International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2021; 5(3): 306-309
Received: 19-03-2021
Accepted: 21-04-2021

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Study of maternal and perinatal outcome in placenta previa at a tertiary care centre

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DOI: https://doi.org/10.33545/gynae.2021.v5.i3e.940

Abstract
Context: Placenta previa complicates 0.3-0.5% of all pregnancies and is a leading cause of third trimester haemorrhage. Placenta previa is associated with high maternal and perinatal morbidity and mortality. The aim of our study was to know the incidence, demographic factors, risk factors, maternal and perinatal outcome in women with placenta previa.
Aims
1. Estimate the incidence of placenta previa
2. To study the demographic profile, risk factors, maternal and perinatal outcome in women with placenta previa

Settings and design: Observational study
Material and Methods: This is a prospective observational study done in KIMS Hubli, a tertiary referral hospital from June 2017-November 2019. All cases of placenta previa after 24 weeks of gestation were included in the study. The demography, risk factors, maternal and perinatal outcome was studied.
Statistical analysis used: IBM SPSS version 22 was used for statistical analysis.
Results: The incidence of placenta previa was 0.7%. Incidence of placenta previa was highest in the age group 20-29 years (83.6%) and 42.6% were multiparous. 35 women had PPH. 13 women had to undergo hysterectomy. 4 for placenta accreta and 9 for atonic PPH (Post-Partum Haemorrhage) for failed medical and conservative surgical procedures. Perinatal mortality was 14.85% with 12 still birth and 18 early neonatal deaths. Perinatal morbidity in terms of admission to NICU was seen in 26.7% (54 babies). There were no maternal deaths.
Conclusion: In our study placenta previa was more common in the age group 20-30 years and in multi gravida. 85% of cases underwent caesarean delivery. Management of Placenta previa is associated with increase in incidence of maternal and perinatal complications. Therefore, all cases of placenta previa should be managed in a tertiary care centre to reduce maternal and perinatal complications.

Keywords: placenta previa, perinatal mortality, perinatal morbidity, maternal morbidity

Introduction

Antepartum haemorrhage is an important contributor to maternal mortality and morbidity worldwide. Placenta previa accounts to one third of cases of APH (Antepartum Haemorrhage) [1]. Placenta previa is a condition in which the placenta is implanted in the lower uterine segment partially or completely beyond 20 weeks of gestation. The incidence of placenta previa is around 1 in 300 deliveries [2]. The incidence of placenta previa has been increasing over the years. This could be in part due to increased incidence of certain risk factors associated with the condition and partly due to increased antenatal diagnosis at 18 to 20 weeks by USG (ultrasonography) which can detect even minor degree of placenta previa.

Risk factors for placenta previa are advancing maternal age, multiparity, multiple gestation, ART (Assisted Reproductive Techniques), previous uterine scar due to caesarean, myomectomy, dilation and curettage, congenital uterine abnormality, intrauterine adhesions, placenta abnormalities like battledore placenta or succenturiate lobe and previous placenta previa [3, 4].

Prior caesarean delivery increases the chances of placenta previa with the incidence being 1.9% for 2 prior caesarean and increasing to 4.1% with 3 or more prior caesarean. Morbidly adherent placenta (placenta accreta spectrum) is common with increase in number of LSCS (Lower Segment Caesarean Section) and is associated with massive intrapartum and postpartum haemorrhage culminating in peripartum hysterectomy, thus contributing to increased maternal morbidity and mortality. Placenta previa also contributes to major cause of perinatal mortality and morbidity mainly due to preterm delivery and its associated complications.

The aim of the study was to

1. Estimate the incidence of placenta previa
2. To study the demographic profile, risk factors, maternal and perinatal outcome in women with placenta previa.

Materials and Methods

An observational prospective study was conducted in department of obstetrics and Gynaecology in Karnataka Institute of Medical Sciences, Hubli, a tertiary referral hospital from June 2017 to November 2019. All cases of placenta previa either diagnosed by USG or clinically after 24 weeks of gestation were included in the study. Patients were subjected to complete history taking, general and systematic examination with relevant laboratory and USG examination. An analysis of maternal and perinatal mortality and morbidity was done. Both mother and baby were followed up till discharge from the hospital.

Statistics

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency and proportion for categorical variables.

Categorical outcomes were compared between study groups using Chi square test /Fisher's Exact test (If the overall sample size was < 20 or if the expected number in any one of the cells is < 5, Fisher's exact test was used.)

P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis.

Results and Observations

Total number of patients delivered during our study period were 25,415. Out of them 202 cases were diagnosed as placenta previa, thus the incidence being 0.794%. Out of 202 cases of placenta previa, 11 cases were given expectant management and were lost for follow-up.

Table 1: Descriptive analysis of parameters in study population. (N=202)

Parameter	Summary
Age in Years (Mean ± SD)	25.62 ± 3.91
Parity (N%)	
Primi	43 (21.29%)
Gravida 2	74 (36.63%)
Gravida 3	59 (29.21%)
Gravida 4 and more	26 (12.87)
History of antepartum haemorrhage (N%)	137 (67.82%)
History of previous Pregnancy (N%)	
1 LSCS (Lower Segment Cesarean section)	44 (21.78%)
2 LSCS	15 (7.42%)
2 LSCS&D AND C	1 (0.5%)
Primi gravida (Unscarred) (No LSCS / D& C)	53 (26.24%)
Previous vaginal delivery (No LSCS / D& C)	87 (43.1%)
Previous vaginal delivery and D AND C	2 (0.99%)
Gest. age (weeks) (Mean ± SD)	35.81 ± 3.58
Hb (g%)	
<5gm/%	3 (1.49%)
6 to 8 gm/%	34 (16.83%)
9 to 11gm/%	101 (50%)
>11 gm/%	64 (31.68%)
Hb at Admissiongm/% (Mean ± SD)	10.3 ± 1.9
Type of Placenta Previa on USG (N%)	
I	71 (35.15%)
IIA	37 (18.32%)
IIB	17 (8.42%)
III	23 (11.39%)
IV	54 (26.73%)
Outcome in present pregnancy (N%)	
LSCS	172 (85%)
Undelivered / lost to follow up	12 (5.94%)
Vaginal	18 (8.9%)

The mean age (in years) was 25.62 ± 3.91 years, majority 29.21% of participants had Obstetric score of gravida 3, 67.82% participants had history of antepartum haemorrhage. With regards to history of previous pregnancy most of the 43.1% participants had previous vaginal delivery (no LSCS / D&C) and only 0.5% participants had 2 LSCS/ D AND C (Previous LSCS / D&C). The mean gestational age (in weeks) was 35.81 ± 3.58. In half of the participants 50% HB level was between 9 to 11 (gm %). 35.15% of participants had type I placenta previa. majority 85.64% had LSCS in the present pregnancy. (table 1)

Table 2: Descriptive analysis of Intra operative complications in study population. (N=202)

Intra operative complications	Summary
Adhesions	7 (3.47%)
Accreta	25 (12.38%)
Atonic PPH (Post-Partum Haemorrhage) requiring medical management	70 (34.65%)
Placental bed bleed	35 (17.33%)
Pressure sutures	14 (6.93%)

Uterine a ligation	25 (12.38%)
B lynch suture	5 (2.48%)
Internal iliac ligation	12 (5.94%)
Subtotal hysterectomy	3 (1.49%)
Subtotal hysterectomy with accreta	3 (1.49%)
Subtotal hysterectomy with PPH	7 (3.47%)
Total hysterectomy with accreta	1 (0.5%)
Total hysterectomy with PPH	2 (0.99%)
Foley's tamponade	15 (7.43%)
Bladder injury+ repair	7 (3.47%)

In intra operative complications, majority 34.65% had Atonic PPH requiring medical management, 17.33% had placental bed bleed, 12.38% participants had uterine artery ligation, 12.38% participants had accreted, 7.43% participants had foley's tamponade. (table 2)

Table 3: Descriptive analysis of post-operative complications in study population. (N=202)

Post-operative Complications	Summary
Hypotension	2 (0.99%)
PPH requiring Paracervical clamps	10 (4.95%)
ICU (Intensive Care Unit) admission	19 (9.41%)
Post op fever	2 (0.99%)
LRTI (Lower Respiratory Tract Infection)	4 (1.98%)
Wound infection	4 (1.98%)
Burst abdomen	1 (0.5%)
AKI (Acute Kidney Injury) +dialysis	1 (0.5%)

Among the study population, majority of the people had, 9.41% were admitted in ICU post-operatively, 4.95% required PPH paracervical clamps. (table 3)

Table 4: Descriptive analysis of neonatal parameters in study population. (N=202)

Neonatal parameter	Summary
NICU(Neonatal Intensive Care Unit) admission (N%)	
NICU admission	54 (26.7%)
No NICU admission	148 (73.3%)
Perinatal Deaths (MSB+FSB+NICU) (N%)	30 (14.85%)
Cause for NICU admission (N=54) (N%)	
Low birth weight	17 (31.48%)
Respiratory syndrome	16 (29.63%)
Low birth weight, Respiratory syndrome	13 (24.07%)
Duration of NICU (N=54) (Mean ± SD)	8.44 ± 6.86
Perinatal Mortality (N=191) (N%)	
Low birth weight	17 (31.48%)
Respiratory syndrome	16 (29.63%)
Low birth weight, Respiratory syndrome	13 (24.07%)
Jaundice	4 (7.41%)
Chorioamnionitis	2 (3.7%)
GDM (Gestational Diabetes Mellitus)	1 (1.85%)
TOF (Tetralogy of Fallot)	1 (1.85%)
Hospital Stay (Mean ± SD)	10.66 ± 7.24

Among neonatal parameters, 26.7% neonates were admitted in NICU. perinatal mortality was 14.85%. The majority 31.48% cause for NICU admission was low birth weight. Mean duration of stay NICU was 8.44 ± 6.86 days. The major causes of perinatal mortality were low birth weight 31.48% followed by respiratory syndrome 29.63%. The mean duration of hospital stay was 10.66 ± 7.24 days. (table 4) MSB- Macerated Still Birth, FSB- Fresh Still Birth

Table 5: Descriptive analysis of requirement of component therapy in study population. (N=202)

Requirement of component therapy	Summary
Blood	
No requirement of CRT	74 (36.63%)
Up to 2	106 (52.5%)
3 to 5	19 (9.4%)
Massive blood transfusions (>5)	3 (1.4%)
FFP	
Up to 2	11 (5.4%)
3 to 5	5 (2.5%)
No FFP	186 (92.1%)
Platelet	
Up to 2	3 (1.5%)
>3	2 (0.99%)
No	197 (97.52%)
Immediate management	
Active	190 (94.06%)
Conservative	12 (5.94%)

With regards to transfusion requirement, 94.06% needed immediate active management. majority 52.5% needed up to 2 CRT while 1.4% required massive blood transfusion (>5). 11 5.4% participants required FFP units up to 2 while 2.5% required 3 to 5 FFP. 1.5% participants required up to 2 platelet units and only 0.99% participants required more than 3 platelet units. (Table 5)

Discussion

Incidence of placenta previa in our study was 0.7%, which is similar in study by Sharma *et al* [5], Raziya *et al* [6]. The incidence of placenta previa was maximum in age group of 20-29 years that is 83.6%. Reddy *et al* [7] reported 73% incidence in 20-29 years age group. The incidence of placenta previa was 72.9 % in age group of 20-29 years in study by Shruthi *et al* [8].

Increasing parityis also a risk factor for placenta previa. In our study 78.7% were multigravida which is similar to study done by Faiz *et al* [9]. Most common type was Type I placenta previa with 71 (35.1%) cases followed by type IV in 54 (26.7%) cases which was similar to study by Rangaswamy M *et al* [10]. Type I placenta previa was 37.27% and type IV placenta previa was 20.9%.

In our study 104 (51.48%) cases were term gestation and 98 (49.2%) cases were preterm which is similar to the study by Rangaswamy M *et al* [10] in which 53.2% were preterm. In our study 44 women (21.7%) had previous 1 LSCS and 18 women (8.9%) had previous 2 LSCS and 2 women had previous D&C. In a study by Sarojini *et al* [11] 6.32% of women had one previous LSCS, 4.7% women had previous 2 LSCS and 7.5% women had prior abortion.

Previously scarred uterus is a significant risk factor for placenta previa. In a study done by Anant CV *et al* [9], multiparity, advanced age, previous abortion, previous LSCS, smoking, cocaine use and male fetus was associated with increased risk

factor for placenta previa. Among 202 women, 35(17.32%) had atonic PPH which is similar in study by Bhatt AD (12%) [12]. All cases of atonic PPH was managed medically initially. Conservative surgical procedures were tried with B- Lynch stitch (2.47%). Pressure sutures (6.93%), uterine artery ligation (12.37%) and Internal artery ligation (5.94%). 9 women (4.45%) had to undergo hysterectomy for PPH not adequately controlled by medical and conservative surgical procedure. 4 women (1.98%) also had to undergo hysterectomy in view of placenta accreta and uncontrolled bleeding, thus the incidence of hysterectomy in our study being 13 women (6.43%). All cases of accreta ending in hysterectomy occurred in previous LSCS patients. Bladder injury and repair was done in 7 women (3.46%) which was in a scarred uterus, thus LSCS playing an important risk factor in placenta previa.

However, there was no maternal mortality in our study in view of vigilant management and blood transfusions. Minor postpartum complications were encountered like postoperative febrile morbidity 1%, AKI (Acute Kidney Injury) in 0.5% and wound infection in 2%. In a study by Mc Shane *et al* (1985)the complications were hysterectomy 28.6%, urinary tract infection 28.6%, shock 14.3%.

Perinatal morbidity and mortality were significant in our study with mortality being 14.85% and NICU admission 26.7%. Perinatal mortality was higher in babies of birthweight <2.5 kg and Type IV placenta previa. Major burden of NICU admission was due to RDS (Respiratory Distress Syndrome) and LBW (Low Birth Weight) secondary to preterm birth which is similar to study by Harper LM [13], neonatal mortality was noted in 10.7%.

There has been a significant decrease in maternal mortality in placenta previa in recent years though much improvement has not been noted in perinatal morbidity and mortality.

Conclusion

In our study placenta previa was more common in the age group 20-30 years and in multi gravida. 85% of cases underwent caesarean delivery. Management of Placenta previa is associated with increase in incidence of maternal and perinatal complications. Therefore, all cases of placenta previa should be managed in a tertiary care centre to reduce maternal and perinatal complications.

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