

Clinical Outcomes of Placenta Previa in Women with a Previous Cesarean Section: A Comparison by Placenta Accreta Spectrum Status

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Abstract: ***Background:** Placenta previa in women with previous cesarean delivery is associated with placenta accreta spectrum (PAS), obstetric haemorrhage, operative morbidity and adverse perinatal outcomes. **Methods:** This retrospective observational study included 81 women with placenta previa and previous cesarean delivery. Patient-level data from the study master chart were analysed for demographic characteristics, obstetric history, PAS, timing and mode of delivery, maternal morbidity and neonatal outcomes. PAS was defined as a recorded diagnosis of accreta, increta or percreta. Categorical variables were compared using Fisher's exact test or the chi-square test, as appropriate. Odds ratios (ORs) were calculated for selected binary outcomes. **Results:** PAS was recorded in 39 women (48.1%), including accreta in 20 (24.7%), increta in 12 (14.8%) and percreta in 7 (8.6%). Postpartum haemorrhage occurred in 32 women (39.5%), and 75 (92.6%) received blood or blood products. Urinary tract injury occurred in 4 (4.9%), DIC in 3 (3.7%), puerperal sepsis in 7 (8.6%), obstetric hysterectomy in 10 (12.3%) and ICU admission in 27 (33.3%). Two maternal deaths were recorded (2.5%). Twenty-eight births (34.6%) were preterm, 29 neonates (35.8%) had low birth weight, 20 (24.7%) required NICU admission and 10 stillbirths (12.3%) were recorded. Obstetric hysterectomy was more frequent in women with PAS than in those without recorded PAS (20.5% vs 4.8%; OR 5.16, 95% CI 1.02–26.05; $p=0.043$). No statistically significant association was observed between PAS and the other maternal outcomes analysed. **Conclusion:** In this cohort of women with placenta previa and previous cesarean delivery, maternal morbidity and transfusion requirements were substantial. PAS was associated with a higher frequency of obstetric hysterectomy. Antenatal identification of women at risk and delivery in a facility prepared for major obstetric haemorrhage and complex pelvic surgery are important in this population.*

Keywords: placenta previa; previous cesarean delivery; placenta accreta spectrum; postpartum haemorrhage; obstetric hysterectomy; maternal morbidity; neonatal outcome

1. Introduction

Placenta previa is an important cause of antepartum haemorrhage and is associated with maternal and perinatal morbidity. The presence of a previous cesarean scar further increases concern for placenta accreta spectrum (PAS), particularly when the placenta overlies the scar.

PAS comprises abnormal placental adherence or invasion and includes placenta accreta, increta and percreta. Previous cesarean delivery is an established risk factor, and the risk increases with the number of prior cesarean deliveries. Placenta previa in the setting of a uterine scar is an important clinical risk combination for PAS.

Women with placenta previa and a previous cesarean delivery may experience antepartum or intrapartum haemorrhage, require transfusion, undergo hysterectomy or other pelvic surgery, and require intensive care. Neonatal morbidity may result from preterm delivery and other complications associated with high-risk pregnancy.

This study assessed maternal and neonatal outcomes among women with placenta previa and previous cesarean delivery and examined the association between recorded PAS and selected clinical outcomes.

2. Methods

Study design and setting: This was a retrospective observational study conducted at a tertiary-care obstetric centre.

Study population: The study included 81 women with placenta previa and a previous cesarean delivery whose clinical information was available in the patient-level master chart.

Data source and variables: Data & variables included maternal age, educational status, socioeconomic status, parity, number of previous cesarean deliveries, previous placenta previa, PAS status, antenatal care, timing and mode of delivery, postpartum haemorrhage, blood or blood-product transfusion, urinary tract injury, DIC, puerperal sepsis, obstetric hysterectomy, ICU admission, maternal mortality, gestational maturity, birth weight, NICU admission, stillbirth and Apgar score.

Definitions: PAS was considered present when the master chart recorded accreta, increta or percreta. Women without any of these recorded diagnoses were classified as having no recorded PAS. The master chart contained some coding irregularities. Two records were coded as having four previous cesarean deliveries although the accompanying coding legend ended at three; these records were retained as recorded. For mode of delivery, the patient-level entries were used as recorded.

Statistical analysis: Categorical variables are presented as numbers and percentages. Comparisons between women with and without recorded PAS used Fisher's exact test for 2×2 tables and the chi-square test for larger contingency tables, as appropriate. Odds ratios were calculated for binary outcomes where estimation was appropriate. Because several outcomes were uncommon, analyses were unadjusted and are interpreted as associations rather than independent effects. A two-sided p value <0.05 was considered statistically significant.

3. Results

Table 1: Maternal characteristics

Characteristic	N	%
Age 18–24 years	13	16.0
Age 25–31 years	46	56.8
Age 32–38 years	16	19.8
Age >38 years	6	7.4
Parity 1–2	59	72.8
Parity 3–4	18	22.2
Parity >5	4	4.9
Previous placenta previa: No	51	63.0
Previous placenta previa: Yes	30	37.0

Table 2: Placenta accreta spectrum

PAS category	N	%
No recorded PAS	42	51.9
Accreta	20	24.7
Increta	12	14.8
Percreta	7	8.6
Any PAS	39	48.1

Table 3: Timing of delivery

Timing	N	%
<32 weeks	7	8.6
32–34 weeks	13	16.0
34–36 weeks	39	48.1
>36 weeks	22	27.2

Table 4: Maternal outcomes

Outcome	N	%
Postpartum haemorrhage	32	39.5
Blood/blood-product transfusion	75	92.6
Urinary tract injury	4	4.9
DIC	3	3.7
Puerperal sepsis	7	8.6
Obstetric hysterectomy	10	12.3
ICU admission	27	33.3
Maternal mortality	2	2.5

Table 5: Neonatal outcomes

Outcome	N	%
Preterm birth	28	34.6
Term birth	53	65.4
Low birth weight	29	35.8
NICU admission	20	24.7
Stillbirth	10	12.3
Apgar <5	11	13.6
Apgar 5–8	14	17.3
Apgar 10	56	69.1

Table 6: Maternal outcomes according to PAS status

Outcome	PAS (n=39)	No PAS (n=42)	OR	p value
PPH	14 (35.9%)	18 (42.9%)	0.75	0.680
Transfusion	37 (94.9%)	38 (90.5%)	1.95	0.677
Urinary tract injury	2 (5.1%)	2 (4.8%)	1.08	1.000
DIC	1 (2.6%)	2 (4.8%)	0.53	1.000
Puerperal sepsis	3 (7.7%)	4 (9.5%)	0.79	1.000
ICU admission	12 (30.8%)	15 (35.7%)	0.80	0.814
Obstetric hysterectomy	8 (20.5%)	2 (4.8%)	5.16	0.043
Maternal mortality	1 (2.6%)	1 (2.4%)	1.08	1.000

Table 7: Neonatal outcomes according to PAS status

Outcome	PAS (n=39)	No PAS (n=42)	OR	P value
Preterm birth	14 (35.9%)	14 (33.3%)	1.12	0.993
Low birth weight	18 (46.2%)	11 (26.2%)	2.42	0.101
NICU admission	12 (30.8%)	8 (19.0%)	1.89	0.335
Stillbirth	1 (2.6%)	9 (21.4%)	0.10	0.015

4. Discussion

This study describes maternal and neonatal outcomes among women with placenta previa and previous cesarean delivery. PAS was recorded in 48.1% of the cohort, and the overall requirement for blood or blood-product transfusion was 92.6%. Obstetric hysterectomy was the maternal outcome most clearly associated with PAS in the present dataset.

The association between PAS and hysterectomy is clinically plausible because invasive placentation can result in severe haemorrhage and may require definitive surgical management. In this study, hysterectomy was recorded in 20.5% of women with PAS compared with 4.8% of women without recorded PAS. The confidence interval was wide, reflecting the small number of hysterectomy events.

Transfusion was common in both groups, occurring in 94.9% of women with PAS and 90.5% without recorded PAS. The high frequency across the cohort indicates a substantial haemorrhagic burden in women with placenta previa and previous cesarean delivery, irrespective of recorded PAS status.

Postpartum haemorrhage was recorded in 39.5% of women. The study did not demonstrate a statistically significant difference in PPH according to PAS status. This may reflect the high baseline risk associated with placenta previa and the limited sample size.

The neonatal data showed a substantial burden of preterm birth and low birth weight. Preterm birth occurred in 34.6% of the cohort, low birth weight in 35.8%, and NICU admission in 24.7%. These findings are relevant to counselling and peripartum planning in this high-risk population.

We recorded 10 stillbirths. In the PAS comparison, stillbirth was less frequent in the PAS group than in the non-PAS group. This result should be interpreted cautiously because the number of events was small and the study was retrospective; the analysis does not establish a protective effect of PAS.

5. Strengths and Limitations

The main strength of the study is the use of patient-level data for analysis of maternal and neonatal outcomes. The study addresses a clinically important high-risk population and includes several relevant maternal morbidity outcomes. The study has limitations. It is retrospective and single-centre, with a modest sample size and limited numbers of uncommon outcomes. The analyses are unadjusted and therefore cannot establish independent associations. Some variables in the master chart contain coding irregularities; the patient-level entries were retained as recorded rather than reclassified. The study also does not provide sufficient information to assess long-term maternal or neonatal outcomes.

6. Conclusion

Among women with placenta previa and previous cesarean delivery, PAS was recorded in 48.1% and blood or blood-product transfusion in 92.6%. Obstetric hysterectomy occurred more frequently in women with recorded PAS. Preterm birth, low birth weight and NICU admission were also common. These findings support careful antenatal assessment and delivery planning in a facility capable of managing major obstetric haemorrhage, complex pelvic surgery and neonatal prematurity.

Declarations

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Conflict of interest: None

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