

## Descriptive Study of Maternal and Neonatal Outcome of Pregnancy with Placenta Previa

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### Abstract:

#### Background:

Managing a case of placenta previa during pregnancy poses a great challenge to every obstetrician in present day obstetrics due its increased risk of maternal and perinatal complications.

#### Objectives:

To study maternal outcomes in placenta previa like haemorrhage (APH&PPH), shock, operative interventions like Emergency LSCS & peripartum hysterectomy, need for massive transfusion, sepsis, even maternal death. To study neonatal outcomes in placenta previa like preterm delivery, low birth weight, IUGR, low APGAR, NICU admission, intrauterine death, neonatal death, congenital malformations.

#### Methods:

This study was conducted on 200 pregnant women, 100 cases complicated with placenta previa in study group and 100 cases in control group who fulfilled the relevant criteria were admitted in department of OBG in Government This is an observational study carried out at Gandhi Hospital over a period of two years, that is from November 2017 to October 2019. It is a tertiary care hospital and a major referral centre for high risk obstetrics in Telangana State.

#### Results:

Among 100 cases of placenta previa maternal complications significantly associated with placenta previa included antepartum haemorrhage 54%, postpartum haemorrhage 29%, shock 9%, sepsis 8%, hysterectomy 9%, need for transfusion 3% and conservative surgery 18%, maternal death 1%. Neonatal complications included preterm birth 30%, IUGR 7%, LBW 28%, NICU admission 22%, Intra uterine death 8%, neonatal death 7%, congenital malformations 1%.

#### Conclusion:

With good antenatal care for placenta previa complicated pregnancies including more frequent antenatal check-ups, correction of anemia during antenatal period, anticipating the complications in consultation with senior obstetrician, educating the patients regarding the complications like prematurity, need for blood transfusions and its products and rarely hysterectomy and taking the paediatrician help will definitely reduce the associated perinatal complications.

**Key Words:** Placenta Previa, Maternal Outcome, Perinatal Outcome, haemorrhage

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### I. Introduction

Placenta implanted partially or completely in the lower uterine segment is called placenta previa<sup>1</sup>. About one third of antepartum haemorrhage belongs to placenta previa. Most characteristic event in placenta previa is sudden onset, painless and recurrent haemorrhage, which does not appear until end of 2<sup>nd</sup> trimester. It is associated with increased maternal morbidity and mortality due to increased incidence of haemorrhagic shock increased operative interventions and sepsis.

There is higher incidence of perinatal mortality and morbidity due to preterm delivery and its related complications like low birth weight, birth asphyxia and neonatal sepsis.

There has been substantial reduction in maternal death in placenta previa throughout globe because of early diagnosis<sup>2</sup> even prior to bleeding, omission of internal examination, availability of blood transfusion facilities, wider uses of caesarean section with expert anaesthesiology skill and judgement. Neonatal outcome also improved because of better care, NICU facilities.

## **II. Aims & Objectives:**

- To study maternal outcomes in placenta previa like haemorrhage (APH&PPH) shock, operative interventions like Emergency LSCS & peripartum hysterectomy, need for massive transfusion, sepsis, even maternal death.
- To study neonatal outcomes in placenta previa like preterm delivery, low birth weight, IUGR, low APGAR, NICU admission, intrauterine death, neonatal death, congenital malformations.

## **III. Materials And Methods:**

This is an observational study carried out at Gandhi Hospital over a period of two years. It is a tertiary care hospital and a major referral centre for high risk obstetrics in Telangana State.

SAMPLE SIZE: 100 cases and 100 controls

STUDY DESIGN: Prospective Observational study

STUDY DURATION: November 2017– October 2019

After getting the approval from the Institutional Ethics committee, a written informed consent was taken from all women recruited into the study. Details were entered in a pre-designed proforma regarding the detailed history of period of gestation, high risk factors like previous uterine manipulations and surgeries, complaints like bleeding per vaginum, past history, complications during present and past pregnancy. Routine antenatal investigations were done in all women. Additional investigations like Placental Colour Doppler was done for all major degree Placenta Previa and MRI was done in selected cases where disparity was noted between USG and placental Doppler. Maternal outcome regarding gestational age at delivery, type of placenta, mode of delivery, complications during antenatal period like antepartum haemorrhage and IUGR, shock, anemia, during intraoperative period like PPH, hysterectomy, during post operative period like sepsis, anemia were observed. Fetal outcome was observed in the form of maturity birth weight and perinatal morbidity and mortality.

### **INCLUSION CRITERIA:**

Pregnant women diagnosed with placenta previa on USG, irrespective of their gestational age and parity.

### **EXCLUSION CRITERIA:**

1. Patient refusal or inability to provide informed consent
2. Pregnant women with other conditions like Diabetes Mellitus, Renal disorders, Liver disorders, Anemia due to other causes, Materna infections, Abruption placenta, coagulation disorders, Preeclampsia, Eclampsia, multiple gestation.
3. Pregnancies with evident fetal anomalies due to other causes.

### **STATISTICAL ANALYSIS:**

The values of epidemiological factors are presented as mean  $\pm$  standard deviation. The statistical tool applied was by using the mad calc calculator.

Qualitative and quantitative data was analysed by chi-square and ANOVA respectively. The results were considered statistically significant when the probability of the null hypothesis was less than at least 5% ( $p < 0.05$ ).

## **IV. Results And Analysis**

### **AGE DISTRIBUTION OF WOMEN WITH PLACENTA PREVIA:**

The mean age of women with Placenta Previa in the present study is  $26.8 \pm 3.5$  years. The highest incidence of placenta previa is in the age group of 25-29 years i.e. 48 cases (48%) while the least incidence was in the age group of 35 – 39 years i.e. 2 cases (2%)

### **DISTRIBUTION ACCORDING TO NUMBER OF PREGNANCIES:**

Though placenta previa is more commonly seen in multi-gravidas, it is not so uncommon in primigravida, with 10% of primigravida in the study having placenta previa. The incidence of placenta previa was highest in women with third pregnancy accounting for 41 cases (41%), Among 41 cases with third pregnancy, 18 cases (43%) had 1 prior LSCS and 15 cases (36%) had 2 prior LSCS, 7 cases (17%) had Dilatation and Curettage.

**DISTRIBUTION ACCORDING TO NUMBER OF PREVIOUS CAESARIAN SECTIONS AND DILATATION & CURETTAGE:**

Women with one previous Caesarean section constituted the majority accounting for 48% (48cases) and those with two and three previous Caesarean sections accounted for 19% (19cases) and 1% (1case) in the study group. 32% (32cases) of the pregnant women had no prior surgeries. 20% of women had history of previous abortions and Dilatation & Curettage was done for them.

**DISTRIBUTION ACCORDING TO HEMOGLOBIN PERCENTAGE**

At the time of admission, 17 (17%) women had haemoglobin levels above 11gm%. Women with haemoglobin levels between 10-11, 9-10 and 8-9 were 32(32%), 35(35%) and 13(13%) respectively. 3(3%) of women were severely anaemic. Mean preoperative Haemoglobin was  $9.6 \pm 1.1$ .

Postoperative mean Hb was  $9.6 \pm 0.5$  and 41% of women had Hb values between 9-10 and women with haemoglobin levels between 8-9 and 10-11 and 11-12 and >12 were 13 (13%) and 26 (26%) and 8 (8%) and 0. Severe Anemia <8gms was there in 11(11%) cases due to blood loss.

**TYPE OF PLACENTA PREVIA BASED ON USG:**

73(73%) were diagnosed to have major degree placenta previa and only 27(27%) women had minor degree placenta previa.

**DOPPLER FINDINGS:**

Out of 73 major placenta previa cases 10 (14%) cases are diagnosed with invasion in that two cases had Percreta , remaining 8 cases had only Accreta and this is confirmed during caesarean section. 63 cases with major placenta previa had no invasion.

Mean GA of women at delivery was  $35.9 \pm 2.1$  weeks. Majority of women underwent delivery at term gestation (58%). 2 babies were born extremely pre-term (< 28 weeks). Very-preterm (28-32 weeks) constituted 11% (11 babies). Moderately to late preterm (32-36 weeks) constituted 29% (29 babies).

Number of women undergoing Elective Caesarian section is 43 (43%), emergency section is 48 (48%), and those who had to undergo Caesarian hysterectomy is 9 (9%)

Out of 100 cases 84 cases required 1-4 units of blood and blood products transfusion and 3 (3%) cases required massive transfusion (they needed more than 10 units transfusions) and 7 (7%) cases did not require any transfusions.

Only 5 (5%) cases required 4-10 units of blood-products transfusion. Mean number of transfusions are  $2.47 \pm 1.6$ .

**TABLE 1: MATERNAL & NEONATAL COMPLICATIONS**

MATERNAL COMPLICATIONS			NEONATAL COMPLICATIONS		
Complications	No of cases	Percentage	Complications	No of babies	Percentage
Antepartum hemorrhage	54	54%	Preterm birth	30	30%
Postpartum hemorrhage	29	29%	IUGR	7	7%
Hemorrhagic Shock	9	9%	Birth weight(kg)		
			>1.5	8	8%
			1.5-2.4	20	20%
			2.5-3	55	55%
>3	17	17%			
Sepsis	8	8%	Low APGAR	18	18%
Hysterectomy	9	9%	NICU admission	22	22%
Need for conservative surgery	18	18%	IUD	6	6%
Massive transfusions	3	3%	Still birth	2	2%
			Early neonatal death	7	7%
			Congenital malformations	1	1%

**TABLE 2 : MATERNAL OUTCOME**

Outcome	No. of women	Percentage
Discharged healthy	99	99%
Maternal Mortality	1	1%
Total	100	100%

**TABLE 3 : PERINATAL OUTCOME**

Outcome	No. of babies	Percentage
Discharged healthy	85	85%
Perinatal Mortality	15	15%
Total	100	100%

Out of 100 cases 85 (85%) cases had their babies discharged healthy and 15 (15%) babies succumbed.

**TABLE 4: COMPARISON OF MATERNAL COMPLICATIONS OF CASES WITH CONTROLS**

Complications	Cases	Controls	P-value
APH	54	1	<0.0001
PPH	21	3	<0.0003
Hemorrhagic shock	9	1	<0.032
Sepsis	8	5	<0.393
Hysterectomy	9	0	<0.037
Conservative surgery	18	1	<0.003
MBT	3	0	<0.193

**TABLE 5: COMPARISON OF PERINATAL COMPLICATIONS OF CASES WITH CONTROLS**

Complications	Cases	controls	P value
Preterm	30	2	<0.0001
IUGR	7	1	<0.0620
Low birth weight	28	6	<0.0001
Low APGAR score	18	9	<0.0673
NICU Admission	22	12	<0.063
IUD	6	1	<0.0907
Still birth	2	0	<0.2949
Neonatal death	7	4	<0.358
Congenital malformations	1	1	<1.0000

## V. Discussion

Placenta previa is one of the leading causes of obstetric haemorrhage leading to increased maternal morbidity and mortality. The present study with 100 women was undertaken at Gandhi Hospital in order to study maternal and neonatal outcome in placenta previa cases. This study was a prospective observational study.

The mean age of women with placenta previa was found to be 26.8±3.5 years in the present study, while that in the studies of **Khashoggi et al**<sup>3</sup>, **Bhat et al**<sup>4</sup> were 27.6 years, 30.6 years, respectively indicating that the incidence of placenta previa becomes more common in women as the age advances and is reported in literature to be the highest in women aged 35 years or older (0.8% of all deliveries) and the lowest in women aged <25 years (0.07%).

### COMPARISON OF PARITY WITH OTHER STUDIES

In the present study the incidence of placenta previa was highest in women with third pregnancy accounting for 41 cases (41%), followed by second pregnancy (37 cases) and fourth pregnancy (8 cases) and fifth pregnancy (4 cases). **Ananth et al (2006)**<sup>5</sup> concluded that along with increase in age and parity (3+) the decrease in spacing between pregnancies is also taken as a separate confounding factor for placenta previa. **Gilliam et al (2002)**<sup>6</sup> studied association between previous LSCS and placenta previa and demonstrated that the combined effect of parity and previous LSCS had higher chance of placenta previa.

### COMPARISON OF PREVIOUS SECTIONS AND PLACENTAL PREVIA WITH PREVIOUS STUDIES:

In the present study women with one previous Caesarean section constituted the majority accounting for 48% (48 cases) and those with two and three previous Caesarean sections accounted for 19% (19 cases) and 1% (1 case), 32% (32 cases) of the pregnant women had no prior surgeries. In **Grobman et al**<sup>7</sup> study risk of 0, 1 and 2 or more sections were 56%, 29% and 14% respectively. In **Oppenheimers**<sup>8</sup> study risk of placenta previa for 0, 1 and 2 or more sections 35%, 25% and 40%. In **Hershkowitz et al**<sup>9</sup> study the risk of placenta previa for 0, 1 and 2 or more sections were 31%, 10% and 59%.

### COMPARISON OF MEAN GESTATIONAL AGE AT DELIVERY WITH PREVIOUS STUDIES:

Mean gestational age at delivery in the present study is 35.9±2.4 weeks. In the study by **Robinson and Grobman**<sup>10</sup> mean gestational age at delivery was 34 wks and in the study by **Deborah A wing et al**<sup>11</sup> the mean gestational age at delivery is 34±2.4.

### COMPARISON OF DEGREE OF PLACENTA PREVIA WITH OTHER STUDIES

According to our study 73% of women are with major degree of placenta previa similar to other studies. In the study by **Chi.P.Dola et al**<sup>12</sup> major degree placenta previa percentage is 60.7%.

### COMPARISON OF INVASIVENESS OF PLACENTA PREVIA WITH OTHER STUDIES:

According to our study 14% of cases with major degree of placenta previa had invasion (adherent placenta), which is similar to **Dong gyu jong et al**<sup>13</sup> study that is 13.4%. Other studies by **Usta et al**<sup>14</sup> and **Chi.p.dola et al** invasion is found in 8.9% and 9.1% respectively.

### COMPARISON OF MODE OF DELIVERY WITH OTHER STUDIES:

In the present study 43% cases delivered by elective caesarean section and 49% delivered by emergency caesarean section and 9% cases underwent Caesarean hysterectomy. In a study done by **Moustafa M. Zaitoun**<sup>15</sup>, emergency caesarean section rate was 51%, 43% cases had elective caesarean section and 6% cases had Caesarean hysterectomy. In **Joan MG crane**<sup>16</sup> study the Caesarean hysterectomy rate was 5.2% which is near to the present study.

In our study antepartum haemorrhage (APH), post partum haemorrhage (PPH), shock and sepsis is observed in 54%, 21%, 9%, 8% of cases respectively and massive blood transfusions (MBT) were given in 3% of cases, which are similar to **Joan MG crane**<sup>16</sup> study in that APH, PPH, shock, sepsis rates were 67.8%, 24%, 5.6%, 9.24% and massive transfusion was done in 3% cases. **Kollamann et al**<sup>17</sup> APH- 42.3% and PPH-7.1% were reported which is lower than the present study. In the present study Caesarean hysterectomy rate is 9% and conservative surgery is done in 18% of cases.

In present study, preterm deliveries, IUGR, LBW, low APGAR, NICU admission, IUD, Stillbirth, neonatal death, congenital malformations rates are 30%, 7%, 28%, 18%, 22%, 6%, 2%, 7%, 1% & these are similar to the study by **Sarojini et al**<sup>18</sup> in which above complications were preterm -31.7%, LBW-27.3%, low APGAR -12%, NICU admission 30%, perinatal deaths -21%, congenital malformations seen in 1.9% of cases In **Nagaardetal**<sup>19</sup> study preterm (50%) and IUGR(13%), NICU admissions (31%), perinatal deaths (19%) which are higher than the present study but LBW(29%) is similar to our study.

In the present study out of the 100 cases, 99 cases were discharged healthy and there was 1 death because of sepsis. In the studies by **Gorodeski et al**<sup>20</sup> and **Joan MGcrane et al**<sup>21</sup>, maternal death percentages were 2.1% and 2% respectively.

In the present study perinatal deaths are 15%, in that 7 babies died because of birth asphyxia, 3 babies due to respiratory distress, 2 babies due to neonatal sepsis, and congenital malformation (neural tube defect) was the cause of death in 1 baby. In the studies by **Gorodeski et al**<sup>20</sup>, **Joan MG crane et al**<sup>21</sup>, the perinatal death percentages were 14%, 22% respectively.

## VI. Conclusion

Managing a case of placenta previa during pregnancy poses a great challenge to every obstetrician in present day obstetrics due its increased risk of maternal and perinatal complication. Thus good antenatal care including more frequent antenatal check-ups, correction of anemia during antenatal period, anticipating the complications in consultation with senior obstetrician, educating the patients regarding the complications like prematurity, need for blood transfusions and its products and rarely hysterectomy and taking the paediatrician help will definitely reduce the associated perinatal complications.

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