

Article

Feto–Maternal Outcome with Placenta Accreta Spectrum: A Cross-Sectional Study

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Submitted: 30 May 2021; Accepted: 17 October 2021; Published: 17 November 2021

Abstract: (1) Background: Placenta accreta spectrum (PAS) is a pathologic invasion of the placental trophoblasts to the myometrium and beyond. This study evaluates the demographic features, risk indicators, feto–maternal outcome, and treatment options in PAS women at our center. (2) Methods: This is a retrospective study carried out in 39 patients with placenta accreta spectrum in our tertiary health care center Sri Maharaja Gulab Singh (SMGS) Hospital, from July 2019 to September 2020. (3) Results: Most patients in our study were in the 30–35 years age group. The previous lower segment Caesarean section (LSCS) was the most critical risk factor for PAS in our research. Thirty-two of the women with PAS (82.05%) had undergone a hysterectomy, and eight patients did not undergo a hysterectomy. Twenty-eight patients needed Intensive Care Unit (ICU) care, 13 of them required ventilatory support, and three of them died due to hemorrhagic shock. In our study, preterm birth occurred in 26 patients (53.84%), while 21 (53.8%) required Neonatal Intensive Care Unit (NICU) admission, and six (15.4%) had early neonatal death and stillbirth. (4) Conclusion: PAS is a devastating event in women’s pregnancy. It leads to high maternal morbidity, mortality, and adverse neonatal outcome. The critical risk indicators for PAS are previous LSCS and placenta previa. Every case with these two concurrent conditions should be operated on in a planned way in the presence of senior obstetricians and of an anesthesiology team.

Keywords: PAS; feto–maternal; placenta accreta

How to cite: Sharma, P.; Raina, P.; Sharma, S. Feto–Maternal Outcome with Placenta Accreta Spectrum: A Cross-Sectional Study. *Timisoara Med.* **2021**, *2021*(2), 3; doi:10.35995/tmj20210203.

Introduction

“Placenta accreta spectrum (PAS), formerly known as the morbidly adherent placenta, is defined as pathologic invasion of the placental trophoblasts to the myometrium and beyond” [1]. It is divided into several types described as accreta (adheres to the myometrium), increta (invades deep to the myometrium), and percreta (the invasion reaches to the uterine serosa and beyond) [1–3]. The incidence of PAS increases due to the increasing number of cesarean sections. In one study, the incidence of PAS increased ten-fold, mainly due to the increased number of Cesarean Sections (CS) being performed [4]. In females with placenta previa, the risk of PAS is 3%, 11%, 40%, 61%, and 67%, for the 1st, 2nd, 3rd, 4th, and 5th or more cesarean sections, respectively [5]. Other risk factors included “advanced maternal age, multiparity, prior uterine surgeries or

curettage, and Asherman syndrome” [6–8]. The treatment in females with PAS is planned hysterectomy with the placenta in situ with no attempt to deliver the placenta. Despite such an ideal approach, PAS is still associated with high maternal morbidity and mortality [9,10]. In India, obstetric hemorrhage is one of the significant causes of maternal mortality (38%). This may be because most women in India are already anemic before they start bleeding [11]. The women with suspected placenta accreta should be transferred to tertiary centers for delivery to ensure access to blood banks, availability of senior obstetricians, and experienced ICUs [12,13]. Our study evaluates the demographic profile, high-risk factors, materno–fetal outcome, and management options in women of PAS at our center.

Materials and Methods

This retrospective study was carried out in 39 patients with placenta accreta spectrum in our tertiary health care center, Sri Maharaja Gulab Singh (SMGS) hospital, Government Medical College Jammu, India, from July 2019 to September 2020.

All the women who were diagnosed as having placenta accreta spectrum on ultrasonography or intra-operatively were included in the study. The primary diagnostic modality for antenatal diagnosis is obstetric ultrasonography. Features of placenta accreta visible by ultrasonography may be present as early as the first trimester; however, most women are diagnosed in the second and third trimesters. Perhaps the most important ultrasonographic association of placenta accreta spectrum in the second and third trimesters is the presence of placenta previa, which is present in more than 80% of accretes. Other gray-scale abnormalities that are associated with placenta accreta spectrum include multiple vascular lacunae within the placenta, loss of the normal hypoechoic zone between the placenta and myometrium, decreased retroplacental myometrial thickness (less than 1 mm), abnormalities of the uterine serosa–bladder interface, and extension of placenta into myometrium, serosa, or bladder. The use of color flow Doppler imaging may facilitate the diagnosis. Turbulent lacunar blood flow is the most common finding for placenta accreta spectrum on color flow Doppler imaging. Other Doppler findings include increased subplacental vascularity, gaps in myometrial blood flow, and vessels bridging the placenta to the uterine margin. All patients enrolled were evaluated by a single expert operator using an ultrasound system equipped with a 4–8 MHz transabdominal transducer and a 5–9 MHz transvaginal transducer (Voluson 730, GE Medical Systems, Zipf, Austria).

The diagnosis of placenta previa was based on the presence of placental tissue covering the internal cervical os, whereas low-lying placenta was diagnosed when the placenta was within 2 cm from the internal cervical os, but did not cover it. All enrolled patients signed a written informed consent. Patients with incomplete clinical and instrumental data and those who gave birth in another hospital were excluded.

Demographic data including age, parity, socioeconomic status, obstetric history, including the previous history of cesarean section or dilatation and curettage, gestational age at delivery, and any intra-operative or post-operative events were recorded. A note was also made about current pregnancy investigations and outcomes like exact placental localization, mode of delivery, estimated blood loss, number of blood transfusions, procedures required to control bleeding, intra-operative or post-operative complications, transfer to intensive care unit, and duration of hospital stay. Neonatal outcomes were reviewed for birth weight, neonatal intensive care unit admissions, and perinatal mortality.

The study was conducted according to the guidelines of the Declaration of Helsinki. Ethical review and approval were waived for this study, due to its retrospective design.

Results

During the study period, there were 23,451 deliveries, out of which 39 patients were diagnosed with placenta accreta spectrum, which provides an incidence of 0.1% at our institution. Most patients in our study were in the 30–35 years age group. Out of 39 patients, 29 patients (74.35%) were secundiparas, 18 patients (46.15%) were diagnosed antenatally by color Doppler, 10 patients (25.64%) presented in the labor room with antepartum hemorrhage, while 11 patients (28.2%) were diagnosed intraoperatively during LSCS. Previous LSCS was the most critical risk factor for PAS in our study. A total of 20 subjects (51.28%) delivered between 34–38 weeks of pregnancy. Table 1 depicts demographic characteristics and risk factors for PAS.

Table 1. Demographic characters and risk factors for PAS.

Parameters	No. of Patients(n)	Percentage (%)	
Age	<30 years	15	38.4%
	30–35 years	20	51.3%
	>35 years	4	10.25%
Gestational age (GA)	28–32 years	5	12.82%
	32–34 years	6	15.4%
	34–38 years	20	51.28%
	>38 years	8	20.51%
Parity	P1	6	15.4%
	P2	29	74.35%
	P3	4	10.25%
Previous LSCS	1	15	20.6%
	2	21	53.84%
	>2	2	6.25%
History of uterine curettage	8	20.51%	

Thirty-two of the women with PAS (82.05%) had undergone hysterectomy, and eight patients did not undergo a hysterectomy. For the females who did not undergo hysterectomy, treatment included uterine artery ligation ($n = 4$), hypogastric artery ligation ($n = 1$), balloon tamponade ($n = 2$), two or more uterotonics ($n = 7$), and wedge resection of the uterus to which placenta is attached ($n = 3$). Twenty-eight patients needed ICU care, and 13 of them required ventilatory support; three of them died due to hemorrhagic shock. Nineteen patients had blood loss of more than 3 L, and 13 needed more than four units of blood. Twelve of our patients had Disseminated Intravascular Coagulation (DIC). The bladder was injured in 10 patients, and one had a ureteric injury. Maternal complications, estimated blood loss, and number of transfusions are shown in Tables 2–4, respectively.

Table 2. Maternal complications.

Characteristics	No of Patients	Percentage
Hysterectomy	32	82.05%
ICU admission	28	71.79%
Ventilatory support	13	33.33%
Prolonged hospital stays	33	84.61%
DIC	12	30.7%
Bladder injury	10	25.64%
Deaths	3	7.69%
Ureteric injury	1	2.5%
VVF	1	2.5%

Table 3. Estimated intrapartum blood loss.

Blood Loss (in mL)	No. of Patients	Percentage
<2000 mL	10	25.64%
2000–3000 mL	12	30.76%
3000–4000 mL	11	28.20%
>4000 mL	8	20.51%

Table 4. Number of transfusions.

Transfusions	No. of Patients	Percentage
Blood transfusion		
One or more units of packed red cells	22	56.41%
Four or more units of packed red cells	13	33.33%
Fresh frozen plasma (FFP) transfusion	16	41.02%

In our study, preterm birth occurred in 26 cases (53.84%). Twenty-one patients required NICU admissions (53.8%), and six each had early neonatal death and stillbirth (15.4%). Table 5 shows the perinatal outcomes in our study.

Table 5. Perinatal outcome.

Perinatal Outcome	No. of Patients	Percentage
Live births	33	84.61%
Stillbirths	6	15.4%
NICU admission	21	53.84%
Preterm birth	26	66.66%
Neonatal death	6	15.4%

Discussion

The incidence of morbidly adherent placenta varies between 0.001 and 0.9 percent of deliveries, depending on the used definition of placenta accreta and the study population, and has risen dramatically over the last three decades, coinciding with the rise in CS rates [14]. Maternal age >30 years, past cesarean sections, and concurrent placenta previa were all risk factors for placenta accreta. Fitzpatrick et al. found similar results. [15]. Additionally, another study by Farquhar C.M. in 2017 reported “that older maternal age, past cesarean section, placenta previa were independent risk indicators for PAS disorders” [16]. The surgical delivery was done in all cases in this study. In the present study, 82.05% of subjects underwent a hysterectomy. According to previous studies, MAP is the most common indication for immediate postpartum hysterectomy, amounting to half of all emergency peripartum hysterectomies [17,18]. Comstock C.H., in his study, found that “hysterectomy is the gold standard in management” [19]. According to our study, 82.05% of the patients underwent a hysterectomy, 84.61% had prolonged hospital stay, 71.79% ICU admission, 89.74% required blood transfusion, 41.02% required FFP transfusion, 25.64% required bladder repair, and the mortality rate was 7.6%, which is similar to the results of Desai R. et al. [20]. A review of 34 studies conducted between 1977 and 2012 found that “the most important maternal outcomes include the need for postpartum transfusion and peripartum

hysterectomy,” as found in our study [21]. In our study, 18 patients (46.15%) had planned hysterectomy and 21 had an unplanned hysterectomy (53.84%), which was similar to the study by Robinson et al. [22]. Scheduled delivery in PAS results in less blood loss, shorter operative time, and blood transfusions. Every attempt should be made to decrease the loss of blood and arrangement for properly cross-matched blood should be done before surgery. Women with PAS delivered before term due to the bleeding. An unplanned delivery occurs or a planned delivery is scheduled before 37 weeks in the case of antenatal diagnosis of PAS. As a result, the babies born to these women were often preterm, had low birth weight, and had low APGAR scores. In our study, preterm birth occurred in 26 cases (53.84%), 21 required NICU admissions (53.8%), and 6 each had early neonatal death and stillbirth (15.4%), which is consistent with the review of Desai R et al. [20]. Some other studies produced similar findings [23,24].

Conclusion

PAS is a devastating event in women’s pregnancy. It leads to high maternal morbidity, mortality, and adverse neonatal outcome. The important risk indicators for PAS are previous LSCS and placenta previa. Every case with these two concurrent conditions should be operated on in a planned way in the presence of senior obstetricians and the anesthetist team.

Author Contributions: Conceptualization, P.S. and P.R.; methodology, S.S.; software, P.S.; validation, P.S., P.R. and S.S.; formal analysis, S.S.; investigation, P.S., P.R. S.S.; resources, S.S.; data curation, P.R.; writing—original draft preparation, P.S., P.R., S.S.; writing—review and editing, P.S.; visualization, P.R.; supervision, P.S.; project administration, S.S.

Funding: This research received no external funding.

Conflicts of Interest: The authors declare no conflict of interest.

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