



ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

FETO-MATERNAL OUTCOME IN PLACENTA ACCRETA SPECTRUM (PAS) IN TERTIARY CARE HOSPITAL, JHARKHAND, INDIA

KEY WORDS: Placenta Accreta Spectrum, PAS, Feto-maternal outcome

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ABSTRACT

Background: Placenta accreta spectrum (PAS) or adherent placenta is a growing obstetrics issue in which the placenta implants at an area of defective decidualization and does not separate after deliver, causing a very high maternal morbidity and mortality; requiring early antenatal diagnosis. **Objectives:** To study feto-maternal outcome of the patients with PAS. To study the demographic details, risk factors, ultrasound findings about placenta, operative procedures done, requirement of blood transfusion and postoperative events and Neonatal outcomes. **Methodology:** After Ethical Approval, a Prospective, observational study done on 50 patients between April 2019- August 2020 in the Department of Obstetrics and Gynaecology, Rajendra Institute of Medical Sciences, Ranchi, coming with USG or MRI diagnosed PAS in OPD/LR, Cases found during cesarean delivery, Cases requiring manual removal of placenta (MROP) after vaginal delivery. Data was entered into excel sheet and analysed using SPSS from IBM. **Results:** In the study, Incidence of PAS came to be 0.25% (n-50). Incidence of placenta accreta spectrum (PAS) with APH was 0.25% (n-18). Mean age of PAS was 27.22 +/-4.74 years. Major risk factors were placenta previa (34%) and history of previous LSCS (46%). 64% patients had placenta accreta, 24% had placenta increta and 12% patients had placenta percreta. The overall complication rate was 62% while mortality rate was 26%. Major maternal complications seen in cases of PAS were bladder/ bowel injury (22%). Requirement of caesarean hysterectomy was seen in 52% cases. Pre-term delivery was seen in 80% of the cases. Low APGAR was reported in 28.6% cases. **Conclusion:** Correct prenatal diagnosis allows time for a multidisciplinary team to make delivery plans, which will help decrease surgical complications, maternal blood loss and prolonged intensive care unit admission.

INTRODUCTION

BACKGROUND

Placenta forms the most important link between developing fetus and mother. Normal situation of placenta is very vital for appropriate growth and development of fetus. Any change in placental location or architecture results in poor pregnancy outcome both for mother and fetus. Kurt Benirschkein 1981 stated that "Placenta is the most accurate record of the infant prenatal experiences".^[1] Placenta accreta spectrum (PAS) is a condition in which the placenta implants at area of defective decidualization typically caused by preexisting damage to the endometrial-myometrial interface and hence does not separate after delivery. It is described as adherent or invasive placenta. The adherent variety is commonly known as placenta accreta, the invasive types are placenta increta and placenta percreta. It can also be divided as focal, partial, total depending on number of cotyledons involved.^[2] FIGO has recently given the guidelines for conservative & non-conservative surgical management of PAS according to grade of accreta invasiveness.^[3] PAS is a growing obstetrics issue because of rising incidence of its risk factors i.e. prior caesarean delivery, pregnancy resulting from assisted reproductive techniques (ART), placenta previa, prior uterine surgery (dilatation and curettage, manual removal of placenta, synaecolysis or myomectomy), increasing maternal age and parity.^[4] PAS was reported as 1:30,000 deliveries in 1950 and has dramatically increased to 1:700 in recent years of 2019.^[5,6,7] It has a very high maternal morbidity and the mortality may be as high as 9% (Range: 5-15%).^[8] Antenatal diagnosis of PAS is highly desirable because outcomes are optimized when delivery occurs at a level of tertiary maternal care facility before the onset of labor or bleeding. Adequate number of blood units, experienced surgeon, anesthetist and intensive care team can be recruited for such a patient.^[9,10] The diagnosis is usually established by ultrasonography and

occasionally supplemented by magnetic resonance imaging (MRI) during antenatal period. However not all population, especially from low resource states have access to qualified and experienced radiologists. Due to these factors, placenta spectrum (PAS) disorders are often diagnosed only at the time of delivery; either during manual removal of Placenta (MROP), retained placental fragment requiring curettage after vaginal birth and heavy bleeding from the placenta site after removal of the placenta during caesarean delivery. It is therefore important that, obstetricians working at all levels should be familiar with the risk factors and proper diagnosis that will facilitate in programmed management and individualization of the patients for better feto-maternal outcome.

AIMS & OBJECTIVES:

To study feto-maternal outcome of the patients with PAS. To study demographic details like age, parity, period of gestation, risk factors like placenta previa, previous caesarean and history of other uterine surgeries, ultrasound findings about placenta, operative procedures done, requirement of blood transfusion and postoperative events. Neonatal outcomes were reviewed from birth weight, NICU admission, and perinatal mortality.

METHODOLOGY:

After Ethical Approval from Institutional Ethics Committee (IEC), a Prospective, observational study done on 50 patients between April 2019- August 2020 in the Department of Obstetrics and Gynaecology, Rajendra Institute of Medical Sciences, Ranchi, coming with USG or MRI diagnosed PAS in OPD/LR, cases incidentally found during cesarean delivery, cases requiring manual removal of placenta (MROP) after vaginal delivery. Patients with other causes of Antepartum haemorrhage, the cases of MROP after vaginal delivery where placenta could be completely removed were excluded from

the study. Demographic details, detail history of current pregnancy and previous pregnancies, examination, routine antenatal investigations were done. Diagnosis of placenta accreta spectrum was made by ultrasonography/MRI. Follow up of these patients till delivery was done. Maternal outcomes were measured in terms of period of gestation at the time of delivery, Mode of delivery, extra surgical maneuvers needed, Need for ICU, etc were noted. An analysis of maternal outcome was done with respect to development of hypovolemic shock, DIC, acute kidney injury, septicemia and maternal deaths. For the newborn, gestational age at delivery, APGAR score, birth weight, need for NICU admission, still birth rate, neonatal mortality rate, presence of congenital anomalies were noted down. Data was entered into excel sheet and analysed using SPSS from IBM.

RESULTS:

In the study, total 20176 patients were screened. Out of which, Incidence of PAS came to be 0.25% (n-50). 24 patients were diagnosed before delivery and 26 incidentally during delivery. Incidence of placenta accreta spectrum (PAS) with APH was 0.25% (n-18). Mean age of PAS was 27.22 +/-4.74 years, 78% patients were Multigravida, 80% patients with PAS had gestational age less than 36 weeks.

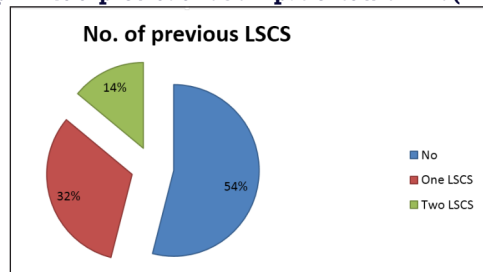
Table 1: Socio-demographic profile of patients with PAS.

Socio-demography		N	%
Residence	Rural	33	66.0%
	Urban	17	34.0%
Education	Illiterate	39	78.0%
	Primary	2	4.0%
	Middle School	5	10.0%
	High School & Above	4	8.0%
Socio-economic Status	Lower	18	36.0%
	Upper Lower	25	50.0%
	Lower Middle	7	14.0%

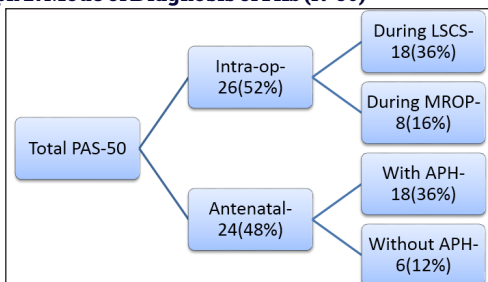
Table 2: Risk factors in patients with PAS

Risk Factors		N-50	%
H/O Abortion	Yes	13	26.0%
	No	26	52.0%
	NA	11	22.0%
ART		6	12.0
Previous Surgery	LSCS	23	46.0%
	D&C	11	22.0%
	Myomectomy	2	4.0%
Placenta Previa	Present	17	34.0%
	Absent	33	66.0%

Graph 1: No of previous LSCS in patients with PAS (n-23)



Graph 2: Mode of Diagnosis of PAS (N-50)



In patients with PAS, 64% patients (32 out of 50) had placenta accreta, 24% were placenta increta and 12% patients had placenta percreta. 80% patients with PAS had preterm delivery (<37wks) and only 20% patients had term pregnancy at the time of delivery.

Graph 3: Mode of Delivery of patients with PAS (N-50)

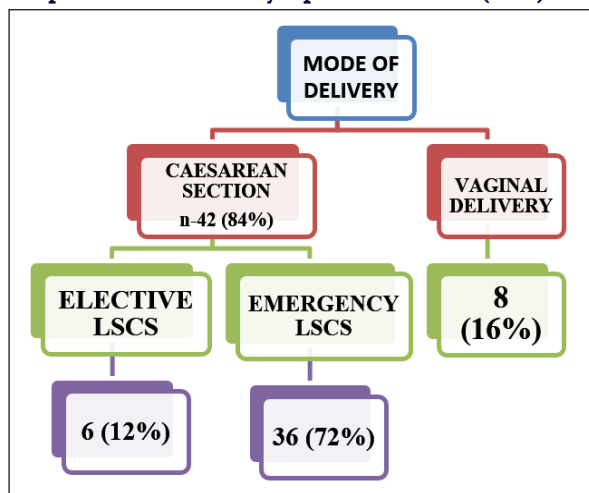


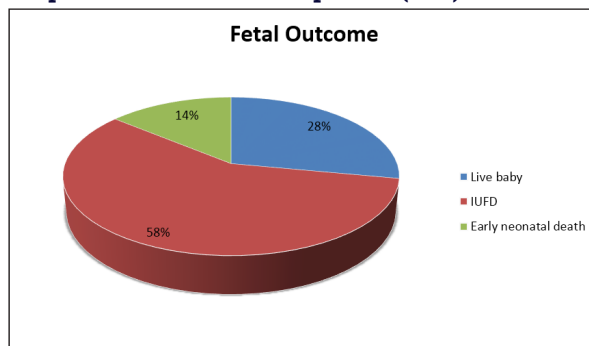
Table 3: Management/ Intra-operative procedures of PAS

Management	N	%
Cervico-isthmic sutures	32	64.0%
Uterine artery Ligation	29	58.0%
Internal iliac ligation	1	2.0%
Post-op Methotrexate	10	20.0%
Sub Total Hysterectomy	26	52.0%

Table 4: Distribution of cases of PAS as per maternal complications

Maternal Complications	N	%
ARDS	4	8.0%
DIC	9	18.0%
PPH	5	10.0%
Massive blood transfusion	42	84.0%
Sepsis	4	8.0%
ARF	1	2.0%
Wound Dehiscence	8	16.0%
Bladder/ Bowel Injury	11	22.0%
Uterine artery Injury	5	10.0%
Mortality	13	26.0%
None	6	12.0%

Graph 4: Fetal outcome in PAS patients (n-50)



Mean birth weight of the live babies was 1.96 Kg. Out of 14 live babies, only 2 babies (14.3%) had birth weight of 2.5 Kg or more.

Table 5: Fetal complications in live babies

Fetal Complications	N	%
APGAR < 7 at 5 mins	4	28.6%
NICU Admission	9	64.3%

Low Birth weight	8	57.1%
No complication	2	14.2%

DISCUSSION:

In the study conducted at our institution, the total population screened during the study period of 18 months was 20,176 pregnant females. Incidence of PAS came to be 0.25% (n=50). Incidence of placenta accreta spectrum with APH was 0.25% (n=18). A study done by **Aggarwal et al.**^[11] over a period of 5 years in a tertiary hospital in Delhi in 2012 and they found the incidence of placenta accreta to be 0.04% i.e. 1 in 2,699 deliveries. In a 2019 systematic review that included 7001 cases of PAS among nearly 5.8 million births, the overall pooled prevalence was 0.17 percent (range 0.01 to 1.1 percent).^[12] A similar study done by **Kumari A et al.** in our institution over a period of two years showed incidence of PAS as 0.31%.^[13] The incidence of PAS shows an increasing trend over the past years while comparing all the studies, and we have also found the same result.

Mean age of PAS was 27.22 +/-4.74 years with 13 out of 50 cases (26%) being over 30 years of age. In present study, 78% patients were Multigravida. Majority of patients (66%) belonged to rural areas, 84% patients were unbooked cases, 78% patients were illiterate and 86% patients belonged to lower socio-economic background as per Modified Kuppuswami Scale. In present study, Socio-demographic distribution of cases was similar to studies done before by **Wasim T et al.**^[14] and **KILIÇCI Ç et al.**^[15]

History of LSCS seen in 46% patients in our study, while **Wasim T et al.**^[14] in their study reported history of LSCS in 96% cases and **Silver RM et al.**^[16] in their prospective study found 100% patients had a prior history of LSCS. In a multivariate analysis done by **Heller DS et al.**^[17], placenta previa appeared to be an independent risk factor for PAS; that is opposed to our study where Placenta Previa was a risk factor in only 34% cases.

For better management of the patients and to reduce morbidity and mortality, diagnosis of placenta accreta spectrum has to be done in antenatal period. In our study, Out of 50 PAS cases, 48% (24 patients) were diagnosed in the antenatal period by USG/MRI. 52% cases presented during intra-op period. Out of which, 18 patients (36%) presented during LSCS while 16% presented during difficult MROP, where placenta had to be removed in chunks and still a part of placenta was left in-situ in a few cases. In other studies also most of the times, diagnosis was made intraoperatively. Similar results were obtained by **Kumari A et al.**^[13] in her study where diagnosis of placenta accreta was made by antenatal ultrasound in 30.2% cases, 53.4% were diagnosed intraoperatively during caesarean section and remaining diagnosed during manual removal of placenta.

Out of 50 patients, Placenta Accreta was the commonest (64%), 24% had placenta increta and 12% patients had placenta percreta. In contrast to our study, a study by **Kumari A et al.**^[13] placenta increta was commonest (46.5%) in the spectrum followed by placenta accreta (37.2%) and placenta percreta (16.2%). Placenta accreta is much more common than placenta increta and percreta as mentioned in the systematic review by **Jauniaux E et al.**^[12]

Ante partum and postpartum haemorrhage, caesarean hysterectomy and preterm birth are main morbidities in cases of placenta accreta when compared to normally sited placenta.^[18] In the present study, we observed that Emergency LSCS was required in 72% cases while 12% cases had elective LSCS and 16% patients had vaginal delivery. Patient had one or more intra-operative procedures. Requirement of caesarean hysterectomy was seen in 52% cases, while few cases were managed by combination of Cervico-isthmic

sutures (64%), uterine artery ligation (58%), internal iliac artery ligation(2%). Post-op Methotrexate was given in 20% cases (10 out of 50).

In present study, we observed that overall complication rate was 62% while mortality rate was 26%. Morbidities seen in various studies were similar to our studies. **KILIÇCI Ç et al.**^[15] observed bladder injury (12.5%), hypertensive disorders (12.5%), DIC (10.4%) and PPH (12.5%). The most significant maternal outcomes include the need for postpartum transfusion due to haemorrhage and peripartum hysterectomy. They also reported significantly higher maternal mortality (22%) similar to our study (26%).

Placenta accreta spectrum is most strongly associated with preterm birth, low-birth weight, and small for gestational age, and reduced 5-min Apgar scores.

In our study, IUFD was seen in 58% cases while early neonatal death was seen in 14% cases. Mean birth weight of the live babies was 1.96 Kg and only 14.3% cases had birth weight of 2.5 Kg or more. NICU admission was required in 64.3% cases with maximum babies having low APGAR score at 5minutes (28.6%). 4 cases of RDS and 5 cases of FGR was reported in our study. High incidence of still births have also been observed by **Upson, K et al.**^[19], they reported that placenta accreta was associated with a marked increased risk of co-existing placenta previa (aOR: 23.2, 95% CI: 16.8–31.8) and stillbirth (aOR: 4.7, 2.4–9.1). **Balayla, J et al.**^[20] also reported similar adverse neonatal outcomes including perinatal mortality, preterm delivery, low birth weight, 5-min Apgar <7, neonatal intensive care unit (NICU) admission, neonatal asphyxia, and hypoxia. Other studies have also reported adverse neonatal outcomes in these patients in terms of lower birth weight and preterm birth^{[13][14][21]}, while there are some others that have reported term deliveries with good perinatal outcomes.^[22] The reason may be difference in comparison groups, time of diagnosis and booking status of the patients.

CONCLUSION:

Placenta accreta spectrum occur commonly in women with high risk factors like caesarean section and placenta previa. Correct prenatal diagnosis allows time for a multidisciplinary team to make delivery plans, which will help decrease surgical complications, maternal blood loss and prolonged intensive care unit admission.

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