Original article

J Nepal Health Res Counc 2022 Jan-Mar; 20 (54): 142-6

Feto-maternal Outcomes in Placenta Previa with and Without Previous Cesarean Section

Isha Pun,[1] Alka Singh[1]

ABSTRACT

Background: Placenta previa is associated with poor maternal and fetal outcomes. Its complications are increasing due to the increased rate of cesarean deliveries. This study aimed to compare maternal and fetal outcomes in placenta previa with and without previous cesarean section.

Methods: This study was conducted in the Department of Obstetrics and Gynecology at Patan Hospital, Nepal. Placenta previa cases were reviewed from 1st January 2010 to 31st December 2019, parted into Group 1 (placenta previa with previous cesarean section) and Group 2 (placenta previa with no prior cesarean section). Strength of association was measured as odds ratio and 95% confidence intervals. P-value at <0.05 was taken as statistically significant.

Results: The total number of placenta previa were 348 (0.42%) of total deliveries (n=82,918) , but 72 charts/records were not found and six cases were excluded. Group 1 comprised 48 cases (0.86%) among prior cesarean section (n=5,581) and Group 2 consisted of 222 cases (0.28%) among those with no prior cesarean delivery (n=77,337) and it was statistically significant. Morbidly adherent placenta, postpartum hemorrhage, cesarean hysterectomy, and maternal deaths were higher in Group 1 and statistically significant. Preterm deliveries and neonatal intensive care unit admission were also more in Group 1 and statistically significant.

Conclusions: Maternal and fetal morbidity were higher in placenta previa with previous cesarean section than with no prior cesarean delivery. Therefore, it is advisable to try to reduce the rate of cesarean section as far as possible.

Keywords: Feto-maternal outcome; placenta previa; previous cesarean section.

INTRODUCTION

Placenta previa complicates approximately 0.3-0.5% of all pregnancies.[1] It is associated with an increased incidence of antepartum hemorrhage (APH), cesarean delivery, postpartum hemorrhage, blood transfusions, cesarean hysterectomy, prolonged hospitalization, and premature deliveries.[2] The incidence of subsequent placenta previa increases with an increasing number of previous cesarean deliveries, ranging from two to four times more as the number of cesarean section increases.[3] The risk of cesarean hysterectomy in placenta previa with history of cesarean section is more as compared to with no history of prior cesarean delivery.[4]

This study aimed to evaluate and compare maternal and fetal outcomes of placenta previa with and without previous cesarean section over a period of 10 years at Patan Hospital.

METHODS

This is a retrospective study which was conducted in the Department of Obstetrics and Gynecology, Patan Academy of Health Sciences (PAHS), Nepal. The data were collected over a period of 10 years from 1st January 2010 to 31st December 2019.

The Institutional Review Committee (IRC) - PAHS approved this study. The total number of deliveries and a total number of placenta previa were calculated from the delivery register logbook and the hospital

Correspondence: **Dr Isha Pun, Department of Obstetrics and Gynecology, Patan Academy of Health Sciences, Kathmandu, Nepal. Email: ishapun2012@gmail.com, Phone: +9779808642420.**

Author Affiliations

[1]Department of Obstetrics and Gynecology, Patan Academy of Health Sciences, Kathmandu, Nepal.

number of each case was noted to retrieve the medical files from the record section department. All cases of placenta previa after 28 weeks of gestation with a singleton pregnancy with or without previous cesarean section were recorded in the proforma . The collected data were divided into two groups. Group 1 included placenta previa with history of cesarean section(s) and Group 2 included placenta previa with no history of cesarean section. Data from both groups were compared in respect to clinical profile, antepartum hemorrhage postpartum hemorrhage (PPH), blood transfusion, cesarean hysterectomy, intensive care unit (ICU) stay, maternal mortality, duration of hospital stay, gestational age at delivery, birth weight, Apgar score of neonates, and neonatal intensive care unit (NICU) admission.

The data were analyzed using SPSS version 19. A Chi-square test was used to determine the association between the outcome variables. Strength of association was measured as odds ratio and 95% confidence intervals. The data was taken as statistically significant when the p-value was <0.05.

RESULTS

There were total 82,918 deliveries during the study period, out of which 348 (0.42%) cases were placenta previa. Seventy-two files of the placenta previa cases could not be retrieved. Therefore, 270 records of placenta previa were analyzed (48 in Group 1 and 222 in Group 2). Among the total deliveries, a history of cesarean delivery was present in 5,581 deliveries.

The incidence of placenta previa with no history of cesarean section was 0.28% and with history of cesarean section(s) was 0.86%, which was statistically significant (Table 1). The mean age of the woman in Group 1 was 30.71 and in Group 2 was 28.49 (Table 1). The number of deliveries before 37 weeks in Group 1 was significantly higher than in group 2 (Table 1).

Table 1. Demographic profile of study population.

Characteristics(	Group 1 N (%)	Group 2 N (%)	Odd ratio (at 95%CI)	p- value
Proportion of Placenta previa	48 (0.86)	222 (0.28)	3.0135 (2.2032 to 4.1217)	< 0.001*
Mean Age	30.71	28.49		
GA in weeks				
<37	26 (54.16)	75 (33.78)	0.4317 (0.2294 to 0.8124)	.008*
>37	22 (45.83)	147 (66.21)		
APH	11 (22.9)	67 (30.1)	0.687 (0.330 to 1.42)	0.316
Type IV placenta previa	25 (52)	83 (37)		

** Significant, ** highly significant*

Morbidly adherent placenta was present among 13 cases (27.08%) in Group 1 (eight were accrete, four were increta and one was percreta), and in group 2, there were five cases (2.25%) which was statistically significant (Table 2). Thirty seven percentage in group 1 and nine percentage in group 2 were complicated by postpartum hemorrhage which was statistically significant (Table 2). For the management of postpartum hemorrhage, condom tamponade was performed in 2.08% of the cases in Group 1 and 0.9% in group 2 though statistically not significant, similarly, uterine ligation was also performed in 2.08% of the cases in Group 1 and 1.8% of the cases in Group 2 and this was also statistically not significant.

One-fourth of the cases in Group 1 underwent cesarean hysterectomy but none in Group 2, which was statistically significant (Table 2). Blood transfusion was required in 37.5% of cases in Group 1 and 5.8% in Group 2 which was statistically significant (Table 2). Intensive care unit admission was required in 15 cases (31.25%) in group 1 and five cases (2.25%) in Group 2 which was statistically significant (Table 2). Re-exploration was required in one case (2.08%) in Group 1. She was G3P1L1A1 at 28 weeks gestation with antepartum hemorrhage with previous cesarean section and emergency cesarean section was done with intraoperative finding of placenta accreta and hysterectomy had to be done with a blood loss of 2000

ml. On the first postoperative day, hemoperitoneum was detected, re-exploration done and hemostasis secured. The recovery period was uneventful. There were two maternal deaths (4.16%) in Group 1 (Table 2). One case was G4P2L1A1 at 36+2 weeks of gestation with previous two cesarean sections who came in labor. Emergency cesarean section was done and had to undergo hysterectomy due to placenta percreta with blood loss of 3500 ml. Multiple blood products were transfused. She died the next day and the probable cause was a hypovolemic shock. The other case was G2P1L1 at 34 weeks of gestation with a previous cesarean section presented with leaking per vagina. Emergency cesarean section was done, the intraoperative diagnosis was ruptured uterus with placenta accreta with hemoperitoneum of 1500 ml, hysterectomy was carried out with multiple blood transfusions. This patient also died on day one.

Table 2. Comparison of maternal outcomes between the two Groups.

Complications		Group 1 N	Group 2 N	Odds ratio (at 95%CI)	p value
Morbidly adherent placenta	Yes	13	5	16.12 (5.41 to 48.01)	<0.001**
	No	35	217		
PPH	Yes	18	20	6.06 (2.88 to 12.74)	< 0.001**
	No	30	202		
Blood transfusion	Yes	18	13	9.64 (4.29 to 21.67)	< 0.001**
	No	30	209		
Cesarean hysterectomy	Yes	12	0	152.39 (8.83 to 2630.24)	0.005*
	No	36	222		
ICU stay	Yes	15	5	19.72 (6.72 to 57.87)	< 0.001**
	No	33	217		
Maternal deaths	Yes	2	0	23.92 (1.12 to 506.60)	0.041*
	No	46	222		

** significant, ** highly significant*

In group 1, all were live birth but there were two stillbirths in group 2. In both the Groups, most of the neonate's weight was more than 2.5kg (62.5% had more than 2.5kg in Group 1 and 73.42% in Group 2), statistically not significant. Seventy-two percent of the neonates in both groups had an Apgar score of more than seven at one minute. NICU admission at the time of delivery was required in 35 % of cases in Group 1 and 1.36% in Group 2, which was statistically significant (Table 3). Preterm deliveries occurred in 54.16% of cases in Group 1 and 33.78% in Group 2, which was statistically significant (Table 3).

Table 3. Comparison of perinatal outcomes between the two groups.

Characteristics		Group 1 N (%)	Group 2 N (%)	Odds ratio(at 95%CI)	p value
GA at delivery (in weeks)	>37	22 (45.83)	147 (66.21)	0.43(0.22 to 0.81)	.008*
	<37	26 (54.16)	75 (33.78)		
Birth weight (in kilogram)	<2.5	18 (37.5)	59 (26.57)	1.97(1.03 to 3.76)	.037
	>=2.5	30 (62.5)	163 (73.42)		
Apgar score at one minute	<7	13 (27.08)	61 (27.47)	0.96(0.479 to 1.95)	.927
	>=7	35 (72.9)	159 (71.62)		
NICU admission at delivery	Yes	4 (8.33)	3 (1.3)	6.63(1.43 to 30.69)	.005*
	No	44 (91.67)	219 (98.64)		

** significant*

DISCUSSION

The overall proportion of placenta previa in this study was 0.42% of total deliveries, which was similar to the studies by Kanak et al (0.266%), Katke (0.62%), and Meena et al (0.76%).[2,5,6] however this was less than the results obtained by Kavitha et al (1.8%) and Parikh et al (0.82%).[7,8]

In this study, the proportion of placenta previa in cases of women with previous cesarean section was higher than with no prior cesarean sections (0.86% and 0.28% respectively) similar to many other studies.[5,7,8] Katke reported a higher incidence of 1.33% in the scarred uterus as compared to 0.47% in the unscarred uterus.[5] Similarly, the incidence was 2.75% in the scarred uterus and 1.4% in the unscarred uterus as reported by Kavitha et al.[7] Parikh et al also reported the comparable incidence of 1.14% in the scarred uterus and 0.49% in the unscarred uterus.[8]

The most common age group in our study was 26-30 years in both the groups which were similar to the results obtained by Katke and Shrigiriwar et al.[5,9] The incidence of antepartum hemorrhage in this study was 22.9% in Group 1 and 30% in Group 2 similar to the result obtained by Tahseen et al. [10] However the result is lower compared to a study by Kavitha et al. (86% in scarred uterus and 88% in unscarred uterus).[7]

This study reported a higher incidence of grade IV placenta in Group 1 (52%) as compared to Group 2 (37%) similar to a study by Tahseen et al. [10] while Katke and Kavitha et al reported not much difference between the two groups.[5,7] Incidence of morbidly adherent placenta in this study was more in group 1 (27%) when compared to group 2 (2.25%) similar to a study by Tahseen et al. (25.7% in scarred group and 4.5% in unscarred group).[10] This study reported a higher incidence of postpartum hemorrhage in group 1 (37.5%) compared to group 2 (9%) similar to studies by Parikh et al, Kanak et al and Kavitha et al.[2,7,8] Need of blood transfusion was more in Group 1 (37.5%) as compared to Group 2 (5.8%) in this study. The result matches with a study by Kanak et al. and Katke . [2,5] Cesarean hysterectomy was required in 25% of cases in Group 1 and not required in Group 2 and the result is consistent with Shrigiriwar et al., Kavitha et al., Parikh et al. and Tahseen et al.[7-10] The need of ICU admission was more in Group 1 (31.25%) when compared to Group 2 (2.25%) and a similar result was obtained by Kanak et al.[2] In the present study, there were two maternal deaths (4.16%) in Group 1 compared to none in Group 2 and this result matches with Shrigiriwar et al and Tahseen et al.[9,10]

The number of preterm deliveries was higher in Group 1 (54%) than Group 2 (33%) and comparable to the results obtained by Katke, Shrigiriwar et al. and Mathuriya et al.[5,9,11] The number of live birth between the two groups in this study was similar to Katke and Shrigiriwar et al.[5,9]

The babies born weighing lesser than 2.5 kg was statistically not significant between the two groups and the result didn't match with Lata et al.[2] Neonatal intensive care unit admission at birth was more in group 1 (35%) as compared to group 2 (1.36%) and this result was consistent with the result obtained by Kanak et al.[2]

CONCLUSIONS

The risk of placenta previa increased in women with a history of the cesarean section when compared to those with no prior cesarean section. Both maternal morbidities/mortality and fetal morbidities were also seen to increase significantly in women with a history of cesarean section.

CONFLICT OF INTEREST

None.

REFERENCES

1. Hung TH, Hsieh CC, Hsu JJ, Chiu TH, Lo LM, Hsieh TT. Risk factors for placenta previa in an Asian population. Int J Gynecol Obstet. 2007;97:26-30. [PubMed]

2. Kanak L, Gita BB. Fetomaternal outcome in placenta previa with and without previous cesarean section-A prospective study. IOSR J Dent Med Sci. 2017;16(7):30-5.[Google Scholar]

3. Kaul S, Mir S. A study on correlation of placenta previa with previous caesarean section and other risk factors. Int J Res Med Sci. 2019 Jun;7(6):2027-33. [Download PDF]

4. Upreti R, Rauniyar A, Rauniyar S, Ansari SN, Khadka M. A comparative study of obstetric outcome of placenta previa in scarred versus unscarred uterus at tertiary Hospital, Kathmandu, Nepal. Int J Reprod Contracept Obstet Gynecol. 2020 Aug;9(8):3183-87. [Download PDF]

5. Katke RD. Placenta previa: outcomes in scarred and unscarred uterus. Int J Reprod Contracept Obstet Gynecol. 2016;5(8):2728-32. [Fulltext] [DOI]

6. Meena N, Dave A, Meena S, Meena A, Shrivastava A. Impact of placenta previa on obstetric outcome. Int J Reprod Contracept Gynaecol. 2015;4:76-80. [Fulltext]

7. Kavitha B, Hota BM. Clinical study of placenta previa in scarred and unscarred uterus. J Dr NTR Univ Health Sci. 2018;7:13-8. [Fulltext]

8. Parikh PM, Makwana S, Shah S, Vithalani V. Feto-Maternal Outcome in Placenta Previa in Scarred Uterus Vs Non Scarred Uterus. IOSR J Dent Med Sci. 2016;15(1):69-73.[Google Scholar]

9. Shrigiriwar M, Kesarwani S, Ramteke S.Feto-maternal outcome in placenta previa in scarred versus non-scarred uterus. Int J Sci Stud. 2019;6(11):13-8.[Fulltext]

10. Tahseen H, Tahira T, Hafiz S, Noreen Z. Placenta previa: A comparative study of obstetrics outcome in previously scarred and unscarred uterus at Service hospital, Lahore. Pakistan J Med Health Sci. 2018;12(3):889-91.[Fulltext]

11. Mathuriya G, Lokhande P. Comparative study of obstetric outcome between scarred and unscarred uterus in placenta previa cases. Indian J Clin Pract. 2013;24. [Fulltext]