

Research Article

A Study on Incidence, Risk Factors, and Maternal Outcome of Placenta Accreta Spectrum in a Tertiary Care Hospital

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Abstract

Background: Placenta accreta spectrum (PAS) refers to abnormal adherence of the placenta, including accreta, increta, and percreta, which can lead to severe maternal morbidity and mortality due to complications such as hemorrhage, invasion into adjacent organs, and need for blood transfusions.

Methods: This retrospective study was conducted at the Government Maternity Hospital, Hanamakonda, Kakatiya Medical College, from January 2024 to June 2024. Data were collected on women presenting with PAS based on clinical and radiological diagnosis, including antenatal and intraoperative findings. Maternal demographic data, risk factors, and outcomes were analyzed.

Results: Among 2,700 deliveries, 16 cases of PAS were identified (incidence: 0.59%). PAS subtypes consisted of 7 accreta, 5 increta, and 3 percreta. Major risk factors included advanced maternal age (56% ≥ 30 years), higher parity (81.2% gravidity 3 or more), previous lower-segment cesarean section (LSCS) in 87.5%, and history of D&C (31.2%). Placenta previa was present in 62.2% of cases. Unbooked status and late referrals were common (68.7%). Preterm termination occurred in 87.5% of cases, and 56.2% underwent cesarean hysterectomy. There was no reported perioperative maternal mortality or significant postoperative complications.

Conclusion: Placenta accreta spectrum is increasingly recognized, i.e., PAS is being diagnosed and understood in more cases than in the past, because both the actual number of cases and clinical ability to diagnose the condition have increased dramatically in recent years, particularly among women with prior cesarean deliveries and placenta previa. Timely diagnosis, multidisciplinary management, and referral to tertiary care are essential to improve maternal outcomes.

More Information

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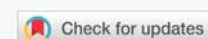
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Keywords: Placenta Accreta Spectrum (PAS); Placenta previa; Maternal morbidity; Cesarean section; Risk factors; Obstetric hemorrhage; Peripartum hysterectomy; High-risk pregnancy; Advanced maternal age



Introduction

Placenta accreta spectrum encompasses a range of abnormal placental adherence conditions, extending from superficial attachment (accreta) to deep invasion of the myometrium (increta) and through the uterine serosa (percreta). Maternal morbidity and mortality result primarily from catastrophic hemorrhage and the need for complex surgical interventions. Rising rates of cesarean section and associated uterine surgeries contribute to the increasing prevalence of PAS. This study aims to investigate the incidence, risk factors, and maternal outcomes associated with PAS in a tertiary care Indian hospital setting.

Materials and methods

Study design: Retrospective observational study

Setting: Government Maternity Hospital, Hanamakonda, Kakatiya Medical College

Period: January 2024 to June 2024

Sample size: All women diagnosed with PAS out of 2,700 deliveries in the study period

Selection criteria

Inclusion: Women diagnosed with placenta previa and



PAS (by clinical, ultrasonographic, and MRI findings when indicated)

Exclusion: Not specified (implied: women without PAS)

Data collection

Demographics, booking status, gravida, obstetric history, gestational age at delivery, prior surgical history

Diagnosis based on clinical, imaging (USG, MRI if required), intraoperative findings

Surgical intervention data (cesarean section, hysterectomy) and perioperative outcomes

Results

Incidence of PAS

- Total deliveries: 2,700
- PAS cases identified: 16 (7 accreta, 5 increta, 3 percreta)
- Incidence: 0.59%

Demographics and risk factors (Tables 1-7)

Table 1

Characteristics	Number(N)	(%)
Booking status		
Unbooked	11	68.7
Booked	5	31.3

Table 2: Maternal age.

Range	Number(N)	(%)
20–25	3	18.7
26–30	4	25
>30	9	56

Table 3: Gravida.

Number of Gravida	Number(N)	(%)
G1	0	0
G2	3	18.7
G3 and above	13	81.2

Table 4: Obstetric history.

Past Obstetric History	Number(N)	(%)
1 previous LSCS,	6	37.5
2 previous LSCS	8	50
D&C	5	31.2

Table 5: Placenta previa status.

Type of Placenta Previa	Number(N)	(%)
Type I	1	6
Type II	2	12.5
Type III	4	25
Type IV	3	18.7

Table 6: Gestational Age at Delivery.

Gestational Age	Number(N)	(%)
< 34 weeks	3	18.7
34 - 37 weeks	11	68.7
> 37 weeks	2	12.5

Table 7: Surgery Performed.

Surgery Type	Number(N)	(%)
Cesarean section	9	56.3
Cesarean hysterectomy	7	43.7

Key observations

- Advanced maternal age: 56% cases occurred in women ≥ 30 years.
- High parity: 81.2% were gravida 3 or more.
- History of previous LSCS: 87.5% - 50% with 2 prior LSCS, 37.5% with 1 prior LSCS.
- History of D&C: 31.2%.
- Unbooked/late referral: 68.7%.
- Preterm termination: 87.5% of PAS cases; 56.2% underwent cesarean hysterectomy.
- Placenta previa co-occurrence: 62.2%.

Discussion

Placenta Accreta Spectrum (PAS) disorders represent an increasing challenge in obstetric practice due to their strong association with prior uterine surgeries, placenta previa, and rising cesarean section rates. In our study, the majority of PAS cases (87.5%) occurred in women with a history of lower-segment cesarean sections (LSCS)—most notably, two previous LSCS in 50% of cases. This echoes the growing body of evidence that the risk for PAS rises exponentially with each subsequent cesarean delivery, emphasizing the need for judicious utilization of cesarean sections in obstetric care [1].

We found that placenta previa was present in 62.2% of PAS cases, which aligns with previous findings that anterior low-lying placentas over prior uterine scars significantly increase PAS risk. Previa morphology also plays a predictive role in invasive placental disorders, acting both as a risk factor and an early diagnostic marker [2,3].

Advanced maternal age and high parity were also significantly associated with PAS in our cohort. More than half the patients were aged over 30 years, supporting global epidemiological trends that demonstrate a cumulative risk with increasing maternal age and parity [3]. Notably, 81.2% of cases were gravida 3 or more, which is consistent with the hypothesis that repeated mechanical or inflammatory injury to the endometrium predisposes to abnormal placental adherence.

Prenatal diagnosis remains a key determinant of favorable outcomes in PAS. Although our hospital follows routine second-trimester ultrasound screening, several cases remained undetected until cesarean delivery. Studies have consistently shown that antenatal identification of PAS results in less intraoperative blood loss, shorter operative times,



reduced ICU admissions, and improved neonatal outcomes [4]. This underlines the need for enhanced imaging protocols and standardized training for ultrasonographers in resource-limited settings.

In terms of management, 43.7% of our patients required cesarean hysterectomies due to uncontrolled hemorrhage and extensive myometrial invasion. This rate is in line with international experience from tertiary care centers. However, recent strategies advocating for conservative or fertility-sparing approaches in selected patients are gaining traction, particularly in lower-middle-income countries where access to blood products and ICU care may be limited [5]. Institutional protocols and individualized risk-based decision-making remain crucial in optimizing outcomes.

Overall, our study contributes to the growing regional data supporting the association between prior uterine surgeries, placenta previa, and adverse maternal outcomes. These findings align with FIGO's global recommendations on the diagnosis and management of PAS, highlighting the importance of early risk factor identification, multidisciplinary planning, and protocol-based delivery in tertiary care settings [2].

Studies reported increased maternal age, multiparity, and prior surgeries as dominant risk factors. Timely multidisciplinary intervention reduced perioperative complications and mortality in this cohort [6-9].

Limitations

- Single-center, retrospective design may limit generalizability.
- Small sample size.
- Lacks long-term maternal and neonatal outcome data.

Conclusion

Placenta accreta spectrum is an increasing obstetric challenge, primarily among women with prior cesarean sections and placenta previa. In our study, placenta previa was present in 62.2% of PAS cases, supporting the strong association between lowlying placenta and abnormal placentation in women before uterine procedures and high parity. Placenta previa thus emerges both as a risk marker and a contributing factor for morbidly adherent placenta, significantly raising the risk of hemorrhage, early delivery, and surgical morbidity.

Early identification, comprehensive antenatal imaging,

and planned multidisciplinary management are crucial to minimize maternal morbidity and mortality.

Recommendations

- Promote regular antenatal care and timely referral for at-risk pregnancies.
- Universal screening for placenta previa and careful evaluation of women with previous cesarean sections.
- Delivery planning in well-equipped tertiary care centers with a multidisciplinary team.
- Policy efforts aimed at reducing primary cesarean rates.

Declarations

Ethics approval: Approved by the Institutional Ethics Committee.

Acknowledgement

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