Chattagram Maa-O-Shishu Hospital Medical College Journal
Volume 24, Issue 1, January 2025

Original Article

Fetomaternal Outcomes in Placenta Previa with and without Coverage of a Uterine Scar in a Tertiary Hospital in Chattogram, Bangladesh

Nahid Sultana[1*]
Shahnaj Jahan Chawdhury[1]
Fahmida Shirin[1]
Munawar Sultana[1]

[1]Department of Obstetrics & Gynecology
Chittagong Medical College Hospital
Chattogram, Bangladesh.

Abstract

Background: *Placenta Previa (PP) is a significant cause of maternal and fetal morbidity and mortality, especially in patients with scared uterus. This study aimed to compare the maternal and neonatal outcomes of PP with and without coverage of a uterine scar in a tertiary hospital in Chattogram, Bangladesh.*

Materials and methods: *A prospective observational study was conducted from January 2024 to June 2024 in Chittagong Medical College Hospital. Consecutively admitted 38 singleton pregnancies with PP with a history of Cesarean Section (CS) or myomectomy were included and divided into two groups: the PP with coverage of a uterine scar group (PPCS group) and the PP without coverage of a uterine group (Non-PPCS group). Maternal and neonatal outcomes between two groups were compared by statistical methods.*

Results: *There were 38 patients with with PP on scared uterus and were further classified into two groups: PPCS (n=23) and Non-PPCS (n=18). Both the groups were comparable in terms of their baseline sociodemographic and clinical characteristics. Placenta accreta spectrum was (95.7% vs. 20%.0, p<0.001), hemorrgage (91.3% vs. 46.7%, p=0.006), urinary bladder injury (26.7% vs. 0%, p=0.031), peripartum hysterectomy (65.2% vs. 6.7%, p=0.001), ligation of uterine artery (56.5% vs. 93.3%, p=0.014) and use of uterine compression suture (30.4% vs. 66.7%, p=0.028) had a significant difference between PPCS group and Non-PPCS group. Neonatal outcomes in terms of prematurity, low birth weight, low APGAR score, need for NICU admission, and perinatal death were similar between two groups.*

Conclusion: *The PPCS group had poorer maternal outcomes than the Non-PPCS group. To counsel their patients appropriately, healthcare providers should be aware of possible complications of placenta previa lying over the uterine scar.*

Key words: Placenta previa; Pregnancy outcomes; Uterine scar.

INTRODUCTION

Although placental pathology is relatively rare, escalation in associated risk factors – including the history of CS - portends an increased incidence of PP-related morbidity and mortality. Between 1990 and 2023, the global CS rate increased from around 7% to 21%, surpassing the ideal acceptable CS rate of around 10%–15%, according to the WHO.[1,2] These trends are projected to continue increasing over this decade, where unmet needs and overuse are expected to coexist with the projected global rate of 29% by 2030.[2] Alarmingly, the CS rate is increasing at an abnormal rate in Bangladesh. Compared to 2017, the incidence of CS in 2022 increased from 34% to 45%.[3] As the rate of CS increases, the rate of PP, especially PP with CS, will most likely increase as well in Bangladesh in the near future.

*Correspondence to:
Dr. Nahid Sultana
Senior Consultant
Department of Obstetrics & Gynecology
Chittagong Medical College Hospital
Chattogram, Bangladesh.
Mobile : +88 01711 01 17 89
Email : nahidsultana.hira@gmail.com

Date of Submission : 25.10.2024
Date of Acceptance : 11.12.2024

www.banglajol.info/index.php/CMOSHMCJ

Many studies have reported PP's clinical outcomes and associated risk factors, and only a few reports have focused on comparing PPCS and non-PPCS.[4-8] Studies found that the PPCS group, compared to the Non-PPCS group, had poorer maternal and neonatal outcomes for intraoperative blood loss, postpartum haemorrhage, and higher hospitalization expenses, even after being grouped according to whether they were complicated by Placenta Accreta Spectrum Disorders (PASD) and placenta position.[6-8] The awareness of the danger of pregnant women with PP before operation and giving more attention to antenatal care and delivery conducted by an expert obstetric team are vital measures to decrease the adverse maternal outcomes of pregnant women with PP.

Evidence about the risk of PPCS and its related complications in Bangladeshi women was limited.[8-10] Information about these conditions is important so that women with a specific type of PP can be appropriately counseled regarding their outcomes and clinical care providers can be appropriately prepared for their deliveries. So, we would like to investigate the difference in clinical profile and feto-maternal outcomes between women with PPCS and non-PPCS in a public tertiary hospital in the southeastern part of Bangladesh.

MATERIALS AND METHODS

A prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Chittagong Medical College Hospital (CMCH) Chattogram, Bangladesh from January 2024 to June 2024.After getting ethical approval from ethical review committee of Chittagong Medical College (Memo No. 59.22.0000.013.19.PG.2024.009/303) dated January 21, 2024, consecutive patients with PP after 28 weeks of gestation and who had previous CS or myomectomy and had delivery in the hospital were included. The diagnosis of placenta previa for this study was based on sonographic diagnosis during the third trimester at 28 weeks gestation or more. Furthermore the diagnosis was confirmed by direct inspection of placental location at the time of CS. Patients with second trimester bleeding due to other than PP, multiple pregnancies, or fetal malformation were excluded.

The patients were selected from antenatal clinic and labor ward of CMCH by careful history taking, clinical examination and necessary investigations. A structured data sheet was used to obtain sociodemographic and obstetric history. Transabdominal sonography was done for obstetrical reasons as well as for exact location of placenta. Patients were followed up till their in hospital postnatal period for assessing maternal and fetal outcomes.

PPCS was defined as when the placenta overlies a uterine scar that may or may not with accreta. Non-PPCS was defined as PP where placenta did not cover a uterine scar in the lower uterine segment. Placenta accreta spectrum was defined as the pathologic invasion of the placental trophoblasts to the myometrium and beyond. Placental positions were categorized as anterior, posterior, or and laterally positioned. Anterior placenta was a placenta dominantly attached to the anterior wall of the uterus and a posterior placenta was a placenta dominantly attached to the posterior wall of the uterus. The other placentas will be defined as ante-posterior or laterally positioned.

Statistical analyses were performed using SPSS Version 23.0. Categorical data were reported as numbers and percentages (%), and quantitative data were expressed as the means ± Standard Deviations (SD) or the median with upper quartileand lower quartile. Statistical significance was calculated using the Chi-square test or Fisher's exact test for differences in qualitative variables and the Mann–Whitney U-test or t-test for differences in quantitative variables. p values <0.05 were considered statistically significant.

RESULTS

The study included 38 cases of PP within the study period, of whom 23 (60.5%) had PPCS and 15 (39.5%) had non-PPCS. The baseline demographic and clinical characteristics of the groups are shown in Table I. There were no significant differences between the two groups in terms of their mean age, educational level, residential location, comorbid conditions, BMI, parity and gestational age.

Table I Baseline characteristics of the patients

Characteristics	PPCS (n=23)	Non-PPCS (n=15)	p value
Age, years	30.3±6.0	28.4±4.2	0.302*
Education			
No formal education	12 (52.2)	5 (33.3)	0.254†
Formal education	11 (47.8)	10 (66.7)	
Residence			
Rural	5 (21.7)	3 (20.0)	0.981†
Urban	8 (34.8)	5 (33.3)	
Semi-urban	10 (43.5)	7 (46.7)	
Antenatal check up			
Irregular	4 (17.4)	1 (6.7)	0.339†
Regular	19 (82.6)	14 (93.3)	
Comorbidity			
Absent	13 (56.5)	11 (73.3)	0.294†
Present	10 (43.5)	4 (26.7)	
BMI, kg/m^2	23.8±2.6	25.1±3.8	0.200†
Parity	3.61±1.44	3.13±1.06	0.279†
Last child birth, years	3.78±1.86	3.87±2.20	0.900†
Gestational age, weeks	34.48±2.92	36.00±1.69	0.077†

Data were expressed as frequency (%) or mean ±SD. †Chi-square test, *Independent sample t test.

The mean number of previous CS was higher in the PPCS group than in the non-PPCS group (2.13±0.92 vs 1.67±0.72). However, the difference failed to reach statistical significance (p=0.108). PPCS is significantly associated with a higher

proportion of total PAS (95.7% vs 20.0%, p<0.001) than Non-PPCS. The position of the placenta was an anterior wall in the entire PPCS group, while in the Non-PPCS group, 40% and 13.3% of patients had posterior and lateral/central placenta (Table II).

Table II PP related characteristics of the patients between groups

Characteristics	PPCS (n=23)	Non-PPCS (n=15)	p value
Type of uterine surgery			
Cesarean section	22 (95.7)	15 (100.0)	1.0*
Myomectomy	1 (4.3)	0 (0)	
No. of cesarean section	2.13±0.92	1.67±0.72	0.108†
Time of diagnosis			
During ANC	22 (95.7)	14 (93.3)	1.0*
During CS	1 (4.3)	1 (6.7)	
Position of PP			
Anterior	23 (100.0)	7 (46.7)	<0.001*
Posterior	0 (0)	6 (40.0)	
Lateral/Central	0 ()	2 (13.3)	
Placenta accreta spectrum			
Absent	1 (4.3)	12 (80.0)	<0.001*
Present	22 (95.7)	3 (20.0)	

Data were expressed as frequency (%) or mean ±SD. *Chi-square test, †Independent sample t test.

The PPCS group was associated with poor maternal outcomes for hemorrhage (91.3% vs. 46.7%, p=0.006), than the Non-PPCS group. More than half (52.2%) patients with PPCS required • 3 unit blood transfusion compared to 33.3% in the non-PPCS group, but the difference was not significant. Higher proportion of patients with PPCS had associated urinary bladder injury than the non-PPCS group (26.1% vs. 0%, p=0.031). Peripartum hysterectomy rate was 65.2% and 6.7%, in PPCS and non-PPCS group, respectively (p=0.001) (Table III).

Table III Comparison of maternal morbidity and mortality in PPCS and Non-PPCS patients

Characteristics	PPCS (n=23)	Non-PPCS (n=15)	p value
Hemorrhage	21 (91.3)	7 (46.7)	0.006‡
Shock	5 (21.7)	1 (6.7)	0.371‡
No. of blood transfusion			
One unit	7 (30.4)	4 (26.7)	0.282*
Two unit	4 (17.4)	6 (40.0)	
Three or more unit	12 (52.2)	5 (33.3)	
Bladder injury	6 (26.1)	0 (0)	0.031*
Maternal mortality	2 (8.7)	1 (6.7)	1.0*
Wound infection	6 (26.1)	3 (20.0)	0.668*
Hoaspital stay, days	10.0 (7.5-13.0)	8.0 (7.0-10.0)	0.121†
Peripartum hysterectomy			
Not required	8 (34.8)	14 (93.3)	0.001*
Required	15 (65.2)	1 (6.7)	
Ligation of uterine artery	13 (56.5)	14 (93.3)	0.014*
Use of uterine compression suture	7 (30.4)	10 (66.7)	0.028*

Data were expressed as frequency (%) or median (Interquartile range). *Chi-square test, †Mann-Whitney U test, ‡Fisher's exact test.

There was no significant association between the PPCS group and the Non-PPCS group in the rates of perinatal death, premature birth, low birth weight, requirement of NICU admission and low APGAR score at 1 min and 5 min (Table IV).

Table IV Comparison of neonatal morbidity and mortality in PPCS and Non-PPCS patients

Characteristics	PPCS (n=23)	Non-PPCS (n=15)	p value*
Malpresentation	6 (26.1)	5 (33.3)	0.630
Gestational age at birth <37 weeks	12 (52.2)	9 (60.0)	0.635
Birth weight <2.5 kg	10 (43.5)	8 (53.3)	0.552
APGAR<7 at 1 minute	15 (65.2)	8 (53.3)	0.464
APGAR<7 at 5 minute	16 (69.6)	11 (73.3)	0.802
NICU admission	11 (47.8)	7 (46.7)	0.996
Perinatal death	4 (17.4)	3 (20.0)	0.839

Data were expressed as frequency (%), *Chi-square test.

DISCUSSION

Prior studies have shown that PP was significantly associated with a range of adverse outcomes for both mothers and neonates; however, comparisons of PP with and without coverage of a uterine scar were rarely reported.[4-10] This prospective analytical observational study was carried out in the Department of Obstetrics and Gynecology, CMCH, Chattogram, Bangladesh, to evaluate the maternal and neonatal outcome of PP lying over the uterine scar compared to patients with non-PPCS. The present study findings were discussed and compared with previously published relevant studies

PP diagnosed in early pregnancy may not persist in late pregnancy and near term due to elongation of the uterus and almost 90% of PP resolves to a normal position by term.[11,12] When placenta is covered in uterine scarring from a prior CS, the placenta cannot move normally. The effects of a previous CS were obvious, and the placenta was unlikely to "migration" in the presence of a uterine scar. Moreover, our data showed that most of the patients (95.7%) in the PPCS pregnancies combined with PAS, suggesting that we should do detailed prenatal examination, including ultrasound and MRI when we find this condition in clinical practice, to determine the likelihood of placenta implantation, location and depth of placenta accreta.

In the present study, the PPCS group was associated with poor maternal outcomes for hemorrhage, associated bladder injury, peripartum hysterectomy rate was than non-PPCS group. Previous study showed that women with PPCS had a higher rate of intraoperative blood loss, postpartum haemorrhage, transfusion, and hysterectomy than patients with non-PPCS.[7,8] However, present study results showed that the proportion of

women with hysterectomies (65.2% and 6.7% in PPCS and non-PPCS group) was higher than that reported in most other studies conducted abroad. For example, previous studies from China reported the hysterectomy rate was 2.6% to 11.9% in women with PP lying over the uterine scar.[7,13,14] Previous study from Bangladesh reported the 24% of the patients with PP overlying the uterine scar need hysterectomy.[8]

There was no significant difference between the PPCS group and the Non-PPCS group in the rates of perinatal death, premature birth, low birth weight, requirement of NICU admission and low APGAR score at 1 min and 5 min, which agreed with the previous study.[8] The neonatal morbidity and mortality were related to the prematurity and in this study more than half of the babies were born preterm in both groups.

LIMITATIONS

This was a single-centered study with a small sample size. Due to the limited sample size, the findings of this study may not reflect the exact scenario of the whole country. Despite these limitations, this study was able to add to the existing body of knowledge on PP in Bangladesh.

CONCLUSIONS

Women with PPCS were more likely to have poorer maternal outcomes than the women with Non-PPCS. Healthcare providers should be aware of possible complications of PPCS to provide proper counselling to their patients. Obstetricians should proactively reduce the CS at their facility level to mitigate the risk of subsequent pregnancies, including developing a PPCS. Large scale multi-center study is needed to provide deeper insight into this issue.

DISCLOSURE

All the authors declared no competing interest.

REFERENCES

1. Brennan K. Placental pathology: A review of placenta previa, placental abruption and placenta accreta. Update in anaesthesia. 2019;34:51-55.
2. Angolile CM, Max BL, Mushemba J, Mashauri HL. Global increased cesarean section rates and public health implications: A call to action. Health science reports. 2023;6(5):e1274.
3. Bangladesh Demographic and Health Survey- 2022. National Institute of Population Research and Training, Medical Education and Family Welfare Division, Ministry of Health and Family Welfare, Dhaka, Bangladesh, The DHS Program, ICF, Rockville, Maryland, USA. 2022.
4. Faiz AS, Ananth CV. Etiology and risk factors for placenta previa: An overview and meta-analysis of observational studies. The journal of maternal-fetal & neonatal medicine. 2003;13(3):175-190.
5. Fan D, Xia Q, Liu L, Wu S, Tian G, Wang W et al. The incidence of postpartum hemorrhage in pregnant women with placenta previa: A systematic review and meta-analysis. PloS one. 2017;12(1):e0170194.
6. Zhu CK, Wang F, Zhou YM, Ying J, Chen DQ. Maternal outcomes in pregnant women with pernicious placenta previa. Journal of Zhejiang University. Medical Sciences. 2015;44(3):253-257.
7. Rao J, Fan D, Zhou Z, Luo X, Ma H, Wan Y, et al. Maternal and neonatal outcomes of placenta previa with and without coverage of a uterine scar: a retrospective cohort study in a tertiary hospital. International Journal of Women's Health. 2021:671-681.
8. Karmaker A, Eusufzai FK, Sultana F. Maternal and Neonatal Outcome of Patients Having Placenta Previa Lying Over The Uterine Scar. Journal of Dhaka Medical College. 2022;31(1):56-60.
9. Sultana M. Neonatal and Maternal Complications of Placenta Previa: A Single Center Study in Bangladesh. SchInt J ObstetGynec. 2021;4(11):413-417.
10. Adhikary A, Begum A, Joty FS, Sarker NR, Sultana R. Maternal Risk Factors of Placenta Praevia and Its Effects on Maternal and Fetal Outcome. Bangladesh Medical Journal. 2019 May 30;48(2):7-12.
11. Bowie JD, Rosenberg ER, Rosenberg ER, et al. The fallacy of placental migration: effect of sonographic techniques. AJR Am J Roentgenol. 1985;144(1):79.
12. Khan AT, Stewart KS. Ultrasound placental localisation in early pregnancy. Scott Med J. 1987;32(1):19–21.
13. Li L, Liu Y, Yu N, et al. Analysis of risk factors for pernicious placenta praevia. Int J ClinExp Med. 2017;10(2):3575–3581.
14. Zhu CK, Wang F, Zhou YM. Maternal outcomes in pregnant women with pernicious placenta previa. Journal of Zhejiang University (Medical Sciences). 2015;44(3):253–257.