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ORIGINAL ARTICLE

Frequency of Preterm Placental Abruption and its Contributing Factors

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ABSTRACT

Objectives: The objectives of this study were to determine the frequency of preterm placental abruption in patients presenting with heavy bleeding in a tertiary care hospital and to determine the frequency of contributing factors towards preterm placental abruption.

Methodology: This was a descriptive case series conducted at Department of Obstetrics & Gynecology at Allama Iqbal Memorial Teaching Hospital, Sialkot. This study involved 260 women aged between 20-40 years who presented with heavy vaginal bleeding between 32-37 weeks of gestation. Preterm placental abruption was noted and contributing factors namely Dai handling, chronic hypertension, premature rupture of membranes, grand multi parity, and maternal age more than 35 years were looked for. A written informed consent was taken from each patient.

Results: The age of the patients ranged from 20 years to 40 years with a mean of 29.78±6.07 years. The gestational age of the patients ranged from 32 weeks to 37 weeks with a mean of 34.40±1.68 weeks. BMI of the patients ranged from 21.1 Kg/m^2 to 35.8 Kg/m^2 with a mean of 28.03±4.15 Kg/m^2. Preterm placental abruption was noted in 12 (4.6%) patients. There was no significant difference in the frequency of placental abruption across gestational age (p=0.913) and BMI (p=0.958) of the patient. Among the contributing factors Dai handling was noted in 58.3% patients with preterm placental abruption followed by maternal age > 35 years (33.3%) and premature rupture of membranes and grand multiparity which were observed in 25.0% patients each. Chronic hypertension was recorded in 16.7% patients. There was no significant difference in the frequency of these contributing factors across gestational age and BMI of the patient.

Conclusion: The frequency of preterm placental abruption was found to be 4.6% with Dai handling (58.3%) and maternal age more than 35 years (33.3%) as the frequent contributing factors.

Keywords: Preterm Placental Abruption, Contributing Factors, Dai Handling

INTRODUCTION

Preterm placental abruption is the term used to describe the premature separation of the placenta from the wall of the uterus before to birth between 24 and 37 weeks of gestation. It is one of the most dangerous obstetric complications and poses a significant risk of death to the mother as well as the unborn child. Incidence of placental abruption at term ranging from 0.3 to 0.9% of births, however, some studies report an incidence of 4.4% of deliveries.[1-4] Incidence of preterm placental abruption is 5.1%.[5] The close connection between abruption and premature birth may be responsible, at least in part, for the high death rate associated with this condition. Early birth was the cause of 55% of the excess perinatal deaths that were caused by abruption.[8] Abruption is potentially disastrous to the fetus with perinatal mortality as high as 60% and APGAR score <7 at 1 & 5 min.[4] Neonatal complications include death and neurodevelopmental delay manifest as long term effect.

Placental abruption usually presents as combination of vaginal bleeding, uterine contraction and abdominal pain.[3] The etiology of placental abruption is multifactorial and include advance maternal age, multiparity, cigarette smoking, drug abuse, rapid uterine decompression (multiple gestation, polyhydramnios), short umbilical cord, prolonged premature rupture of membrane, chorioamnionitis, folate deficiency, chronic hypertension, preeclampsia, and prior history of placental abruption. However chronic hypertension, preeclampsia and premature rupture of membrane are more significant risk factors causing preterm placental abruption.[2]

Placental abruption was recorded in 10.1 per 1000 singleton births in Japan. Contributing factors for abruption like chronic hypertension (13.2%) and premature rupture of membranes (3.3%), maternal age 36 - 40 years (44%) and grand multigravida (52%).[7] It is estimated that placental abruption is the root cause of ten to twenty percent of all perinatal fatalities and ten percent of all preterm deliveries in industrialized nations.[5] A hemorrhagic shock, coagulopathy, disseminated intravascular coagulation, and renal failure are all examples of problems that might affect the mother.

The objective of the present study is to find the frequency of preterm placental abruption in patients presented with heavy bleeding and its contributing factors towards preterm placental abruption. An important factor which is contributing towards preterm placental abruption in country like Pakistan is Dai handled cases (untrained birth attendant) specifically cases from peripheries (country side). Presently there is no comprehensive data available at national and international level to tackle the issue. A pilot study was undertaken by obstetrics and gynecology department at Sir Ganga Ram Hospital, in which 100 cases of abruption were studied, out of those 22 cases of abruption were due to unprofessional conduct and mismanagement done by Dai. This study will provide accurate base line information and ratio of contributing factors towards preterm placental abruption as compared to other well established factor. The results of this study will be shared with health care authorities to help them developing strategy for risk reduction and control of such evolving epidemics to significantly decrease the mortality and financial burden on health care system in a resource limited country like Pakistan.

METHODOLOGY

It was a descriptive case series conducted at Department of Obstetrics and Gynecology, Allama Iqbal Memorial Teaching Hospital, Sialkot. We included the patients with heavy vaginal bleeding at the age (20-40) years, mildly preterm (32- 37) weeks of gestation, calculated by dating ultrasound and singleton pregnancy, assess by ultrasound were included in this study. We excluded all pregnant women with cigarette smoking and drug abuse as assessed by history, Chorioamnionitis as evaluated by foul smelling discharge and fever ≥100F^o, folate deficiency, measured by lower serum B^{12} level, and short umbilical cord (average length - 50-60 centimeter) were excluded from the study. Informed consent was taken from the guardian of the patient and was explained that data was to be used and published. Demographic profile was recorded including age, parity and address. Placental abruption was diagnosed by general physical examination using abdominal pain and vaginal by ultra sonographic findings and observing the placenta at delivery.

Mother's age, parity, gestation, blood pressures, history of premature rupture of membrane, history of Dai handling were recorded as per operational definitions. All the patients were managed by following standard protocols for the management of placental abruption. All the information was recorded in a predesigned proforma.

RESULTS

The age of the patients ranged from 20 years to 40 years with a mean of 29.78±6.07 years. The gestational age of the patients ranged from 32 weeks to 37 weeks with a mean of 34.40±1.68 weeks. BMI of the patients ranged from 21.1 Kg/m^2 to 35.8 Kg/m^2 with a mean of 28.03±4.15 Kg/m^2 as shown in Table 1.

Table 1: Baseline Characteristics of Study Sample

Characteristics	Participants n=260
Age (years)	29.78±6.07
Gestational Age (weeks)	34.40±1.68
BMI (Kg/m^2)	28.03±4.15

Table 2: Frequency of Preterm Placental Abruption(n=260)

Preterm Placental Abruption	Frequency	Percent (%)
Yes	12	4.6
No	248	95.4
Total	260	100

Table 3: Frequency of various Contributing Factors among Patients with Placental Abruption (n=12)

Contributing Factors	Frequency	Percent (%)
Dai Handled	7	58.3
Chronic Hypertension	2	16.7
Premature Rupture of Membranes	3	25.0
Grand Multiparity	3	25.0
Maternal Age > 35 years	4	33.3

Table 4: Various contributing Factors by Gestational Age

Contributing Factor		Gestational Age Groups		Total	P value
		32-34 weeks (n=6)	35-37 weeks (n=6)		
Dai Handled	Yes (n=7)	3	4	7	0.558
		50.0%	66.7%	58.3%	
	No (n=5)	3	2	5	
		50.0%	33.3%	41.7%	
Chronic Hypertension	Yes (n=2)	1	1	2	1.000
		16.7%	16.7%	16.7%	
	No (n=10)	5	5	10	
		83.3%	83.3%	83.3%	
Premature Rupture of Membranes	Yes (n=3)	1	2	3	0.505
		16.7%	33.3%	25.0%	
	No (n=9)	5	4	9	
		83.3%	66.7%	75.0%	
Grand Multiparity	Yes (n=3)	1	2	3	0.505
		16.7%	33.3%	25.0%	
	No (n=9)	5	4	9	
		83.3%	66.7%	75.0%	
Maternal Age >35 years	Yes (n=4)	2	2	4	1.000
		33.3%	33.3%	33.3%	
	No (n=8)	4	4	8	
		66.7%	66.7%	66.7%	

Table 5: Stratification of Various contributing Factors by BMI

Contributing Factor		BMI Groups			Total	P value
		20-25 Kg/m^2 (n=4)	25-30 Kg/m^2 (n=4)	>30 Kg/m^2 (n=4)		
Dai Handled	Yes (n=7)	2	3	2	7	0.710
		50.0%	75.0%	50.0%	58.3%	
	No (n=5)	2	1	2	5	
		50.0%	25.0%	50.0%	41.7%	
Chronic Hypertension	Yes (n=2)	0	1	1	2	0.549
		0.0%	25.0%	25.0%	16.7%	
	No (n=10)	4	3	3	10	
		100.0%	75.0%	75.0%	83.3%	
Premature Rupture of Membranes	Yes (n=3)	1	1	1	3	1.000
		25.0%	25.0%	25.0%	25.0%	
	No (n=9)	3	3	3	9	
		75.0%	75.0%	75.0%	75.0%	
Grand Multiparity	Yes (n=3)	1	1	1	3	1.000
		25.0%	25.0%	25.0%	25.0%	
	No (n=9)	3	3	3	9	
		75.0%	75.0%	75.0%	75.0%	
Maternal Age > 35 years	Yes (n=4)	1	1	2	4	0.687
		25.0%	25.0%	50.0%	33.3%	
	No (n=8)	3	3	2	8	
		75.0%	75.0%	50.0%	66.7%	

Among the contributing factors Dai handling was noted in 58.3% patients with placental abruption followed by maternal age > 35 years (33.3%) and premature rupture of membranes and grand multiparity which were observed in 25.0% patients each. Chronic hypertension was recorded in 16.7% patients as shown in Table 3. There was no significant difference in the frequency of these contributing factors across gestational age and BMI of the patient as shown in Table 4 and 5 respectively.

DISCUSSION

In the present study, we noted preterm placental abruption in 12 (4.6%) patients. Our observation is in line with that of Sarwar et al. (2006) who observed similar frequency of 4.4% among pregnant women presenting at Ayub Teaching Hospital, Abbottabad.[9] Suzuki et al. also observed similar high frequency of 4.7% among Japanese patients.[10] Shumway et al. (1999) observed quite higher frequency of 15.4% among American patients .[11]

Among the contributing factors, Dai handling was noted in 58.3% patients with preterm placental abruption followed by maternal age > 35 years (33.3%) and premature rupture of membranes and grand multiparity which were observed in 25.0% patients each. Chronic hypertension was recorded in 16.7% patients.

Up till now a number of studies have investigated contributing factors of preterm placental abruption but none of them reported Dai handling which is a common malpractice in Pakistan and we found it a frequent finding in patients with preterm placenta abruption. We observed maternal age > 35 years being the second most common contributing factor among such patients. Our observation is in line with that of Ghaheh et al. who observed similar frequency of 39.0% among Iranian patients of preterm placental abruption.[3] Shrivastava et al. (47.8%) and Patel et al. (45.0%) reported much higher frequency of older maternal age (>35 years) among Indian such patients.[12-13] Hossain et al. reported grand multiparity in 29.6% of such patients while we observed it in 25.0% cases (118). Shrivastava et al. reported much higher frequency of grand multiparas (87.0%) among Indian such patients.[12] Ghaheh et al. observed PROM in 23.0% of Iranian patients with preterm placental abruption in line with the present study[3] while Suzuki et al. observed it in 41.18% of Japanese such patients.[10] Chronic hypertension was recorded in 16.7% patients. Our observation is similar to that of Hossain et al. who also observed similar frequency of chronic hypertension (16.0%) among local women with preterm placental abruption.[14]

The present study is first to consider a very important contributing factor of preterm placental abruption and that is Dai handling which has never been established before. We observed it in 58.3% of patients with preterm placental abruption which is alarmingly high and warrants public awareness of the risk of handling by untrained birth attendants. It also enables risk stratification and advocates that in future practice patients presenting with heavy vaginal bleeding with a history of Dai handling shoulder be suspected of preterm placental abruption with anticipated workup and management to avoid the morbidity and mortality associated with this condition.

A very important limitation to the present study was that we didn't consider the outcome of mother and the child in relation with the contributing factors. Such information would further help in the risk stratification of these patients. Therefore such a study is highly recommended in future research.

CONCLUSION

- The frequency of preterm placental abruption was found to be 4.6% with Dai handling (58.3%) and maternal age more than 35 years (33.3%) as the frequent contributing factors.

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