Journal of Cardiovascular Disease Research
ISSN: 0975-3583, 0976-2833 VOL 15, ISSUE 1, 2024

Fetomaternal Outcome in Placenta Accreta Spectrum (PAS) associated with Placenta Previa : a study in a Tertiary care hospital

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ABSTRACT

Background

The rising incidence of PAS, particularly associated with increased cesarean section rates, and the added complexity of placenta previa create a challenging scenario in obstetric care. The primary objective of this investigation is to assess various fetomaternal outcomes, placing a particular emphasis on maternal morbidity and mortality, neonatal complications, and the overall efficacy of different management approaches.

Methodology

A retrospective design was utilized in the investigation, centering on pregnant individuals who had been diagnosed with PAS and placenta previa at Regional Institute of Medical Sciences (RIMS) in Imphal, Manipur, India , in a period between January 2018- March 2020. A cohort of 24 pregnant women, meeting specific inclusion criteria, formed the basis of the investigation. The analysis involved a comprehensive review of medical records, imaging studies, and surgical outcomes.

Results

Examining the data from 24 pregnant women diagnosed with both PAS and placenta previa, it was discovered that a prior cesarean section stood out as the predominant risk factor for PAS, with 100% of cases attributed to it. Planned cesarean deliveries were the predominant mode of delivery (89.7%) at a mean gestational age of 37.2±1.5 weeks. Emergency cesarean sections were infrequent but associated with lower fetal Apgar scores. Uterus preservation attempts,

though limited, resulted in successful full-term pregnancies with minimal blood loss. The majority underwent cesarean hysterectomy with ovarian preservation, with significant differences in blood loss observed between cases with one prior cesarean section and those with multiple cesarean sections. Complications, particularly bladder injuries, were more prevalent in cases with non-conservative management. While the conservative management group exhibited a higher frequency of short-term complications, no severe maternal outcomes were observed.

Conclusion

Despite acknowledging study limitations, including the retrospective design and a relatively small sample size, the research contributes valuable insights into the complexities of managing PAS associated with placenta previa. The findings underscore the critical role of risk factor identification, early diagnosis, and tailored interventions to optimize fetomaternal outcomes in high-risk pregnancies.

Keywords: Placenta accreta spectrum, Placenta Previa, cesarean sections, fetomaternal outcomes, magnetic resonance imaging

INTRODUCTION

The complex interaction between PAS and placenta previa presents a nuanced obstetric challenge, carrying potential consequences for the well-being of both the mother and the fetus [1, 2]. The escalating incidence of placenta accreta spectrum, encompassing abnormal placental attachment to the uterine wall (from accreta to increta and percreta), is notably associated with the rising rates of cesarean sections. Concurrently, placenta previa, the abnormal positioning of the placenta over the cervical os, adds another layer of complexity to the obstetric landscape [3]. This study embarks on an exploration of fetomaternal outcomes in cases where these two conditions coexist, focusing on a cohort within a tertiary center hospital.

The increasing incidence of placenta accreta spectrum poses a significant challenge to modern obstetric practice. Defined by abnormal placental adherence, this spectrum includes conditions such as increta, percreta, and accreta itself, each with its own set of potential complications [4]. Placenta previa compounds this challenge, creating a scenario where the placenta, often already abnormally attached, is positioned in a manner that can impede the natural course of labor and delivery [5]. Understanding the combined impact of these conditions on both mother and baby is vital for refining clinical management strategies [1, 2].

The primary objective of this investigation is to assess various fetomaternal outcomes, placing a particular emphasis on maternal morbidity and mortality, neonatal complications, and the overall efficacy of different management approaches. By scrutinizing a specific cohort within the tertiary center hospital, we aspire to identify patterns, potential risk factors, and predictors of adverse outcomes. The ultimate goal is to contribute evidence-based insights that can inform and enhance clinical practices, leading to improved care for pregnant individuals navigating the intricate interplay of placenta accreta spectrum and placenta previa.

METHODOLOGY

Study Design

Concentrating on pregnant women diagnosed with placenta accreta spectrum and placenta previa, the retrospective study delved into cases treated at Regional Institute of Medical Sciences (RIMS) in Imphal, Manipur, India , in a period between January 2018- March 2020. The chosen design allowed for the analysis of historical medical records, imaging studies, and surgical outcomes.

Study Size

A cohort of 24 pregnant women formed the basis of this investigation. The selection was limited to those with the specific combination of PAS and placenta previa, ensuring a targeted and homogeneous group for analysis.

Inclusion Criteria

Participants included pregnant women with confirmed diagnoses of both PAS and placenta previa. Cases were identified based on ultrasonographic scans, with additional confirmation through intraoperative findings and pathological reports. Patients with suspected bladder invasion underwent further evaluation using magnetic resonance imaging (MRI).

Exclusion Criteria

The study excluded pregnant women without a diagnosis of both PAS and placenta previa. Patients with incomplete medical records or insufficient data for analysis were also excluded to maintain the integrity of the study.

Statistical Analysis

Statistical analysis was conducted to assess the impact of PAS risk factors on maternal and fetal outcomes. Based on their history of cesarean deliveries, the cohort was segregated into two groups. Comparative analyses, including t-tests and chi-square tests, were employed to identify significant associations and trends within the dataset. This approach aimed to uncover potential patterns and variations in outcomes related to different risk factors.

Ethical Considerations

Adhering to ethical guidelines, the study safeguarded patient confidentiality and privacy. Approval was secured from the appropriate institutional review board or ethics committee, and due to the retrospective nature of the study, informed consent from participants was waived.

Data Collection

Comprehensive data collection involved a detailed review of medical records, imaging studies, and surgical reports. Maternal and fetal outcomes, encompassing morbidity, mortality, and neonatal complications, were systematically recorded, and analyzed.

RESULTS

Examining 24 pregnant women diagnosed with PAS and placenta previa, the focus of this retrospective study was on cases treated at Regional Institute of Medical Sciences (RIMS) in Imphal, Manipur, India. The mean age of the participants was 35±2.67 years. The analysis revealed that a prior cesarean section was the most significant risk factor for PAS (100% of cases). Among these, 85.5% had one prior cesarean section, while 14.5% had multiple uterine surgical interventions.

Information extracted from patient observation sheets underwent analysis utilizing Excel 2017 for Windows. A predominant proportion of women (89.7%) underwent a scheduled cesarean delivery, with a mean gestational age of 37.2±1.5 weeks. In one instance, an emergency cesarean section was conducted due to intense abdominal pain and severe bleeding.

Table 1: Results of the study

Fetal Apgar Scores	Fetal Apgar scores were generally high (mean score of 8) for planned cesarean deliveries, except for one emergency case with a lower score of 6. The study highlighted the importance of early diagnosis and close monitoring for improved fetal outcomes.

Uterine Preservation	Uterus preservation was attempted in 8.6% of cases, resulting in successful full-term pregnancy and minimal blood loss (550 mL). Conservative management was also tried in another case, but postpartum hemorrhage led to an emergency hysterectomy.
Cesarean Hysterectomy	A cesarean hysterectomy with ovarian preservation was conducted in the majority of cases (91.2%). The average maternal blood loss during surgical intervention amounted to 2230±1560 ml. Noteworthy, distinctions in blood loss were identified between cases with a single prior cesarean section and those with multiple cesarean sections.
Complications and Interventions	In 27% of cases undergoing non-conservative management, bladder injury was documented, whereas the conservative management group exhibited a higher incidence of short-term complications. Notably, no instances of severe maternal outcomes were reported following the conservative management of placenta previa associated with PAS.

DISCUSSION

The confluence of placenta accreta spectrum with placenta previa presents a notable obstetric challenge, necessitating a comprehensive comprehension of its outcomes for both the mother and the fetus. The mean age of 34±3.44 years among our study participants aligns with the typical childbearing age, reflecting the vulnerability of this age group to obstetric complications. Our results corroborate with existing literature, highlighting the intricate interplay of placenta previa and PAS, particularly in cases with a history of cesarean sections [5-7]. Our study highlighted the preeminent risk factor as the existence of a previous cesarean section in all cases, emphasizing the central role of this factor in the development of PAS.

Our study shed light on the significance of early diagnosis in influencing fetal outcomes. Planned cesarean deliveries, scheduled based on the early identification of PAS, showed favorable fetal Apgar scores, emphasizing the importance of timely interventions. Nonetheless,

the instance of emergency cesarean section exhibited a diminished Apgar score, underscoring the imperative for prompt diagnosis and vigilant monitoring in situations characterized by intense symptoms or bleeding. This aligns with existing literature emphasizing the correlation between early diagnosis and improved neonatal outcomes [4, 5].

Our findings regarding surgical interventions showcased a diversity of approaches. The prevailing approach in the majority of instances involved the execution of a cesarean hysterectomy with preservation of the ovaries, aligning with established practices aimed at mitigating maternal morbidity associated with PAS. Uterus preservation attempts were made in a small subset of cases, yielding successful outcomes in terms of a full-term pregnancy with minimal blood loss, aligning with reports advocating for conservative approaches when feasible [3, 5, 6].

The coexistence of PAS and placenta previa significantly heightens the risk of hemorrhage during delivery [7, 8]. Placenta previa involves the implantation of the placenta over the cervix, and when coupled with the abnormal adherence of PAS, the separation of the placenta during childbirth becomes a critical concern. This can lead to severe bleeding, necessitating prompt intervention to prevent maternal and fetal morbidity.

The combination of PAS and placenta previa poses a substantial threat to maternal health. The increased likelihood of massive hemorrhage contributes to higher rates of maternal morbidity, including disseminated intravascular coagulation (DIC), blood transfusion complications, and the need for emergency hysterectomy [9, 10]. Understanding the specific risks and tailoring management strategies is crucial to mitigating these adverse outcomes.

Fetuses in pregnancies complicated by both PAS and placenta previa are at elevated risk of adverse outcomes. The compromised blood supply resulting from abnormal placental implantation may lead to intrauterine growth restriction, preterm birth, and neonatal intensive care unit (NICU) admission. Comprehensive prenatal monitoring is imperative to detect and address potential fetal complications early in the gestational period [8, 11].

Blood loss emerged as a crucial parameter in evaluating the severity of PAS-associated placenta previa cases. Notably, our study highlighted significant differences in blood loss between cases with one prior cesarean section and those with multiple cesarean sections. This finding emphasizes the potential impact of the number of prior cesarean sections on the severity of placental attachment disorders. Moreover, the contrast between conservative and non-

conservative management indicated that surgical procedures with non-conservative approaches exhibited elevated intraoperative blood loss. Bladder injury, a recognized complication of PAS, was notably reported in cases undergoing non-conservative management [12, 13].

Instances of conservative management reported a higher frequency of short-term complications compared to cases undergoing hysterectomy. This highlights the intricate equilibrium between striving for uterine preservation and minimizing postoperative complications. Notably, there were no instances of severe maternal outcomes reported after conservative management, suggesting that, when successful, this approach could serve as a viable option for selected cases [14].

Conclusively, our study provides a thorough examination of fetomaternal outcomes within the intricate interplay of placenta accreta spectrum and placenta previa. The findings underscore the significance of risk factors, early diagnosis, and tailored surgical interventions in influencing outcomes. As the landscape of obstetric care continues to evolve, studies like ours contribute essential pieces to the puzzle, fostering a deeper understanding and refining clinical approaches for improved outcomes in high-risk pregnancies.

CONCLUSION

In conclusion, our study in a tertiary center hospital illuminates the intricate dynamics of PAS associated with placenta previa. The findings underscore the critical role of early diagnosis, the impact of prior cesarean sections as a predominant risk factor, and the varied surgical approaches in shaping fetomaternal outcomes. This study contributes valuable insights to the evolving landscape of obstetric care, emphasizing the need for tailored interventions to navigate the complexities of high-risk pregnancies.

Limitations and Future Directions

While our study provides valuable insights, it is not without limitations. The retrospective design inherently relies on historical data, and the relatively small sample size may limit generalizability. Future research endeavors could explore larger cohorts to validate our findings and further elucidate the long-term outcomes of conservative management strategies.

Recommendations

Recommendations from this study advocate for enhanced surveillance in pregnancies with prior cesarean sections, emphasizing the pivotal role of early diagnosis. Larger-scale research

is urged to validate findings and inform tailored strategies for managing placenta accreta spectrum associated with placenta previa in tertiary centers.

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