Implications of placenta previa on pregnancy outcome: A prospective study

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Abstract

Introduction: Placenta previa is a major cause of antepartum hemorrhage, leading to substantial fetomaternal morbidity and mortality. The aim of the present study was to determine the effect of placenta previa (PP) on pregnancy outcome.

Material and Methods: It was a prospective study conducted over a period of 3 years including 262 antenatal women with PP at > 28 weeks of gestation.

Results: In the present study 0.8% of the pregnant women were associated with placenta previa among them most of them were between 20-30 years (51.1%) and multigravida (90.0 %). Majority presented with bleeding between 30-34 weeks (46.9%).Most of the cases (80.2%) had one or the other known risk factors. Ultrasound was done in only 50.8% of cases, among which low lying placenta constituted major proportion(56.4%). 43.4% of women were kept on expectant management as they presented with bleeding at < 34 weeks of gestation. Only 14.5% of women had normal delivery, rest 85.5% underwent caesarean section. Adverse maternal outcome were seen in 40.8% of cases, out of which hemorrhagic shock (25.6%), postpartum hemorrhage (29.8%), Acute renal injury (4.58%), peripartum hysterectomy (9.16%). Most of the women (54.3%) needed >1 unit of blood transfusion. There were 9 cases of maternal mortality.

Conclusion: Pregnancy complicated with PP poses a great challenge to every obstetrician due to associated fetomaternal complications. Early diagnonsis and timely intervention may improve outcome.

Keywords: Placenta previa, Prospective, Prevalence, Gestation age, Predisposing factors, Vaginal bleeding placenta accrete, Maternal outcome.

Introduction

Placenta previa is an obstetric condition characterized by abnormal implantation of placenta into the lower segment of the uterine wall, covering whole or part of the cervix.[1] It accounts for one third of all cases of antepartum haemorrhage. The reported world wide prevalence of placenta previa is 5.2 per 1000 pregnant women, though there is significant international variation, prevalence was highest among Asian studies and lower in sub-Saharan Africa studies.[2]

The exact etiology of placenta previa is not known, previous studies have postulated multiple factors such as advanced maternal age, multiple gestation, previous caesarean section, previous D&C, multiparity, malpresentation, and diabetes mellitus.[3-8] The simplest, most precise and safest method of placental localization is provided by transabdominal sonography.[9] It is a potential cause of maternal morbidity and mortality because of the associated antepartum and intra partum haemorrhage leading to increased incidence of blood transfusion, maternal shock, operative interventions and sepsis.[10] Early diagnosis and timely intervention helps in reducing the fetomaternal morbidity and mortality by keeping an eye on need of blood transfusion, and arranging for a team of experienced surgeon, anesthesiologist and paediatrician.[11] Management of placenta previa depends on clinical presentation, gestational age and degree of previa. Sometimes expectant management improves the outcome, when mothers life is not at risk.

The aim of this study was to determine the effect of placenta previa on pregnancy outcome. So that they can be managed in the best possible way with favourable outcome.

Material and method

It was a prospective descriptive study carried out in the Department of Obstetrics & Gynaecology, GSVM Medical College, Kanpur over a period of three years, from January 2014 to December 2016 after institutional ethical approval. After written & informed consent, a total of 262 pregnant women who presented with painless vaginal bleeding, those asymptomatic but diagnosed as having PP on tranaabdomonal ultrasound or incidentally diagnosed during caesarean section presenting after 28 weeks of gestation age were included in the study. Those presenting at <28 weeks gestation and other causes of antepartum hemorrhage were excluded from study. As usual gestational age was calculated by last menstrual period and first trimester scan. Baseline information on patient's age, gravity ,gestational age at the time of bleeding, predisposing factors , degree of PP by ultrasound, mode of delivery were collected. Maternal complications analysed included hemorrhagic shock, postpartum hemorrhage, acute renal failure, bowel and bladder injuries, peripartum hysterectomy, admission to ICU, anaesthesia complications, no. of units of blood transfused, length of hospital stay, wound infection and maternal mortality.

In women with major degree of PP, elective caesarean section was planned at 38 weeks gestation or possible earlier intervention before the expected date is justified in cases with excessive bleeding or signs of labour. Two or more units of cross matched blood was kept ready at the time of admission. Data were analyzed using simple tabulations.

Results

Number of obstetric admission in the study period were 31656, among which 262 presented as placenta previa accounting for prevalence of 0.8 %. In our study, majority 134 (51.1%) were between 20-30 years of age and 105 (40.1%) were above 30 years. Only 26 (9.92%) of study cases were primigravida followed by gravida 2 with maximum number of cases 112(42.7%). 109(41.6%) were booked & 153 (58.4%) were unbooked. 103(39.3%) were from urban and 159 (60.7%) from rural areas. Out of 262 cases, 233(88.9%) presented with bleeding per vaginum, majority 123(46.9%) between 30-34 weeks. 29(11.1%) of cases had no bleeding episode till term. Majority presented with one or multiple risk factors for placenta previa that is, previous history of D & C in 39 (14.9%), PID/STD in 16(6.11%), previous one caesarean section in 69(26.3%), previous 2 LSCS in 18 (6.87%), gestational hypertension in 53(20.2%), previous history of PP seen in 15(5.72%), twin pregnancy in 9(3.44%) cases. No definitive cause was found in 52 (19.8%). **(Table 1)**

Table 1: Baseline & obstetric characteristics of study population (n=262)

	No. (%)
Age(in years)	
<20	23(8.78)
20-30	134(51.1)
>30	105(40.1)
Gravity	
Primigravida	26(9.92)
Gravida 2	112(42.7)
Gravida 3	66 (25.2)
≥Gravida 4	58(22.1)
Booking status	
Booked	109(41.6)
Unbooked	153(58.4)
Habitat	
Urban	103(39.3)
Rural	159(60.7)
GA at presentation (in wks)	
With bleeding	**233(88.9)**
28-30	25(9.54)
30-34	123(46.9)
34-36	49(18.7)
≥37	36(13.7)
Without bleeding	**29(11.1)**
***Predisposing factors**	
Previous H/O D&C	39(14.9)
PID/STD	16(6.11)
Previous 1 caesarean section	69(26.3)
Previous 2 caesarean section	18(6.87)
Gestational hypertension	53(20.2)
Previous H/O PP	15(5.72)
Multiple gestation	09(3.44)
No known cause	52(19.8)

(*Total % age exceeded 100 as single women had multiple risk factors)

Out of 262 cases, ultrasound could be done in only 133(50.8%) women. Low lying placenta constituted 75(56.4%) of all PP cases followed by marginal placenta previa in 34(25.6%) and 11 (8.27 %) had central placenta previa in USG. Among these, 11(8.27%) cases of placenta accrete were detected. Rest 129 (49.2%) women presented in emergency with severe bleeding, were immediately operated so USG could not be done. Intraoperatively also low lying placenta 62(48.1%) was most common finding followed by central placenta previa in

35(27.1%) cases. Placenta accrete was an intraoperative finding in 16 (12.4%) cases among which 11 were diagnosed preoperatively, in two cases ultrasound examination failed to detect placenta accrete, rest 3 were diagnosed during caesarean section. **(Table2)**

Table 2: Degree of placenta previa (n=262)

Degree of Placenta	Ultrasound finding 133 (50.8%)	Intra-operative finding 129(49.2%)
	Number(%age)	Number(%age)
Low lying (Type I)	75(56.4)	62(48.1)
Marginal (Type II)	34(25.6)	19(14.7)
Partial (Type III)	13(9.78)	13(10.1)
Complete (Type IV)	11(8.27)	35(27.1)
Placenta accrete	11(8.27)	16(12.4)

Out of the 262 pregnant women, 114 (43.5%) were kept on expectant management as they presented with bleeding before 34 weeks, but majority79(69.4%) could be kept only upto 1 week as they had severe successive bout of bleeding. Among 262 cases, 38(14.5%) had vaginal delivery, mostly women with type I and very few with type ll. Out of these, 11(28.9 %) had term and 27(71.1%) had preterm delivery.224 (85.5%) were delivered by LSCS, and majority 196 (87.5%) had emergency LSCS and 28 (12.5%) cases were done by elective LSCS. **(Table 3)**

Table 3: Duration of expectant management and mode of delivery

*Expectant management (n=144)	Number (%)
<1 week	36(31.6)
1 week	43(37.8)
2 week	29(25.4)
>2 week	06(5.26)
Mode of delivery(n=262)	**Number (%)**
Vaginal	**38(14.5)**
Term	11(28.9)
Preterm	27(71.1)
Caesarean section	**224(85.5)**
Elective	28(12.5)
Emergency	196(87.5)

(*for women who presented with bleeding P/V < 34 weeks of gestation)

Maternal complications were seen in 107 (40.8%) women. Among these, postpartum hemorrhage in 78(29.8%) cases, 67 (25.6%) of women went into hemorrhagic shock, majority recovered and9(3.44%) expired, 39(14.9%) cases required ICU admission, 9 (3.44%) presented with rupture uterus(among these 7 had scarred uterus & 2 were unexplained),acute renal failure in 12 (4.58%) cases, MROP was done in 6 (2.23%) for adherent placenta, intra operative bladder and bowel injuries were 13 (4.96%) and 4 (1.53%), peripartum hysterectomy was performed in 24 (9.16%) cases (11 for various degree of placental invasion, 4 for rupture uterus and rest for atonic PPH not controlled by by medical or conservative surgical measures). More than one unit of blood transfusion was needed in majority of cases 145 (55.3%). 19(7.25%) of women had anaesthesia complication. Among late complications, wound infection seen in 26(9.92%), septicemia in 29(11.1%), length of hospital stay was > 8 days in 59(22.5%) cases. **(Table 4)**

Table 4: Maternal outcome (n=107)

Early	Number(%age)
Hemorrhagic shock	67(25.6)
Rupture uterus	9(3.44)
Postpartum hemorrhage	78(29.8)
Manual removal of placenta	6(2.23)
Acute renal failure	12(4.58)
Bladder injury	13(4.96)
Bowel injury	4(1.53)
Peripartum Hysterectomy	24(9.16)
ICU Admissions	39(14.9)

Blood transfusion(in units)	
1	34(13.0)
2-3	102(38.9)
>3	43(16.4)
Anaesthesia complications	19(7.25)
Maternal Mortality	09(3.44)
Late	Number(%age)
Wound infection	26(9.92)
Septiceamia	29(11.1)
Length of hospital stay >8 days	59(22.5)

(*Total % age exceeded 100 as one women had multiple complications)

Discussion

This study was conducted to evaluate the various degrees of placenta previa & its clinical implication on maternal outcome. The prevalence of placenta previa in our study was 0.8% which is close to 0.7% reported in a study conducted in Pakistan by Bhutia et al.[12] Majority of the pregnant women were in between 20-30 years of age (51.1%) and were multigravida (90.0%). Advanced maternal age and multiparity are considered as risk factors for placenta previa and maternal haemorrhage in many studies.[13,14] The increased risk of placenta previa among multigravida women may be explained by degenerative change to the uterine vasculature, leading to underperfusion of the placenta, compensatory enlargement and increased likelihood of implantation on the lower segment.[15] Majority of pregnant women (46.9%) presented with significant bleeding per vaginum between 30-34 weeks.11.1% of women had no bleeding episode till term. Comparable results were found in the study of Sarella LK et al.[16] Various predisposing factors included previous history of D&C, pelvic inflammatory disease, previous caesarean sections, hypertensive disorders of pregnancy, history of placenta previa. No definitive cause was found in 19.8% of cases. Malhotra et al, in their study on placenta accreta also reported few of these risk factors.[17] Sexually transmitted disease and PP also showed association, suggesting intrauterine adhesions as a possible mechanism for impaired placental migration.[7] Past history of caesarean section and history of uterine scar, previous H/o of D&C were also found to be associated with placenta previa, similar to previous studies done by kiondo et al and Anzaku and Musa.[15,18]

In the present study antenatal diagnosis using USG was possible only for 50.8% women, among which low lying placenta was the most common USG finding. Manohar et al also reported low lying placenta as most common finding in their study.[19] In another 49.2% of cases, placenta previa was diagnosed during ceasarean section. 43.5% of women were kept on expectant management , as their gestational age was < 34 weeks but majority (69.4%) were kept only upto 1 week as they had successive severe bout of bleeding. When mothers life is not at risk expectant management will improve the outcome.[20]

Out of the 262 cases, (14.5%) women had vaginal delivery, among which 28.9% had term and (71.1%) had preterm delivery. Majority (85.5%) were delivered by LSCS. Results are comparable to a study conducted by Anand et al.[21] Similarly in a study done by Elizabeth et al in northern Tanzania showed caesarean section rate of 73.3%.[22]

Placenta previa is associated with adverse pregnancy outcomes like increased risk of hemorrhagic shock, antepartum and postpartum hemorrhage, MROP, adjacent organ injury, peripartum hysterectomy, blood transfusion, prolonged hospital stay, and caesarean section .In our study, out of 262 women 40.3% had one or multiple complications. These findings are consistent with previous studies.[4,6,23] Contributing factors for hysterectomy were presence of placenta accrete and previous CS.[24]Incidence of blood transfusion in our study was 68.3%. While Brenner et al and Willikan et al in their study reported 36% and 52.4% respectively.[13,14] Involvement of bladder in cases of PP is associated with significant morbidity. Bladder injuries were reported as high as 26% in a meta-analysis of 54 cases of placenta percreta.[25]

Conclusion

The prevalence of placenta previa in our study was at par with past studies. Advanced maternal age, multiparity, prior caesarean section, and D&C are the independent risk factors. It poses a great challenge to every obstetrician due to associated maternal and perinatal complications. Early diagnosis either at the onset of first bout of bleeding, by ultrasound examination and referral to higher center will likely result in improved fetomaternal outcomes.

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