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Fetomaternal Outcome and Risk Factors in Placenta Previa: Descriptive Cross Sectional Study in Bankura Sammilani Medical College and Hospital

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ABSTRACT
Antepartum haemorrhage is one of the important causes of perinatal mortality and morbidity in India. The increased risk of perinatal morbidity and mortality in placenta praevia is due to preterm birth, low birth weight, birth asphyxia and neonatal sepsis. The study was conducted to study incidence, risk factors associated with placenta previa and to assess the feto-maternal outcome of placenta previa. It was a descriptive cross-sectional study. This study was conducted in Bankura Sammilani Medical College, Bankura, West Bengal from February 2020 to July 2021. This study was conducted among 92 pregnant women who are diagnosed as a case of placenta previa or operated cases of placenta previa. Pregnant women who were fulfilling the inclusion and exclusion criteria were included in this study. Statistical data were analysed by using Microsoft Excel and SPSS V.20 software. Study shows that mean age was 25.30±3.60 years, mean GA was 33.74±SD 2.48 weeks. Study shows that 10 (10.87%) were 4th gravidae mother. It shows that 68 (74%) didn't have any history of previous caesarean section. Study shows that 42 (46%) have used 2 units blood, 16 (17%) have used 3 or more units of blood transusion. This study shows that 75 (81.5%) have live baby, 17 (18.5%) have still born baby and 31 (33%) newborns were admitted at NICU. Study shows that 44 (47.8%) newborn were healthy. Whereas, 5 (5.4%) newborn have been suffered from RDS and 26 (28.3%) have LBW. Placenta previa accounts approximately 0.5% of all deliveries but still remains major cause of maternal and perinatal morbidity and mortality. As the maternal and perinatal morbidity and mortality due to placenta previa is preventable, efforts should be made to bring down these rates. Along with the development of neonatal intensive care unit appears to have great contribution to the dramatic reduction in the perinatal complications in placenta previa.

INTRODUCTION

Placenta praevia is the localisation of a placenta in the lower segment of uterus, over or near the internal cervical os[1]. The reported incidence for placenta praevia is 1 case per 300-400 deliveries[2]. Antepartum haemorrhage complicates 3-5% of pregnancies and is a leading cause of perinatal and maternal mortality worldwide[3]. Risk factors include high parity, advancing maternal age, previous caesarean section and uterine surgery[4]. Antepartum haemorrhage is one of the important causes of perinatal mortality and morbidity in India[5].

The prevalence of placenta praevia has been rising in parallel with the increasing rate of caesarean delivery and it has become a serious public health problem worldwide[6,7].

Ante partum haemorrhage is defined as bleeding from or into the genital tract after 28 weeks of pregnancy and before delivery of the baby[8]. Antepartum haemorrhage is the most dangerous and devastating group of obstetric haemorrhage. Placenta Previa contributes 1/5th of the cases of antepartum haemorrhage. Placenta previa overall prevalence rate was 4 per every 1000 births. It is a major cause of maternal morbidity and mortality because of its associated massive antepartum (9 times risk) and intra partum haemorrhage (8 times risk)[1]. Managing a case of placenta previa during pregnancy poses a great challenge to every Obstetrician in present day Obstetrics due to its increased risk of maternal and perinatal complications. This catastrophic complication not only poses a risk to the fetus but also endangers the mother's life. Developed countries have a near zero maternal mortality rate for placenta previa but even with today's better medical facilities and awareness India lags way behind.

Placenta previa involves bleeding from placental site which is located in the lower uterine segment either partially or completely and as the lower uterine segment stretches near term or in labour the associated bleeding is inevitable.

The aetiology of placenta previa remains largely obscure but several clinical and epidemiological studies have observed the increased occurrence of placenta previa among women with previous history of abortion or Caesarean section, advanced maternal age, multiparity, male foetus, multiple pregnancy, smoking, cocaine abuse, poor socioeconomic status, uterine and placental pathology, ART etc.

Diagnosis can be confirmed by TAS, TVS. Ultra sonography offers high degree of diagnostic accuracy in placenta previa by confirming placental positioning, foetal lie, foetal well being. So it is very important to recognize placenta previa early and transport them to the major referral hospital, thereby decreasing the maternal and foetal morbidity and mortality.

Maternal complications includes ante partum and postpartum haemorrhage, shock, retained placenta, preterm delivery. Placenta in lower segment obstructs engagement of head necessiating higher rates of caesarean sections, peripartum hysterectomies and need of skillful surgeries like bilateral uterine arteries ligation / bilateral internal iliac arteries ligation, B lynch suture and its modifications[9]. Bleeding associated with placenta previa leads to foetal complications like hypoxia, intra uterine growth retardation, low birth weight, intrauterine fetal death, congenital malformations, birth asphyxia, still born, NICU admissions.

Most studies done in this institution on this subject were conducted about a span of decade ago. So, we were interested in knowing whether we are any better position in managing this obstetric emergency; so as to achieve our ultimate goal of healthy mother and healthy baby at the end of every pregnancy.

Objectives of study:

- To study incidence and risk factors and enumerate etio-pathological factors associated with placenta previa
- To assess the feto-maternal outcome f placenta previa

MATERIALS AND METHODS

It was a descriptive cross-sectional study. This study was conducted in labour ward, antenatal ward, post-natal ward in Bankura Sammilani Medical College within a time frame of about 18 months i.e., February 2020 to July 2021, after acceptance of synopsis.

This study was conducted among pregnant women who are diagnosed as a case of placenta previa or operated cases of placenta previa. Pregnant women who were fulfilling the inclusion and exclusion criteria were included in this study. Diagnosis of placenta previa was done at any time i.e., at the time of performing an ultra sonography with or without 2nd trimester per vaginal bleeding or at the time of per vaginal examining or at the time of caesarean section. Pregnant women with multiple pregnancy, pregnancy before 28 weeks and causes of ante partum haemorrhage other than placenta previa and those who did not give consent for study were excluded from this study.

The sample size for the proposed study was estimated based on the formula used for cross sectional study i.e:

$$N = \frac{Z^2pq}{L^2}$$

where, Z is 1.96 at 95% confidence interval. p is Prevalence of outcome of interest, here it is Postpartum Haemorrhage as stated by previous

researchers, it is 42.2% q is compliment of p = 100-p. L is Allowable error around the reported prevalence and here it is assumed to be 10 (absolute). So, finally:

$$N = \frac{1.96 \times 1.96 \times 42.2 \times 57.8}{10 \times 10} = 84$$

Considering 10% non-respondent rate the revised sample size would be 84+10% of 84≈92 (Approximately).

Data collection included the risk factors, operative events, ante partum and intra partum blood loss, post-operative condition of the patient, post-operative blood transfusion, fetal outcome. By studying all the above mentioned factors we analyzed the incidence of risk factors and obstetric outcome of placenta previa.

Statistical analysis: The data was tabulated in Microsoft Excel software and analysed with SPSS V.20 software. p<0.05 was considered as significant.

Ethical considerations: Study was initiated after obtaining the informed consents from the participants and ethical clearance from the institutional ethical committee.

RESULTS

Study shows that 46 (50%) out of 92 placenta previa cases belongs to 26-30 years. of age group. (Mean age -25.30 years, SD 3.60 years) (Fig. 1 and Table 1).

In the study 55 (60%) out of 92 belongs to 30-34 weeks. of gestational age group. (Mean GA 33.74 weeks, SD 2.48 weeks). Study shows that 10 (10.87%) were 4th gravidae mother and 68 (74%) out of 92 didn't have any history of previous caesarean section. Whereas only 3 (3%) mothers had history of previous caesarean section (Fig. 2 and Table 1).

Study shows that 53 (58%) pregnant mothers had per vaginal bleeding and 71 (77%) had BP within normal range.

Table 1: Parameters of placenta previa

Parameters	No. of cases (N =92)	Percentage
Age		
≤20 years	18	20
21-25 years	23	25 Mean age: 25.3 years, SD: 3.60
26-30 years	46	50
31-35 years	05	05
Gestational age-(weeks)		
28-30	03	03
30-34	55	60 Mean GA: 33.74 weeks, SD: 2.48
35-39	34	37
Gravidae		
G1	10	11
G2	36	39
G3	24	26
G4	34	24
Past H/O abortion		
No	15	16.3
1	31	33.7
2	46	50
Past H/O caesarean section		
No	68	74
1	21	23
2	03	03
H/O per vaginal bleeding		
No	39	42
Yes	53	58
Post operative period		
Unevent full	40	43.47
PPH	36	39.13
Shock	07	07.60
Wound infection	09	09.78
Blood Transfusion		
One unit	34	37
Two units	42	46
Three or more	16	17
Birth weight (kg)		
<1.5	03	03
1.5-2.5	23	25
>2.5	66	72
NICU admission		
Yes	31	34
No	61	66
Fetal complications		
Healthy baby	44	47.8
LBW	26	28.3
Still born	17	18.5
RDS	05	5.4

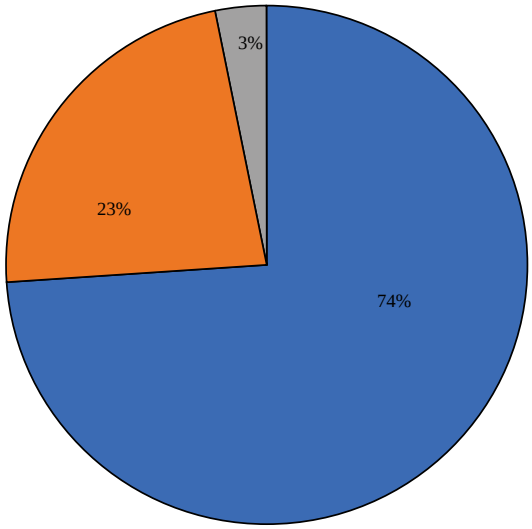

Fig. 1: Distribution of pregnant mother with placenta previa according to age

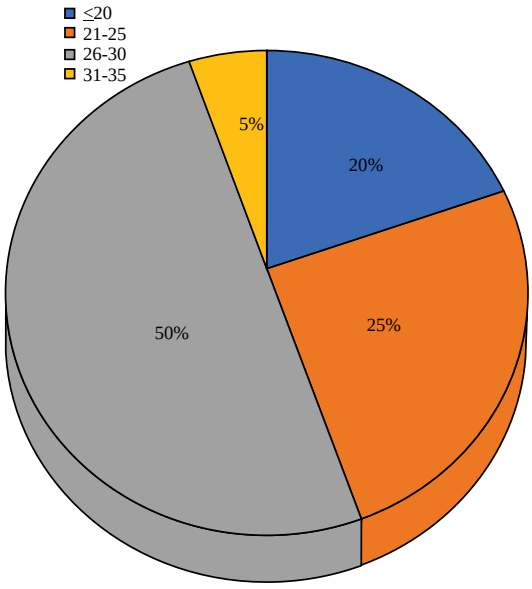

Fig. 2: Distribution of pregnant mother with placenta previa according to history of previous caesarean section

Table 2: Distribution of pregnant mother with placenta previa according to concurrent procedures (N = 92)

Concurrent procedure	No of cases	Percentages
Caesarean section	55	59.80
CS followed by uterine artery ligation	18	19.60
CS followed by Internal Iliac ligation	5	5.30
CS followed by subtotal hysterectomy	4	4.40
CS followed by uterine balloon amponade	4	4.40
CS followed by UAL+B lynch sutures	2	2.18
CS followed by UAL+total hysterectomy	1	1.08
CS followed by UAL+B/L tubectomy	1	1.08
CS followed by B/L tubectomy	1	1.08
CS followed by UAL+CHO square sutures	1	1.08
Total	92	100.00

Table 2 and Fig. 3 reflected that most of the pregnant mother with placenta previa 55 (59.8%) have underwent CS, w hereas 1 (1.08%) mother have underwent CS followed by total abdominal hysterectomy, 1(1.08%) mother have underwent CS followed by UAL +B/L tubectomy, 1 (1.08%) mother have underwent CS followed by B/L tubectomy, 1 (1.08%) mother have underwent CS followed by UAL +Cho square sutures, 5 (5.3%) mothers underwent CS followed by internal iliac artery ligation, 18 (19.6%) mothers underwent CS followed by uterine artery ligation, 4(4.4%) mothers underwent CS followed by uterine ballon tamponade, 4(4.4%) mothers underwent CS followed by subtotal hysterectomy and 2 (2.18%) mothers underwent CS followed by uterine artery ligation +B-Lynch Sutures.

Study shows that 42 (46 %) have used 2 units blood, 16 (17 %) mothers have used 3 or more units of blood (Fig. 4 and Table 1).

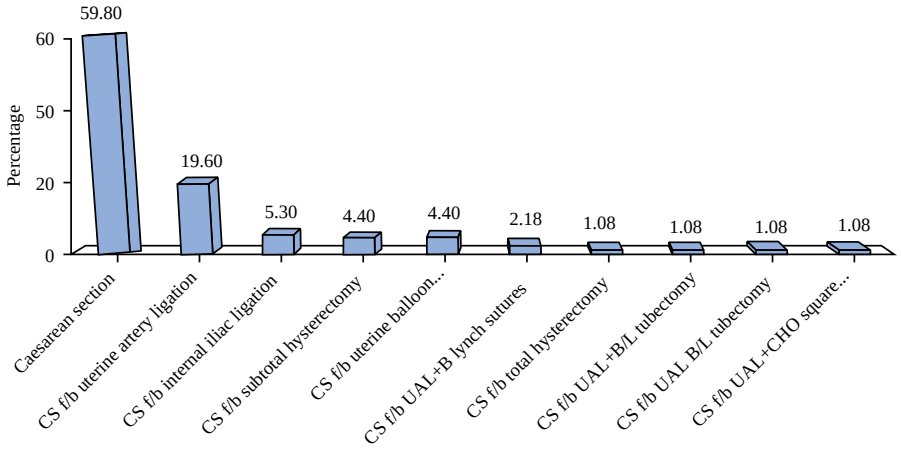

Fig 3: Distribution of pregnant mother with placenta previa according to concurrent procedure

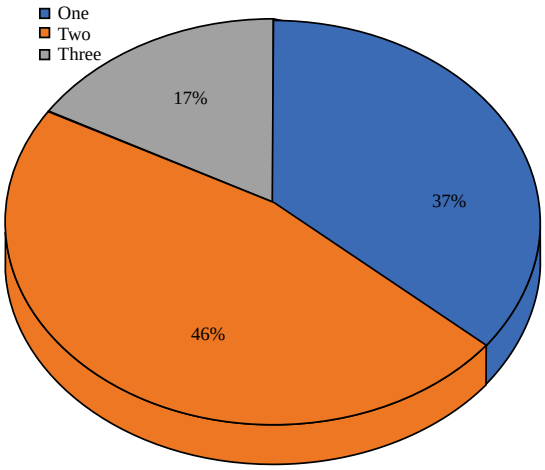

Fig. 4: Distribution of pregnant mother with placenta previa according to number of units of blood transfusion

This study shows that 75 (81.5%) have live baby, 17 (18.5%) have still born baby and 31 (33%) newborns were admitted at NICU. Study shows that 44 (47.8%) newborns were healthy. Whereas 5 (5.4%) newborns have been suffered from RDS and 26 (28.3%) have LBW (Table 1).

Figure 5 shows that 34% newborns were admitted in NICU.

DISCUSSIONS

There has been substantial reduction in maternal death in placenta previa throughout globe because of early diagnosis even prior to the bleeding, omission of internal examination outside the hospital, free availability of blood transfusion facilities, wider use of caesarean section with expert anaesthesiology, skill and judgement. All these factors reduced maternal death of placenta previa <1% or even to zero in some centers.

The incidence of placenta previa is approximately 0.3% of all pregnancies[10-12]. The incidence decreased dramatically by about from 0.3-0.05%.

In our study we found the incidence of placenta previa is about 0.05%. and incidence of maternal mortality was nil.

Six month study of Ashraf and Sabir[13] with 4658 pregnant women in Willingdon hospital, Lahore shown that mean age of patients with placenta previa were 33.20±5.03 years and mean gestational age was 35.38±3.00 weeks. Our study shows mean age: 25.30±3.6 years and mean gestational age: 33.74±2.48 weeks.

In a prospective study of Shah *et al*.[14], 50 cases carried out to study maternal and perinatal outcome in case of placenta previa in tertiary care hospital shown that 72% of cases of placenta previa were multi gravidae. Our study shows that 39 % pregnant women with placenta previa were of 2nd gravidae and 24% multi gravidae tend to have placenta previa.

In a prospective study of Shah *et al*.[14], 50 cases carried out to study maternal and perinatal outcome in case of placenta previa in tertiary care hospital discussed that previous abortion increases the risk of placenta previa along with multi parity and previous

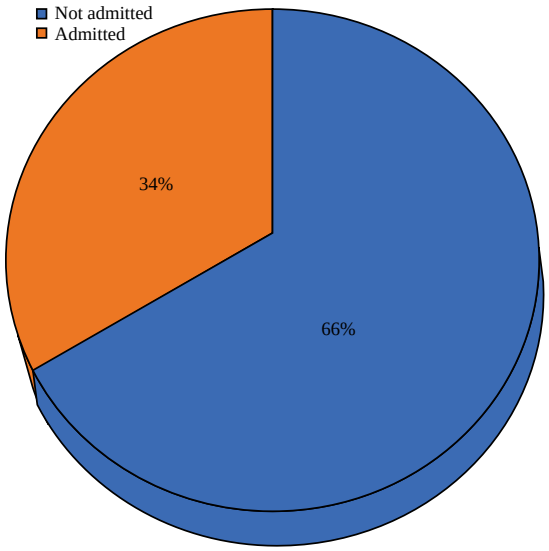

Fig. 5: Distribution of newborn to admission at NICU

C-section. Our study also shows that 50% of cases were with history of 2 previous abortions and 33.7% were with history of 1 previous abortion and 16.3% were with no history of any abortion.

Seven month cross sectional study of Shabnum *et al*.[15] conducted with 100 pregnant women in tertiary care hospital shown that there is an association of 53% cases of placenta previa in those who had 2 previous caesarean section. Our study shows incidence of placenta previa with two previous caesarean section was 3%, one previous caesarean section was 23% and no previous caesarean section was 74%.

Seven month cross sectional study conducted with 100 pregnant women in tertiary care hospital shown that majority of cases were presented with vaginal bleeding which is painless[15]. The findings almost matches with our study where 58% cases presented with painless vaginal bleeding. A 6 months' prospective descriptive study conducted at Omdurman Maternity Hospital, Sudan, which determines the maternal and fetal outcomes[16]. It shown that along with c section there were some intra operative interventions done to control bleeding. They were multiple haemostatic sutures in 34.5% cases, uterine tamponade in 20.7% cases, uterine artery ligation in 12.6% cases, hysterectomy rate was 23%[16]. Our study shows 59.8% cases doesn't require any intra operative intervention. Among the cases of intra operative interventions-3.26% required multiple hemostatic sutures (B Lynch, Cho Square), 4.4% uterine tamponade, 19.6% uterine artery ligation, 5.48% required hysterectomies, other procedures like Internal iliac artery ligation was required in 5.3% cases.

A 6 month prospective descriptive study of 52 singleton pregnancies with placenta previa conducted at Sohag university hospital Egypt shown that out of all cases of women with placenta previa 26.4% had placenta accreta of which 15.1% underwent obstetric hysterectomy [17]. In our study we found 5.48% cases of morbidly adherent placenta out of which all cases underwent obstetric hysterectomy.

Seven month cross sectional study conducted with 100 pregnant women in tertiary care hospital shown that out of 100 cases 58% cases had postpartum haemorrhage, 52% required blood transfusions and 11% were in shock[15]. In our study 39.13% cases had postpartum hemorrhage, almost all cases required blood transfusions but vary in number like 37% received one unit, 46% received 2 units and 17% received 3 or >3 units of blood transfusion and 5.43% were in shock.

We observed in our study, mainly intra operative and postoperative complications of wide range and variety. Postoperative wound infection observed in 9.78%, post-partum hemorrhage in 39.13% of cases and fortunately we encountered 43.47% cases with uneventful post-operative period. We elaborated intra operative events in this study to bring awareness regarding types of bleeding and how can the bleeding be noticed and intervened in cases of placenta previa. A 1 year cross sectional study of 100 patients of placenta shown that 84% of neonates were born live and 16% were dead, which almost matches with our study where 81.5% of neonates were live and 18.5% were dead[18].

A 6 months' prospective descriptive study conducted at Omdurman Maternity Hospital, Sudan, shown that of all deliveries 38% of neonates were admitted in NICU[16]. The findings matches with our study which shows 34% neonates got admitted in NICU, out of which 28.3% were with Low birth weight and 5.4% with respiratory distress syndrome.

CONCLUSION

Placenta previa accounts approximately 0.5% of all deliveries but still remains major cause of maternal and perinatal morbidity and mortality. As the maternal and perinatal morbidity and mortality due to placenta previa is preventable, efforts should be made to bring down these rates. A good antenatal care, early detection of placenta previa by ultra sonography, omission of internal examination outside the hospital, careful conservative management including the aggressive use of blood transfusion in cases of moderate to severe bleeding and timely intervention with wider use of caesarean section with expert anesthesiology, skill, judgment and team approach is the key to success. Along with the development of neonatal intensive care unit appears to have great contribution to the dramatic reduction in the perinatal complications in placenta previa.

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