I abruption had no coagulation abnormalities while few patients with Grade II abruption had minor coagulation abnormalities not

developing DIC and not requiring any treatment. On the other hand 9 patients show that overall 9% with grade 3 abruption developed DIC. This of patients developed DIC and as all of these belonged to grade 3 abruption so this shows that 26% of patients with grade 3 abruption developed DIC, requiring treatment with fresh blood, fresh frozen plasma and immediate termination of pregnancy. The study at Liverpool hospital, UK, showed DIC developing in 1 out of 33 patients of placental abruption i.e. 3%". The study at Nishtar Hospital, Multan, showed DIC developing in 2.5% of patients. 45 The study at PGMI, LRH, Peshawar, showed DIC developing in 16.5% of patients of placental abruption.[11]

This study shows that the fetal and maternal outcome in cases of placental abruption depends largely on the grade of abruption as well as how early this condition is recognized and how briskly measures are taken to overcome this problem. Obstetric decision making and organization may influence the maternal and perinatal outcome.

Patients with mild degree of abruption (grade 1) have a good prognosis for the mother and the baby while in those with grade 2 abruption fetal outcome depends largely on appropriate management. Patients with grade 3 abruption have already lost their fetus and management aims mainly to prevent maternal complications.

It is seen that there is a need for immediate delivery in a pregnancy complicated by placental abruption at term or in cases of maternal or fetal compromise. Method of delivery is dependent on the evaluation of each clinical scenario. A trial of labor and vaginal delivery is recommended whenever tolerated by the maternal fetal pair. In cases of fetal distress fetal outcome depends on decision to delivery interval and need for an early cesarean section should be considered.

Placental abruption severe enough to cause fetal death is a true obstetrical emergency and must be respected by the obstetricians. A fulminant maternal DIC can occur over a short period of time. Therefore delivery should be expedited as it is the only means with which to halt the DIC. Vaginal delivery can often be accomplished in such cases as the abruption often causes a rapid and tumultuous labor. Maternal coagulation studies should be done and blood and its component therapy should be given as needed. Management must be in a hospital with personnel and resources capable of supporting a massive coagulopathy and the potential necessity for cesarean delivery or hysterectomy. In such cases, cesarean section is indicated with failure of progress in labor or an unstable mother. When surgical delivery is necessary, replacement of blood and its components should begin before surgery.

Postpartum haemorrhage is another important complication which can be prevented by appropriate preventive measures and if it occurs it has to be managed aggressively to prevent maternal compromise. Placental abruption remains a complex and important challenge in obstetrical care. Early recognition and appropriate management of this condition is important to have a favourable outcome for the mother and the baby.

CONCLUSION

Abruptio placentae, although a relatively rare obstetric emergency, has attracted the attention of clinicians throughout the history of obstetrics because of its unpredictable occurrence and the adverse outcomes, both for the mother and the fetus.

Conflict of interest: Nil

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