Maternal and Neonatal Outcomes after Planned or Emergency Delivery for Placenta Accreta Spectrum

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Abstract: *For the mother, placenta accreta spectrum is a fatal disorder that frequently causes significant blood loss. So, proper management and care are vital to prevent adverse outcomes.* **Objective:** *This study aimed to determine the Maternal and Neonatal Outcomes after Planned or Emergency Delivery for Placenta Accreta Spectrum.* **Methodology:** *The current cross-sectional descriptive Study was conducted at the Department of Gynecology and Obstetrics, Sheikh Zayed Hospital and Medical College, Rahim Yar Khan, over 6 months. Total 30 women fulfilling the inclusion criteria from the in-patient department of obstetrics and gynecology, SZH RYK were included in the study. Depending on delivery, planned or emergency caesarean delivery, the women were divided into two groups and were followed up for the Maternal & neonatal Outcome. Data were entered into and analyzed using SPSS-24.* **Results:** *30 women with Placenta accreta spectrum were included in the current study. Among them 20(66.6) underwent planned and 10(33.33%) emergency caesarean delivery. The basic maternal characteristics were not significantly different between the two groups; however, the women who had emergency caesarean delivery had a high parity and a lower BMI (P <0.05). The group that had an emergency delivery had a considerably larger percentage of women who experienced antepartum haemorrhage (50% P <.001). The median gestational ages at which emergency deliveries occurred were noticeably lower (value of p less than 0.001). Nonetheless, women having an emergency delivery had a greater risk of maternal ICU admissions (value of P.02). We compared neonatal outcome in both groups the admission to intensive care unit in Emergency delivery was higher (48%) as compared to planned delivery (15%) (P value <0.001)* **Conclusion:** *Our study concluded that emergency deliveries did not result in higher rates of maternal morbidity, transfusions, or blood loss. Antenatal haemorrhage was the single biggest risk factor for emergency delivery. Emergency delivery increased the risk of maternal and neonatal ICU admissions.*
Keywords: Pregabalin, Hemodynamics, Pneumoperitoneum

Introduction

The clinical condition known as placenta accreta spectrum (PAS), which comprises placenta accreta, placenta increta, and placenta percreta, occurs when the placenta develops too far within the uterus. Because of the increased risk of severe postpartum haemorrhage, PAS is a potentially dangerous disorder (1). PAS is reported to occur in 1-2 out of every 500 deliveries (2, 3). Placental trophoblasts often infiltrate the myometrium in accreta; in increta, they enter the myometrium; and in percreta, they invade the serosa and/or nearby pelvic organs via the myometrium (4, 5). After birth, the placenta separates typically from the uterus; however, in cases of placenta accrete, part of the placenta or all the placenta stays connected to the uterus, resulting in severe bleeding. When diagnosing PAS, ultrasound is helpful, especially during the second trimester (6, 7). A prospective cohort study of 28 individuals with placenta accrete in Lebanon by Seoud et al. (22 with planned delivery and 6 with emergency delivery). All individuals in the emergency group needed a blood transfusion (p = 0.03), while 11 out of 22 (50%) patients in the elective group got one. More significantly, in elective situations, only 1.90 (±2.20) units of packed red blood cells were transfused, but in emergent cases, the quantity was 7.83 (±4.90) units (p = 0.03) (8).

According to a retrospective cohort research by Fishel Bartal et al. in the USA, 41 (37.6%) of the 109 women who had caesarean hysterectomy for PAS had an unplanned birth. Pregnant women who had an unplanned birth had a higher risk of bleeding than those who had a scheduled delivery (p = 0.04). Compared to women who had a scheduled birth, those who had an unplanned delivery had a shorter gestational age at delivery (30.3 vs. 33.8 weeks, p = 0.001), a 75% higher rate of the primary outcome (63 vs. 36%, p = 0.007), and a higher rate of admissions to the

critical care unit (39 vs. 17.7%, p = 0.01). No difference was observed in the newborn morbidity between the two groups.[9] Shamshirsaz et al. in USA, conducted a study on individuals with placenta accrete. A total of 130 individuals had a hysterectomy, 60 (46.2%) needed an urgent delivery, and 34 (56.7%) of the planned deliveries and 26 (37.1%) of the urgent deliveries had composite maternal morbidity (P=.03). The planned delivery group received fewer transfusions of fresh frozen plasma and red blood cells P=.02. Compared to the planned delivery group, the urgent group had higher frequency of low Apgar score & respiratory distress syndrome P<.01; breathing difficulties, 34 [61.8%] vs 16 [27.1%], P<.01An independent predictor of an urgent delivery was having had two or more caesarean deliveries in the past (adjusted odds ratio 11.4, 95% confidence interval (CI) 1.8-71.1).[10] Studies are available in literature comparing outcomes of both approaches. Studies favoring the planned delivery approach have already been done. However, as there might be regional or ethnic differences, the current study was conducted to determine the impact of Placenta Accreta Spectrum on maternal and neonatal outcomes after Planned or Emergency Delivery.

Methodology

The current Cross Sectional Descriptive Study was conducted at the Department of Gynecology and Obstetrics, Sheikh Zayed Hospital and Medical College, Rahim Yar Khan over 6 months. The sample size was calculated using n = N*X / (X + N − 1). The sample size was 30. Inclusion criteria were women age 18-45 years, already booked cases of PAS, Single fetus pregnancy on ultrasound, Gestational age 28-34 weeks, Unplanned delivery cases: Women with PAS undergoing Emergency

delivery as defined in operational definition, Planned delivery cases: Women with PAS undergoing Elective delivery as defined in operational definition. The exclusion was absent fetal cardiac activity on ultrasound on admission, and Unwilling to participate. Total 30 women fulfilling the inclusion criteria from the in-patient department of obstetrics and gynecology, SZH RYK were included in the study after taking approval from the ethical committee and REU CPSP department. Informed consent was obtained from each patient, ensuring confidentiality and no risk to the patient while participating in this study.

The researcher herself inquired about maternal age, gestational age, and previous C-section. Placenta accreta spectrum (PAS) was diagnosed as per the operational definition. For maternal outcome and fetal outcome variables, complete inquiry and follow-up of each delivery were done. All data was entered in an especially designed proforma.

Data were entered into and analyzed using SPSS-24. For the quantitative variables such as maternal age, gestational age at delivery, estimated blood loss, and length of hospital stay, mean and standard deviation or median and interquartile range (IQR) were calculated. Frequencies and percentages were calculated for qualitative variables, including blood transfusion, maternal admission to intensive care unit (ICU), neonate birth weight, neonate admission to NICU, and Apgar score groups at 1 and 5 minutes. The following tests were applied. Independent sample t-test or Mann-Whitney U-test for gestational age at delivery, estimated blood loss, and length of hospital stay. Chi-square test or Fisher's exact test for maternal blood transfusion, maternal admission to ICU, birth weight groups, neonatal admission to NICU, and APGAR score groups at 1 and 5 minutes. Again, a p-value ≤ 0.05 was considered significant.

Results

A total of 30 women with Placenta accreta spectrum were included in the current study. Among them, 20(66.6%) and 10(33.33%) underwent planned and emergency delivery respectively. The individuals who had an emergency delivery had a high parity and a lower BMI (P<0.05). There were no significant differences between the two groups regarding the primary maternal features as presented in Table 1. The group that had an emergency delivery had a considerably more significant percentage of women who experienced antepartum haemorrhage (50% P <.001). Antepartum haemorrhage was a significant predictor of delivery in emergency when multivariate analysis was conducted (odds ratio: 4.7, 95% confidence interval 2.6-8.5, P <.001) as displayed in table 2. The median gestational ages at which emergency deliveries occurred were noticeably lower (value of p less than 0.001). The prevalence of severe maternal morbidities, the amount of blood units transfused, and the estimated blood loss did not differ significantly between women who had planned vs emergency deliveries. Nonetheless, women having an emergency delivery had a greater risk of maternal ICU admissions (p-value of P.02) as shown in Table 2. We compared neonatal outcomes of emergency and planned delivery. Birth weight, gestational age at delivery, and APG AR scores at 1st and 5th minute were significantly lower in both groups, however, admission to the intensive care unit in the Emergency delivery was higher (48%) as compared to planned delivery (15%) (p value <0.001) as presented in table 3.

Table 1. Demographic Features Of The Study Population And Maternal Outcomes Of Planned And Emergency Delivery

Antepartum features	Delivery planned N= 20	Delivery emergency N=10	Value of P
Parity[w]	2 (1– 2)	2 (1– 3)	.01
Age[w]	35 (31– 38)	34 (31– 38)	.66
Previous cesarean sections	1 (1– 2)	2 (1– 3)	0.7
Previous Delivery and C -section [w]	1 (1– 2)	2 (1– 3)	0.51
Placenta previa [C]	18(92%)	9 (93%)	.61
Body Mass index [w]	25.5 (23.2– 28.7)	24.6 (22.3– 28.3)	0.2
Antepartum bleeding [F]	7(35%)	5(50%)	<0.001
Mother outcomes			
Loss of Blood [w]	2000 (1200 to 4000)	1550 (1000– 3500)	.098
Blood transfusion [w]	2(0-6)	2(0-6)	.45
Admission at ITU[C]	6(30%)	4(40%)	
At delivery gestational age	36 (35– 37	34 (32– 36)	<.001
Fisher's Exact test was used for various morbidities in one mother separately.			
Kidney failure	0(zero)	1(10%)	0.33
Damaged bowel	0(0)	0(0)	-
Damaged urinary tract	0	0	0
Damaged bladder	1(5%)	1(10%)	.31
GI fistula	0	0	0
Heart issue	0	1(10%)	0.33
Shock due to bleeding	O	0	-
[Data] explored by Mann-Whitney U test.			
[Chi-square] test			

Table2.Multilevel logistic regression study of risk variables for emergency cesarean delivery in pregnancies affected by placenta accreta spectrum disease

	Univariate	Value of P	Multivariate	P value
	Crude odds ratio 95% interval		Adjusted odd ratio 95% interval	
Gravidity	1.2 (0.1– 1.5)	.001	2.2 (0.8– 1.8)	.17
Parity	1.3 (0.1– 1.6)	.001	2.1 (0.9– 1.6)	.60
BMI at booking	0.9 (1.9– 1.0)	.002	1.9 (0.9– 1.0)	.06
Antepartum bleeding	5.0 (2.9– 8.8)	<.001	5.7 (2.7– 8.6)	.001

Table 3. Neonatal outcomes after planned and emergency delivery. Data presented as median (IQR), Standard deviation, and calculated by the Whitney U test

Variables	Planned delivery N= 20	Emergency delivery N=10	Value of P
Gestational age	37(25-40)	34(25-40)	Less than 0.001
Birth weight(SD)	2922.22±656.58	2200.24±897.50	Less than 0.001
First minute APGAR score	8(3-8)	7(1-8)	Less than 0.001
5th minute APGAR score	8(4-9)	9(5-9)	0.01
ICU admission			
Yes	15.3%	48%	<0.001
No	53%	86%	

SD= Standard deviation, P value less than 0.001 was significant

Discussion

A peripartum hysterectomy and significant blood loss are typical outcomes of placenta accreta spectrum, which can be fatal for the mother (11, 12). Making specific early prenatal identification of these instances enables meticulous birth planning in a specialized facility with a skilled multidisciplinary team. It has been demonstrated that this lowers maternal morbidity (13). Reduced bleeding & emergency procedures have been associated with scheduled deliveries instead of emergencies (14). In this study, 30 women with Placenta accreta spectrum **were** included. Among them, 20 underwent planned delivery and 10 emergency delivery. When the mother and maternity team agreed on a time for the delivery, it was considered "planned" (elective). When performed for one of the following reasons, it was considered an "emergency": (1) An imminent danger to the lives of the lady or the fetus. (2) Fetal or maternal impairment that did not pose an urgent hazard to life. (3) Data, including estimated loss of blood, rates of transfusion, damage of lower urinary tract, fistula development, sepsis, and intensive therapy unit (ICU) admission, was collected. Results for both mums and babies were compared. The only substantial predictor of emergency delivery was antepartum hemorrhage. This implies that the least damaging invasion, corresponding to the less clinically challenging end of the PAS, may also occur in women who are more prone to have an emergency delivery because of bleeding. The finding that there is comparable blood loss & morbidity in planned and emergency cases may be explained by the therapeutic feasibility of this, since placentas that fully invade the pelvis appear to be far less likely to separate and haemorrhage significantly. When comparing the neonatal results of individuals having planned vs emergency deliveries within a similar gestational range, we found only differences in the outcomes at gestations. The most important factor affecting the newborn outcome for women with PAS is the gestational age at birth; greater gestational ages are associated with better neonatal outcomes. These results, which were noted at birth, did not result in appreciable variations in the main morbidities of newborns. Given that the sole significant independent predictor for emergency CD in this sample was antepartum haemorrhage, which is consistent with the assessment of other studies (15). These findings contradict the earlier research in which bleeding was not linked to a noticeably higher risk of emergent delivery (P =.20) (15). The results of our study do not show a surge in maternal adverse consequences in women receiving an emergency delivery, with only a greater rate of ITU admission (40%). This conclusion was expected since earlier research documented comparable findings (13). We compared neonatal outcomes of emergency and planned delivery. Birth weight, gestational age at delivery, and APGAR scores at 1st and 5th minute were significantly lower in both groups, however, admission to the intensive care unit in the Emergency delivery was higher (48%) as compared to planned delivery (15%) (p value <0.001). These results are similar to the study conducted by Fatma Nurgül, et al, in 202. They reported that neonatal intensive care unit (ICU) admission was significantly higher in the ECD cases (p < 0.001) (16).

Conclusion

Our study concluded that emergency deliveries did not result in higher rates of maternal morbidity, transfusions, or blood loss. Antenatal haemorrhage was the single most significant risk factor for emergency delivery. Emergency delivery increased the risk of maternal and neonatal ICU admissions.

Declarations

Data Availability statement
All data generated or analysed during the study are included in the manuscript.
Ethics approval and consent to participate
Approved by the department concerned. (IRBEC-RYMC-0323-24)
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Conflict of interest

The authors declared the absence of a conflict of interest.

Author Contribution

SS (Post graduate resident)**,**
Manuscript drafting, Study Design,
NN (Associate Professor**)**
Review of Literature, Data entry, Data analysis, and drafting article.
Conception of Study, Development of Research Methodology Design,

All authors reviewed the results and approved the final version of the manuscript. They are also accountable for the integrity of the study.

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