

MATERNAL AND PERINATAL OUTCOME IN PREGNANCIES COMPLICATED BY PLACENTA PREVIARajendra Wakankar¹, Alka Patankar², Sachin Khedkar³**HOW TO CITE THIS ARTICLE:**

Rajendra Wakankar, Alka Patankar, Sachin Khedkar. "Maternal and Perinatal Outcome in Pregnancies Complicated by Placenta Previa". Journal of Evolution of Medical and Dental Sciences 2015; Vol. 4, Issue 46, June 08; Page: 7986-7994, DOI: 10.14260/jemds/2015/1161

ABSTRACT: AIMS AND OBJECTIVES: To evaluate the maternal and perinatal outcome of pregnancies complicated with placenta previa at tertiary care centre and to evaluate the potential risk factors involved in pregnancies complicated with placenta previa at tertiary care Centre. **METHOD:** We carried out 2 year retrospective observational study during period from November 2009 to October 2011 Tertiary care hospital and medical college. ANC cases with history of bleeding per vaginum after 28 weeks attending ANC clinic and emergency ward were included in study with appropriate age parity matched controls with other complications like pregnancy induced hypertension, abruption placentae, multiple gestation were excluded. Demographic data, medical and surgical histories, all the events regarding maternal and perinatal mortality were recorded. Data was analysed by using appropriate software. **RESULTS:** 136 cases of placenta previa were analysed and found prevalence of placenta previa was 1.36%. During the present study 41.80% cases were booked and 58.20% cases were unbooked. Maximum number of cases in present study were in the age group of 18-24 years. Previous caesarean (57.49%) and previous abortion (42.53%) found important risk factors. 41.04% cases were delivered at 33-36 weeks of gestation followed by 33.58% in 28-32 weeks of gestation. Expectant management was given to 37.32% of cases while 62.68% cases were managed on active basis. In present study maternal morbidity were postpartum hemorrhage (56.71%), sepsis (37.31%), urinary tract infection (5.22%), wound infection (5.22%), wound gape (4.47%), hysterectomy (2.23%), prolonged hospital stay >10 days (17.91%). There were two (1.49%) maternal mortality in present study. Maximum number of infants i.e. 58.20% had birth weight between 1.6 to 2.4kg. Out of this 16.41% were of 1.6-2kg and 41.79% comprised of 2.1-2.4 kg. 39.55% infant required NICU admission and 60.45% of cases were with mother. Perinatal mortality was 2.98%. This is attributable to NICU facilities available at tertiary care centre. **CONCLUSION:** Placenta previa complicating pregnancy is responsible for significant maternal and neonatal morbidity and mortality. Such a high risk pregnancy irrespective of fact whether the placenta previa is of major degree or minor degree managed at tertiary care centre. All cases of placenta previa presenting with bleeding per vaginum irrespective of gestational age should be managed at tertiary care centre where team of expert obstetrician, anaesthetist, neonatal and blood facilities are available.

KEYWORDS: Maternal and neonatal morbidity and mortality.

INTRODUCTION: Placenta previa is a localisation of placenta in the lower segment of uterus over or near the internal cervical os.¹ The frequency of this condition is about 3 to 6 per 1000 deliveries.² The major cause of maternal mortality and morbidity with placenta previa are haemorrhage (both antepartum and postpartum), anaemia, sepsis, and placenta accrete. Pregnancies with low lying placenta are associated with a high incidence of postpartum haemorrhage.³ A history of previous caesarean section and complete previa increase maternal morbidity due to increased risk of massive

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haemorrhage, placenta accrete and chances of hysterectomy.^{4,5} These patients usually succumb to haemorrhage leading to shock and renal failure. The reduced maternal mortality in recent years is mainly attributable to the increased use of blood transfusion, Effective antibiotic therapy and better understanding of management of shock and renal failure. The increased use of caesarean section, preceded by expectant management has been universally adopted in cases of placenta previa, which has reduced maternal mortality to nil and fetal mortality to less than 10%.⁶ The rate of admission of neonates to NICU and duration of stay in hospital were increased in pregnancies complicated with placenta previa.⁷ The type of placenta previa also affects the fetal outcome, as major placenta previa has greater fetal morbidity than minor placenta previa.⁸ Old ideas regarding the immediate active management in cases of antepartum haemorrhage have changed in favour of hospitalisation and more conservative treatment to improve fetal salvage. So if occurrence of placenta previa cannot be avoided, at least the cases can be better managed if they are treated in well equipped institution where with operative facilities and enough blood ready in right time, they are examined by an experienced obstetrician and decision regarding the mode of delivery and proper care of newborn is taken.

AIMS AND OBJECTIVES:

Primary: To evaluate the maternal and perinatal outcome of pregnancies complicated with placenta previa at tertiary care Centre.

Secondary: To evaluate the potential risk factors involved in pregnancies complicated with placenta previa at tertiary care Centre.

MATERIAL AND METHODS: ANC cases with history of bleeding per vaginum after 28 weeks attending ANC clinic and emergency ward were included in study with appropriate age parity matched controls with other complications like pregnancy induced hypertension, abruption placentae, multiple gestation were excluded.

Permission from ethics committee had been taken:

Study Design: A Retrospective study.

Study Period: Two years from November 2009 to October 2011.

Study setting: Tertiary care hospital and medical college (Govt. Medical College, Nagpur.).

Sample size: Assumption $\alpha=0.05$ (two sided).

Power=0.900

$P1=0.03$ $p2=0.15$ (5 times more risk)

$n2/n1=1.0$

Estimated required sample size: $N1=134$ and $N2=134$.

Inclusion criteria:

1. Patients diagnosed as placenta previa on routine antenatal ultrasound or emergency admitted with bleeding per vaginum after 28 weeks and before delivery.
2. Singleton pregnancy.
3. Patient with known last menstrual period.

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Exclusion criteria:

1. Twin pregnancy.
2. Cases associated with other complicating factors like PIH, Diabetes, etc.
3. Cases with abruption placentae.

Placenta previa will be diagnosed by transabdominal USG according to Jaunax and Campbell classification.

Type I: The placenta just encroaching on lower uterine segment.

Type II: Placenta reaches the margin of the internal cervical os.

Type III: Placenta partially covering the internal os.

Type IV: Placenta completely covering the internal os.

Each of the first three types is subdivided into type A and type B depending on placenta mainly lies on the anterior (A) or the posterior (B) wall respectively.

- All patients with clinical manifestation were admitted earlier. Stable patients with mild to moderate bleeding and with fetal immaturity were managed by expectant line of management that is complete bed rest, tocolysis, blood transfusion, fetal monitoring, and acceleration of fetal maturity and timely delivery after fetal maturity or at 37 completed weeks.
- Patients with severe bleeding were managed by caesarean section after resuscitation.
- Hospital protocol is followed and patient with type I and type II anterior placenta previa were allowed to deliver vaginally unless caesarean section necessitated due to uncontrollable haemorrhage or some obstetric indication.
- Detailed information was collected regarding the maternal characteristics including demographic data. Eg, maternal age, race, parity, gestational age at admission, past obstetric history including history of previous pregnancy with placenta previa any current obstetric complications, eg chronic hypertensive disease, pregnancy induced hypertension, preterm labor, premature rupture of membrane, presenting symptoms, pertinent physical examination, investigation performed, type of delivery, time of delivery, estimated blood loss, blood transfusion or antibiotics needed, complications and length of hospital stay.
- Neonatal outcome data were recorded including GA at delivery, birth weight, interval from admission to delivery, Apgar score at 1 minute and 5 minutes and length of neonatal hospital stay
- Perinatal outcomes evaluated were;
 - Preterm.
 - Preterm IUGR.
 - Term IUGR.
 - Neonatal death (death of a live born infant within 28 days of life).
 - Fetal death (delivery of dead fetus at or after 28 weeks of gestation).
 - Perinatal mortality (combination of stillbirth and neonatal death).

STATISTICAL ANALYSIS: Continuous variables were presented as mean±D. Categorical variable were expressed in percentage. Continuous variable were compared with unpaired t-test. Categorical variable were compared by chi-square statistics. For small numbers, fisher exact test was applied

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whenever required. $P < 0.05$ was considered as statistical significance. Data was analysed using statistical software STATA version 10.0.

RESULTS:

Total no cases delivered at tertiary care institute during study period	22919
Total number of cases of antepartum haemorrhage	758
Total number of placenta previa cases	312
Total number of cases of APH due to other cases	446
Total number of cases in the study group	134
Prevalence	1.36%

Table 1: Distribution of subjects according to type of antepartum haemorrhage

Table 1 shows that the prevalence of antepartum haemorrhage in the tertiary care institute was 3.30% out of this 41.16% comprised of placenta previa and rest 58.84% due to other causes. The prevalence of placenta previa cases in our study was 1.36%.

Parameters		Study	Control
Average age of patients		26.94±4.84	26.5±4.76
Parity	Nulliparas	47 (35.1%)	53 (39.6%)
	Primipara	52 (38.8%)	65 (48.5%)
	Multiparous	35 (26.1%)	16 (11.9%)
Booking status	Registered	56 (41.80%)	64 (47.76%)
	Unregistered	78 (58.20%)	70 (52.24%)

Table 2: Demographic parameters

Table 2 depicts that the average age of patients was 26.94±4.84 in study group and 26.5±4.76 in the control group. In the study group 35.1% patients were nulliparas, 38.8% were primipara and 26.1% were multiparous. So maximum numbers of patients were nulliparous and primipara. In the study group 41.8% were registered antenatally whereas 58.20% were unregistered whereas 47.76% of control group were registered while 52.24% were unregistered. So according to booking status both groups were comparable.

Factor	Study	Control	p-value
Previous LSCS	69(51.49%)	51(38.05%)	0.027
Multiparity ($p \geq 2$)	35(26.11%)	18(13.43%)	0.003
Advanced age (>30year)	35(26.11%)	30(22.38%)	0.476
Previous abortion	31(23.13%)	41(30.59%)	0.168
Previous MTP	26(19.40%)	14(10.44%)	0.040
Previous placenta previa	10(7.46%)	2(1.49%)	0.018

Table 3: Distribution of study subject according to presence of predisposing factors

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Table 3 depicts that previous LSCS, multiparity, previous MTP, previous placenta previa were significant risk factors in cases of placenta previa seen in 51.49%,26.11%,19.40% and 7.46% in study group compared to 38.05%,13.43%,10.44% and 1.49% respectively in control group.

Mode	Study	Percentage	Control	Percentage	p-value
Vaginal	9	6.71%	28	20.89%	X ² =11.32 P=0.001
LSCS	125	93.28%	106	79.10%	
Total	134	100%	134	100%	

Table 4: Distribution of subjects according to mode of delivery

Table 4 shows that Caesarean section was done in 125 (93.28%) cases in study group and 106 (79.10%) cases in control group. The difference in incidence of vaginal deliveries and caesarean section in two groups was statistically significant.

Weeks of gestation	Study	%	Control	%	p-value
At 28 week	3	2.23%	0	0%	X ² =16.72 P=0.001
28.1-32 weeks	45	33.58%	21	15.67%	
32.1-36 weeks	55	41.04%	63	47.01%	
>36 weeks	31	23.13%	50	37.31%	
Total	134	100%	134	100%	
mean± SD	34.87±2.97 (24-40)		35.08±2.23 (30-40)		

Table 5: Distribution of subjects according to period of gestation at the time of delivery

Table 5 depicts significant number (76.85%) of preterm deliveries before 36 weeks were present in the study group as compared to 62.69% of the control group. Thus accounting for significant morbidity and mortality associated with placenta previa. The mean gestational age in weeks in study group was 34.82±2.97 and 35.08±2.23 in control group.

Morbidity	Study	%	Control	%	p-value
PPH	76	56.71%	36	26.86%	0.0001
Blood transfusion	76	56.71%	29	21.64%	0.00001
Sepsis	50	37.31%	13	9.70%	0.00001
Hysterectomy	03	2.23%	00	00	0.24
Fever	50	37.31%	13	9.70%	0.00001
UTI	07	5.22%	00	00	0.014
Wound infection	07	5.22%	07	5.22%	1.00
Wound gape	06	4.47%	01	0.74%	0.055
Vaginal discharge	13	9.70%	07	5.22%	0.163
Maternal mortality	02	1.49%	00	00	0.498

Table 6: Distribution of study subjects according to maternal morbidity

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Table 6 shows that in the study group PPH was seen in 76(56.71%) cases whereas in control group PPH occurred in 36(26.86%) cases out of which all the cases in the study group received blood transfusions and 29 cases in control group required blood transfusion. Puerperal sepsis was seen in 50 cases (37.31%) in the study group whereas it occurred in 13 cases (9.70%) in control group. There were more complications like fever 50 cases (37.31%), wound infection 7(5.22%), wound gape 6(4.47%), urinary tract infection 7(5.22%) and more number of hospital stay (>10 days) in 24(17.91%) cases in study group compared to that of control group.

There were two maternal mortality in the study group as compared to none in control group which was statistically not significant.

Type of placenta previa	Total cases	Premature without IUGR	Neonatal anaemia	Hyperbilirubinemia	IUGR	Hospital stay (>7days)	Neonatal mortality
I	62(46.26%)	17(27.4%)	2(3.2%)	12(19.4%)	17 (27.4%)	21 (33.87%)	1(1.6%)
II	47(35.07%)	13(27.7%)	2(3.2%)	15(31.9%)	13 (27.7%)	27 (57.44%)	1(2.1%)
III	8(5.98%)	4(50%)	0	1(12.5%)	4 (50%)	2 (25%)	0
IV	17(12.69%)	6(35.3%)	1(5.9%)	3(17.6%)	6 (35.3%)	3(5.9%)	0
P-value		0.557	0.878	0.343	0.557	0.772	1.00

Table 7: Distribution of study subjects according to type of placenta previa and neonatal outcome

Table7 shows that prematurity was maximum (50%) in type III followed by (35.3%) in type IV and almost equal 27% in type I and type II placenta previa. Neonatal anaemia was maximum in type IV (5.9%) whereas none in type III placenta previa. Neonatal hyperbilirubinemia was maximum 31.9% in type II followed by 19.4% in type I and minimum 12.5% in type III placenta previa. Maximum number of neonatal hospitalization were in type II (57%) followed by type I (33.8%), whereas least in type IV placenta previa. Neonatal mortality were maximum in type II (2.1%) and none in type III and type IV placenta previa.

APGAR	Study	%	Control	%	p-value
1 MIN <5	16	11.94%	1	0.74%	0.0001
5 MIN <7	13	9.70%	1	0.74%	0.0001

Table 8: Distribution of subjects according to Apgar score of neonates

Table 8 depicts that severe birth asphyxia with APGAR score less than 5 at 5 minute was present in 16(11.94%) cases in study group as compared to 1(0.74%) in the control group and APGAR score less than 7 at 5 minute was present in 13(9.70%) in study group as compared to 1(0.74%) in control group.

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Perinatal Death	Study	%	Control	%	p-value
Stillbirth	02	1.49%	0	0	0.498
Neonatal death	02	1.49%	0	0	
Perinatal mortality	04	2.98%	0	0	
Total	134	100%	134	100%	

Table 9: Distribution of subjects according to perinatal death

Table 9 depicts that there were 2 (1.49%) stillbirth among study group compared to none in control group and 2 (1.49%) neonatal death in study group as compared to none in the control group.

DISCUSSION: In this study we compare maternal and neonatal outcomes of 134 pregnant woman with placenta previa and 134 healthy pregnant woman. The prevalence of placenta previa was 1.34% in our study which is comparable to study by Bhideet al⁹ (1990) which is 0.85 to 1.207%. In Tarique et al¹⁰ (1995) study maximum numbers of patients were from 20-29 years age group (60.4%) and in present study it was 64.92%. in present study 2.98% patients were ≤19 years and 32.08% patients were in the age group ≥30years which is comparable to study by Tarique et al¹⁰ (1995), in which patients in respective age group were 7.3% and 32.30%. But this was showing disparity with study by Lea Tuzovic et al¹¹ (2003) in which 0% patients were ≤19 years, 37.1% in 20-29 years and 62.90% in age group ≥30 years.

This shows that majority of women finished their obstetric carrier before 30 years of age and tradition of early marriage in India with woman attaining multiparity much earlier than western counterpart. In present study maximum number of cases 95(70.90%) were nulliparous (35.1%) and primipara (38.8%) whereas only 26.1% were multiparous which is not in accordance with the study conducted by Tarique et al¹⁰ (1995) where 93.75% and Lea Tuzovic et al¹¹ (2003) where 71.60% of the patients were multiparous. In present study 51.49% patients had previous caesarean section, 23.13% patients had previous abortion and 19.40% patient had previous MTP. 9.8% patient had previous sections caesarean section and 45.5% of patient had previous spontaneous abortion and MTP in study conducted by Lea Tuzovic et al¹¹ (2003).

Similar study conducted by Harshkowitz R et al¹² (1995) had 21.1% rate of previous LSCS whereas Tarique et al¹⁰ (1995) found 15% rate of previous LSCS and 30% rate of previous abortion and MTP. This proves the hypothesis that endometrial damage is significant risk factor for causation of placenta previa. There were 93.28% incidence of caesarean section and 6.71% of cases delivered vaginally in present study which is comparable with study by Chernevak et al¹³ (1984) with 91.7% incidence of caesarean section and 8.3% cases delivered vaginally. Due to safe anaesthesia, blood bank facilities, higher antibiotics and improvement of caesarean section technique there is more liberal use of caesarean section of placenta previa for good maternal and fetal outcome. In the present study there were two maternal mortalities in study group as compared to none in control group. These patients were referred to tertiary care Centre in emergency in exsanguinated state.

They had central placenta previa and were aggressively treated with massive blood transfusion, transfusion of blood products and emergency caesarean section but still could not be salvaged. In maternal morbidity, postpartum haemorrhage was most common complication. Puerperal sepsis occurred more commonly in study group (33.71%) as compared to the control

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groupn (9.70%). Other complications like fever, urinary tract infection, wound infection, wound gape, vaginal discharge, prolonged hospital stay were more common among the study group as compared to control group and were comparable to study by Tarique et al¹⁰ (1995). In our study group prematurity was seen in 82(61.19%) cases whereas in control group prematurity found in 60(44.77%) cases. This was in accordance with study by Crane etal⁵ (1999) who found prematurity in 46.56% in study group as compared to 7.27% in the control group.

Also similar observation were seen by Gillian et al¹⁴ (2001) whereas prematurity observed in 47.3% in study group compared to 9.19% in control group. In the study group 53 (39.55%) neonates required NICU admission and in the control group 12 (8.95%) neonates required NICU admission, out of this 24 neonates in study group whereas only 7 neonates in control group required admission of >7 days. Similar observations were made by Crane et al⁵ (1999). The study reported NICU admission rate of 40.20% in study group as compared to 8.45% in control group. IUGR occurred in 30 (22.38%) cases in study group whereas in control group IUGR occurred in 15(3.73%) cases. Hyperbilirubinemia was seen in 31 (23.13%) cases in study group whereas it was seen in 15 (3.73%) cases in control group. Neonatal sepsis occurred in 48 (35.85%) cases in the study group whereas it was seen in none in control group. Similar observation were made by Crane et al⁵ (1999) regarding incidence of prematurity, IUGR, hyperbilirubinemia, neonatal sepsis and neonatal hospital stay.

CONCLUSION AND RECOMMENDATIONS:

- Placenta previa complicating pregnancy is responsible for significant maternal and neonatal morbidity and mortality. Such a high risk pregnancy irrespective of fact whether the placenta previa is of major degree or minor degree managed at tertiary care centre.
- In developing countries antepartum hemorrhage and postpartum hemorrhage is still cause of maternal mortality and morbidity.
- Keeping the findings of the present study in view where placenta previa was found in maximum number of nulliparas and primipara, routine ultrasound scan for localisation of placenta should be done for antenatal patients.
- Irrespective of type of placenta previa all patients presenting with bleeding episode should get hospitalised till delivery and managed at tertiary care centre.
- In our study patients were kept hospitalised, given steroids and timely intervention was done and high risk neonates were managed in well-equipped neonatal intensive care unit.
- Hence we recommend that all cases of placenta previa presenting with bleeding per vaginum irrespective of gestational age should be managed at tertiary care centre where team of expert obstetrician, anaesthetist, neonatal and blood facilities are available.

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AUTHORS:

1. Rajendra Wakankar
2. Alka Patankar
3. Sachin Khedkar

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of Obstetrics & Gynaecology, Indira Gandhi Government Medical College, Nagpur.
2. Associate Professor, Department of Obstetrics & Gynaecology, Government Medical College, Nagpur.

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COMPETING INTERESTS: None

3. Private Practitioner, Department of Obstetrics & Gynaecology, Khedhar Hospital, Ghat Road Chalisgaon, Jalgaon.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Rajendra Wakankar,
Assistant Professor,
Department of Obstetrics & Gynaecology,
Indira Gandhi Government Medical College,
Nagpur, Maharashtra.
E-mail: drrajendrawakankar@gmail.com

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