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Original Research Article

Study on Feto Maternal Outcome in Third Trimester Pregnancy with Vaginal Bleeding

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Abstract

Introduction: Third trimester vaginal bleeding is a major cause of maternal and perinatal morbidity and mortality even in modern day obstetrics and is one of the most frequent emergencies in obstetrics. Bleeding from the genital tract from 27th weeks of pregnancy to the delivery of the baby.

Aims: To study the prevalence of vaginal bleeding in third trimester at tertiary care hospital, the importance of early diagnosis and prompt treatment in the improvement of maternal and perinatal outcome, the value of current obstetric practice in managing bleeding in third trimester.

Materials and Method: The present study was a Prospective, Observational Study. This study was conducted over 18 months after getting approval from institutional ethics committee at Obstetrics and Gynaecology Department and Paediatric Medicine Department of Burdwan Medical College & Hospital. 162 patients were included in this study.

Result: From our study we could discover statistically significant association with various demographic factors like age of patient, literacy, socio economic status etc. Majority patients were Multi Gravida, mostly delivering preterm. Almost half (49.3 %) had placenta previa, followed by abruptio placentae in 48.1 % of cases. Most common presentation was cephalic (70 %).62 % patients delivered by emergency caesarean sections, around 5 % underwent CS with B/L uterine artery ligation, and 1 % of patients required obstetric hysterectomy. 72 (44.4%) patients underwent 1-unit PRBC transfusion. A significant association between APH and other risk factors like GDM and PIH was found. In our study, 2.46% patients developed DIC, 3.70% patients developed ARF, 3.08% patients developed sepsis, and 12.34% patients developed PPH as complications. 9.87% of patients needed CCU management and recovered. Only 3 patients died even after extensive CCU support. We found alive birth rate of 87.1% and a preterm birth rate of 54.9%.54.93% babies had a birth weight <2500 gm. Maximum babies APGAR at 1 min ranged between 4-6. Of the total neonatal deaths, 10.5% baby died due To HIE, 14.8 % died due to respiratory Distress.

Conclusion: We observed that third trimester vaginal bleeding even in a tertiary care hospital is associated with adverse and fatal maternal as well as fetal outcomes.

Keywords: Third Trimester, Vaginal Bleeding, Fetomaternal Outcome, Antepartum Hemorrhage, Placenta Previa, Abruptio Placentae.

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Introduction

Third trimester vaginal bleeding is one of the most frequent emergencies and a major cause of maternal and perinatal morbidity and mortality even in modern day obstetrics. According to centre for disease control and prevention, haemorrhage

was a direct cause of maternal death in about 30% of cases.

Antepartum haemorrhage (APH), which is defined as vaginal bleeding events occurring during the second half of pregnancy (after 20 weeks of estimated gestational age until delivery), remains as an important cause of perinatal mortality and maternal morbidity worldwide. [1] In addition to maternal morbidity secondary to acute haemorrhage and operative delivery, the fetus may be compromised by uteroplacental insufficiency, premature birth and perinatal death.

The most frequent causes of APH are abruptio placentae and placenta previa. Other causes include cervical lesions, genital infections, trauma, and rarely vasa previa, vulvovaginal varicosities, and genital tumours. Nongynecological causes such as haematuria and rectal bleeding also should be considered.

However, in some cases, the exact cause cannot be ascertained and remained of undetermined origin. It can complicate about 2–5% of pregnancies with an incidence of placenta previa and abruptio placentae about 0.33% to 0.55% and 0.5 to 1%, respectively.[2]

Maternal complications of APH are malpresentations, premature labour, postpartum haemorrhage, sepsis, shock and retained placenta. They also include higher rates of caesarean section, peripartum hysterectomy, coagulation failure, puerperal infections and even death. Maternal morbidity and mortality are attributed to the sequence of haemorrhage, hypofibrinogenemia, renal failure and puerperal infection. Pulmonary oedema, caesarean section, postpartum anaemia and Sheehan syndrome are other major maternal morbidities.[3]

Fetal complications are premature delivery, low birth weight, intrauterine death, congenital malformations and birth asphyxia.

Placenta previa is the complete or partial covering of the internal os of the cervix with the placenta. A low-lying placenta is where the edge is within 2 cm from the internal os. The underlying cause of placenta previa is unknown. There is, however, an association between endometrial damage and uterine scarring.[4]

The risk factors that correlate with placenta previa are advanced maternal age, multiparity, smoking, cocaine use, prior suction, and curettage, assisted reproductive technology, history of caesarean section(s), and prior placenta previa.4 Nearly 90% of placentas identified as "low lying" will ultimately resolve by the third trimester due to placental migration.[5,6] The placenta itself does not move but grows toward the increased blood supply at the fundus, leaving the distal portion of the placenta at the lower uterine segment with relatively poor blood supply to regress and atrophy.[5,6] Migration can also take place by the growing lower uterine segment thus increasing the distance from the lower margin of the placenta to the cervix.

Placenta increta is the invasion of the placenta into the myometrium, and placenta percreta is the invasion into the uterine serosa and or surrounding organs. [7] Placenta accreta spectrum can lead to massive haemorrhage, and an integrated team approach is necessary before delivery. Placenta accreta spectrum diagnosis is via ultrasonography with very high sensitivities and specificities. MRI is useful for cases of posterior placenta previa or to assess potential invasion to the bladder. However, they are costly and have not been shown to improve diagnosis or outcomes compared to ultrasonography alone. If there is a high suspicion for a PAS, then a plan for caesarean hysterectomy should be discussed with the patient. The plan should be to leave the placenta in situ to avoid massive haemorrhage. With the diagnosis of placenta previa, the patient is scheduled for elective delivery at 36 to 37 weeks via caesarean section. [8] However, some patients with placenta previa present with complications and require urgent caesarean sections at an earlier gestational age.

Placental abruption is the separation of placenta either partially or totally from its implantation site before delivery. It is initiated by haemorrhage into the decidua basalis which results in retroplacental hematoma. The phenomenon of impaired trophoblastic invasion with subsequent atherosis is related and inflammation or infection may also be contributory. Risk factors for placental abruption include advanced maternal age, multiparity, low body mass index (BMI), abruption in a previous pregnancy, preeclampsia, polyhydramnios, intrauterine infection, premature rupture of membranes, abdominal trauma, smoking, drug misuse (cocaine and amphetamines), pregnancy following assisted reproductive techniques and maternal thrombophilias. [9]

Types of placental abruption includes concealed variety, revealed variety and mixed. Action should be swift and decisive once placental abruption has been suspected, because the prognosis for mother and fetus is worsened by delay. Treatment consists of initial resuscitation and stabilization of the mother and recognition and management of complications, as described previously. It is individualized based on the extent of the abruption, maternal and fetal reaction to this insult, and gestational age of the fetus. [10] Vasa previa refers to unprotected fetal vessels running through the membranes over the cervix. Until recently, this condition was associated with an exceedingly high perinatal mortality rate attributable to fetal

exsanguination when the membranes ruptured. Risk factors for vasa previa include second-trimester placenta previa and low-lying placentas, velamentous cord insertion, placentas with accessory lobes, in vitro fertilization, and multifetal gestations.[11] Women with above risk factors should undergo a third trimester TVS with Colour doppler to look for presence of fetal vessels over the cervix. Consideration for antenatal corticosteroids at 28-32 weeks and hospitalisation at 30-32 weeks for safe confinement should be done. Such patients should deliver with CS in a centre equipped with facilities of neonatal transfusion. [12]

Material and Methods

Study Design: Prospective, Observational Study.

Study Setting: Department of obstetrics and gynaecology, Department of Paediatric Medicine, and Department of Radiology, Burdwan Medical College, West Bengal.

Study Period: 18 months after getting approval from institutional ethics committee From March 2021 to September 2022.

Study Population: All pregnant women presented with bleeding per vaginal in third trimester at OPD & emergency.

Inclusion Criteria: All cases of bleeding per vaginal with gestational age > 27 weeks

Exclusion Criteria

1. Any antenatal cases of gestational age < 27 weeks with bleeding PV
2. Patient suffering from any other bleeding disorder
3. Bleeding from a source other than uterus.

Sample design and sample size: Samples was recruited by hospital based serial sampling. We have 162 patients presented with vaginal bleeding in third trimester in this study period

Study Tools

1. Preformed and pretested data collection sheet.
2. Consent form
3. USG machine – VOLUSON (GE)

Study Technique: Preformed and pretested data collection sheet and Consent form was allotted to every patient fulfilling the inclusion criteria. Then the collected data was analysed, and the conclusion was formulated.

Women who fulfilled the above criteria were included in the study. Informed consent was obtained from the patient and family members. On admission, detailed history of the patient regarding age, address, socio-economic status, history regarding her previous antenatal check-ups was obtained. General physical examination was done to assess both maternal and fetal condition. Abdominal examination, per speculum and per vaginum examination (when required) was done. The gestational age of the patient was confirmed with her dates, first trimester ultrasound and a basic obstetric ultrasound was performed to confirm the fetal growth parameters, placental position and amniotic fluid index. All patients presenting with APH were initially investigated and managed as per standard procols, and subsequent management was done according to the suspected cause, severity and type of bleeding and the gestational age of the pregnancy. The subsequent management was divided into immediate termination vs expectant management. Placenta previa and abruptio placenta were mainly categorised, rest of the patients were placed under unclassified haemorrhage and further management depended on gestational age, nature and cause of bleeding and the state of fetus. Most of the benign causes of genital tract bleeding and cervical carcinoma were excluded by gentle visual examination with speculum. The conditions were treated accordingly.

Statistical Analysis: For statistical analysis data were entered into a Microsoft excel spread sheet and then analysed by SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. Z-test (Standard Normal Deviate) was used to test the significant difference of proportions.

Once a t value is determined, a p-value can be found using a table of values from Student's t-distribution. If the calculated p-value is below the threshold chosen for statistical significance (usually the 0.10, the 0.05, or 0.01 level), then the null hypothesis is rejected in favour of the alternative hypothesis. P-value $\leq$ 0.05 was considered for statistically significant.

Result

Table 1: Distribution of general parameters

Parameter	Category	Frequency	Percentage	Z Value	P Value	Significance
Age in Group	≤ 20	35	21.60%	10.2222	< 0.00001	Significant
	≥ 21	127	78.40%			
Literacy	Illiterate	42	25.30%	8.8889	< 0.00001	Significant
	Literate	121	74.70%			
Booking Status	Booked	141	87.00%	13.3333	< 0.00001	Significant
	Unbooked	21	13.00%			
Socioeconomic Status	Lower Class	96	59.30%	3.3333	0.00086	Significant
	LowerMiddle Class	66	40.70%			
Obstetrical History	Primigravida	57	35.20%	0.9173	0.35758	Not Significant
	Multigravida	105	64.80%			
Gestational Age (Weeks)	< 37 weeks	89	55.00%	1.7778	0.07508	Not Significant
	≥ 37 weeks	73	45.00%			

Table 2: Distribution of fetal outcomes

Category	Subcategory	Frequency	Percentage	Z Value	P Value	Significance
Live Birth / Still Birth	Live Birth	141	87.10%	13.3333	< 0.00001	Significant
	Still Birth	21	12.90%			
Perinatal Mortality / Morbidity	Death due to HIE	17	10.50%	-4.8597	< 0.00001	Significant
	Death due to Respiratory Distress, HIE	24	14.80%			
	Still Birth	23	14.20%			
	Survived after SNCU treatment	45	27.20%			
	NA (Not Available/Applicable)	53	32.70%			
1-Minute APGAR Score	0–3	23	14.19%	6.8004	< 0.00001	Significant
	4–6	80	49.38%			
	7–10	59	36.41%			
Birth Weight	< 2500 grams (Low Birth Weight)	89	54.93%	6.8004	< 0.00001	Significant
	≥ 2500 grams	73	45.06%			

Table 3: Distribution of obstetric outcomes

Parameter	Category	Frequency (n)	Percent (%)	Z Value	P Value	Significance
Mode of Previous Delivery	LSCS	33	20.4	10.103	< 0.00001	**Significant**
	NA (Primigravida)	87	53.7			
	ND	37	22.8			
	1 ND, 1 LSCS	5	3.1			
Bleeding Type	Placenta Previa	80	49.38	9.967	< 0.00001	**Significant**
	Abruption Placenta	78	48.14			
	Vasa Previa	2	1.2			
	Indeterminate Origin	2	1.2			
Type & Grade of Placenta Previa / Abruption Placenta	AP Grade 1	43	27.21	10.103	< 0.00001	**Significant**
	AP Grade 2	27	17.8			
	AP Grade 3	8	5.06			
	Placenta Previa	48	30.36			
	Low Lying Placenta	32	20.25			
Fetal Presentation	Breech	42	25.9	12.655	< 0.00001	**Significant**
	Cephalic	115	71			
	Oblique	5	3.1			
Mode of Delivery	Emergency LSCS	102	62.96	11.9	< 0.00001	**Significant**
	ND	50	30.9			
	Em LSCS + B/L Uterine A. Ligation	8	4.93			
	Em LSCS + Obstetric Hysterectomy	3	1.23			
Blood Transfusion (if	1 PRBC	72	44.4	9.44	< 0.00001	**Significant**
	1 WB, 1 PRBC	9	5.55			

any)	2 PRBC	5	3.1			
	NA	74	45.7			
	1 PRBC, 1 WB, 4 FFP	2	1.23			
Associated Risk Factors	GDM	5	3.1	12.376	< 0.00001	**Significant**
	PIH	45	27.8			
	NA	112	69.1			
Maternal Outcomes	DIC	4	2.46	13.924	< 0.00001	**Significant**
	ARF	6	3.7			
	Sepsis	5	3.08			
	PPH	20	12.34			
	NA	127	78.39			
CCU Management Outcome	Survived	16	9.87	15.632	< 0.00001	**Significant**
	Died	3	1.85			
	NA	143	88.27			

From our study we could discover statistically significant association with various demographic factors like age of patient, literacy, socio economic status etc. Majority patients were Multi Gravida, mostly delivering preterm. Almost half (49.3 %) had placenta previa, followed by abruptio placentae in 48.1 % of cases. Most common presentation was cephalic (70 %).62 % patients delivered by emergency caesarean sections, around 5 % underwent cs with B/L uterine artery ligation, and 1 % of patients required obstetric hysterectomy. 72 (44.4%) patients underwent 1-unit PRBC transfusion. A significant association between APH and other risk factors like GDM and PIH was found. In our study, 2.46% patients developed DIC, 3.70% patients developed ARF, 3.08% patients developed sepsis, and 12.34% patients developed PPH as complications. 9.87% of patients needed CCU management and recovered. Only 3 patients died even after extensive CCU support. We found alive birth rate of 87.1% and a preterm birth rate of 54.9%.54.93% babies had a birth weight <2500 gm. Maximum babies APGAR at 1 min ranged between 4-6. Of the total neonatal deaths, 10.5% baby died due To HIE, 14.8 % died due to respiratory Distress.

Discussion

Table 4:

Comparison Parameters	**Ujala S et al. (2021) [13]**	**Tsikouras P et al. (2016) [14]**	**Purohit A et al. (2014) [15]**	**Our Study**
Number of cases	91	480	134	162
Mean age	27 years	Not reported	Increased incidence with increasing age	22.94 years
Gestational age	Preterm [27-34 weeks]	Preterm 57.7%; Severe preterm 7.7%	Preterm [<37 weeks]	Preterm
Parity	All primigravida	Not reported	Increased incidence with increasing parity	Multigravida > Primigravida
Socioeconomic status	72% poor	Not reported	Not reported	Lower class > Lower middle class
Literacy	66% undergraduate	Not reported	Not reported	74.7% literate
Type of bleeding	Not reported	Abruption 24.2%, Placenta previa 29.2%, Ut rupture 0.4%, Cervical dilatation 11.3%, Unknown 26.3%	Placental abruption, Placenta previa	Abruption 48.1%, Placenta previa 49.3%, Vasa previa 1.2%, Unclassified 1.2%
Fetal presentation	Not reported	Not reported	Not reported	Cephalic 71%
Mode of delivery	VD 14%, CS 69%, C.Hys 8%	Maximum CS	Maximum CS	VD 30.9%, CS 62.9%, C.Hys 1.23%, CS + B/L uterine ligation 4.93%

Associated risk factors	Not reported	Positive association with preeclampsia, pre-GDM, hypothyroidism	Hypertension with placental abruption, previous CS with placenta previa	Positive association with GDM, PIH
Blood transfusion	Not reported	Not reported	Not reported	Needed in 55% of patients
Mortality	Not reported	Not reported	1.49%	1.85%
Live birth rate	90%	Maximum livebirth	56.71%	87.1%
Low birth weight	Not reported	One third of all births	Not reported	54.93%
Perinatal mortality	Not reported	Not reported	43.25%	38%

In our study, a statistically significant association was found between antepartum hemorrhage (APH) and various demographic and clinical factors such as age, literacy, and socioeconomic status. The majority of the patients were multigravida, aligning with findings from Purohit et al. (2014), which also reported increased incidence with increasing parity. Most deliveries in our cohort were preterm, similar to the results of Tsikouras et al. (2016), who reported 57.7% preterm births.

Placenta previa (49.3%) and abruptio placentae (48.1%) were the most common causes of APH in our study, comparable to findings by Purohit et al. and Ujala S et al. (2021), though the prevalence of abruption was notably higher in our cohort. Cephalic presentation was most common (71%), consistent with general obstetric expectations. Emergency caesarean section was the primary mode of delivery (62.9%), and only 1.23% of cases required obstetric hysterectomy, which is lower than the 8% reported by Ujala S et al. Bilateral uterine artery ligation was performed in 4.93% of cases. Blood transfusion was required in 55% of patients, with 44.4% receiving one unit of PRBC, indicating the significant hemodynamic impact of APH.

We observed a significant association of APH with GDM and PIH, supporting findings by Tsikouras et al. and Purohit et al., who also reported positive correlations with hypertensive disorders and gestational diabetes. Complications in our study included PPH (12.34%), DIC (2.46%), ARF (3.70%), and sepsis (3.08%). CCU care was needed in 9.87% of cases, with a maternal mortality rate of 1.85%, comparable to the 1.49% reported by Purohit et al.

Perinatal outcomes revealed a live birth rate of 87.1%, significantly higher than Purohit et al.'s 56.71%. However, our preterm birth rate (54.9%) and low birth weight incidence (54.93%) remain concerning. APGAR scores at 1 minute were generally between 4–6. Of the neonatal deaths, 10.5% were attributed to hypoxic-ischemic encephalopathy (HIE), and 14.8% to respiratory distress, highlighting the critical impact of APH on neonatal morbidity and mortality. Our observed perinatal mortality rate was 38%, slightly lower than the 43.25% reported by Purohit et al.

Conclusions

Vaginal bleeding in third trimester is associated with increase maternal and perinatal morbidity and mortality. Whenever placenta previa is diagnosed it is best to avoid vaginal examination. All women presented with vaginal bleeding in third trimester should be assessed whether urgent intervention is necessary to reduce maternal or fetal compromise. Expert Obstetrician is necessary for taking decision about the time and mode of delivery. Investigations should be performed to assess the extent of physiological consequences of bleeding. All women with bleeding in third trimester should be recommended hospital stay upto bleeding stops or till decision for termination of pregnancy. Every obstetrician must be vigilant while managing third trimester vaginal bleeding. Every live birth baby with APGAR score 4-6 needs urgent SNCU management.

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