Original Research Article

A Study on Cases of Placenta Accreta Spectrum in a Tertiary Care Centre

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Abstract:

Background: The Placenta Accreta Spectrum (PAS) involves abnormal placental attachment to the uterine wall, exacerbated by rising cesarean section rates. Effective management in rural settings requires early diagnosis through ultrasound and MRI, and a collaborative care approach.

Methods: A retrospective analysis at a tertiary care center from January 2015 to December 2019 assessed PAS prevalence, types, management, and outcomes in 60 patients. The study utilized medical records for data on demographics, PAS type, treatment methods, and outcomes, employing both descriptive and inferential statistics.

Results: The cohort showed high multiparity, with PAS types identified as accreta (40%), increta (35%), and percreta (25%). Antenatal diagnosis occurred in 80% of cases, with cesarean hysterectomy being the main treatment (70%). Significant maternal morbidity, including blood loss and ICU admissions, was noted, alongside generally positive fetal outcomes. PAS severity and prior cesarean deliveries were linked to increased maternal morbidity.

Conclusion: Managing PAS in rural settings is challenging, requiring early detection and interdisciplinary strategies. The study underscores the importance of careful surgical planning and reducing non-essential cesarean deliveries to mitigate PAS risks.

Recommendation: Enhancing diagnostic tools and establishing team-based protocols are essential in rural care centers to improve PAS patient outcomes.

Keywords: Placenta Accreta Spectrum, Tertiary Care, Cesarean Section, Multidisciplinary Management.

Introduction

The Placenta Accreta Spectrum (PAS) describes obstetric complications arising from abnormal placental adherence to the uterine wall, which is categorized into placenta accreta, increta, and percreta based on invasion depth. The increased PAS incidence is notably linked to the global rise in cesarean sections (C-sections) and other uterine surgeries that contribute to uterine scarring, thus elevating the risk for future pregnancies [1,2]. Diagnosis primarily involves ultrasound and MRI to ascertain the extent of placental adhesion and invasion, which is pivotal for preoperative planning [3].

Management of PAS demands an integrated approach, coordinating care among obstetricians, anesthesiologists, radiologists, and potentially urologists and general surgeons to address severe hemorrhage and organ damage risks. This includes strategies like planned preterm delivery and preparation for significant blood loss, aiming to minimize maternal morbidity and mortality. While conservative management may be considered, leaving the placenta in situ poses risks of infection and extended hospitalization [4,5].

Tertiary care centers encounter specific challenges in PAS management due to the limited availability of specialized healthcare providers, diagnostic tools, and blood bank resources, complicating diagnosis and care planning and possibly elevating adverse outcome risks. Overcoming these barriers may involve telemedicine and establishing emergency transport protocols to higher-level care facilities [6]. Moreover, the scarcity of resources emphasizes the importance of preventative strategies, such as reducing non-essential C-sections and enhancing provider awareness of PAS risk factors for timely referral to specialized centers [7].

This study endeavors to provide a systematic examination of the clinical presentations, management strategies, and outcomes for PAS cases at a tertiary care center. Aiming to shed light

on the specific challenges and strategies employed in diagnosing and managing PAS in rural settings, this research seeks to evaluate the prevalence, types, and effectiveness of management approaches, both surgical and non-surgical. Through documenting these cases, the study aspires to offer insights that could inform guidelines and enhance care for PAS patients in similar healthcare environments [8,9].

Material and Methodology

This retrospective study analysis aimed to examine the diagnosis, management, and outcomes of patients with abnormal placenta accreta spectrum (PAS) at a tertiary care center.

Study Setting: The research was conducted at a tertiary care hospital, equipped with a specialized obstetrics and gynecology department for handling high-risk pregnancies and complex deliveries.

Participants: The study included all pregnant individuals diagnosed with PAS at the center from January 2015 to December 2019. Inclusion Criteria: Confirmed diagnosis of PAS during pregnancy through ultrasound and MRI or postnatally via histopathological examination. Exclusion Criteria: Incomplete medical records or patients transferred out before delivery or treatment conclusion.

Data Collection and Bias Minimization: Cases were identified using hospital records and diagnostic codes for PAS and related conditions. Two independent researchers reviewed records to identify eligible cases. Variables collected encompassed patient demographics, PAS type, diagnostic methods, management approaches, maternal outcomes, and fetal outcomes, utilizing a standardized data collection form for consistency.

Management Procedure: PAS cases were managed through a multidisciplinary team approach, including obstetricians, radiologists, and surgeons, with decisions based on the condition's severity, gestational age, and patient preferences.

Statistical Analysis: SPSS software (version 25.0) was used for data analysis. Descriptive statistics summarized the study population's characteristics, and inferential statistics, including chi-square tests and t-tests or Mann-Whitney U tests, analyzed outcomes. Logistic regression identified factors linked to adverse outcomes, considering a p-value <0.05 as statistically significant.

Results

Over five years, this study at a tertiary care center observed 60 patients diagnosed with the abnormal placenta accreta spectrum (PAS), showcasing an average patient age of 32 years, with a prevalence of multiparity (average parity of 2). The PAS cases were distributed as 40% placenta accreta, 35% increta, and 25% percreta. Diagnostics predominantly utilized antenatal ultrasound and MRI for 80% of cases, with the remainder confirmed postnatally via histopathology.

The majority (70%) underwent planned cesarean hysterectomy, marking it as the prevalent surgical treatment, whereas conservative management was attempted in 10% of cases, and the rest received alternative surgical interventions like uterine artery embolization. The study reported considerable maternal morbidity, notably an average blood loss of 1500 mL, with a significant portion (75%) necessitating blood transfusions and 30% requiring ICU care primarily due to hemorrhage and DIC complications. Fortunately, there were no maternal fatalities.

Fetal outcomes revealed an average gestational age of 36 weeks and birth weight of 2500 grams, with a subset (15%) displaying initial low Apgar scores that generally improved shortly after birth. NICU admissions were necessary for 20% of the newborns, predominantly due to prematurity and respiratory distress.

A significant correlation was identified between PAS severity and increased maternal morbidity, specifically relating to blood transfusion needs and ICU admissions. Further, logistic regression pinpointed a history of cesarean delivery as a notable predictor of PAS development.

The study underscores the complexity of managing PAS, particularly in a rural setting, highlighting the imperative of early, accurate diagnosis and the efficacy of a multidisciplinary treatment approach to enhance both maternal and fetal outcomes.

Table 1: The key demographic and clinical characteristics of the study population, including age, parity, type of PAS, diagnosis method, management approach, estimated blood loss, blood transfusion, ICU admission, gestational age at delivery, birth weight, Apgar score at 1 minute, and NICU admission.

Variable	Total (n=60)
Age (years)	32 (24-43)
Parity	2 (1-5)
Type of PAS	Accreta: 40% (n=24) < br>Increta: 35% (n=21) < br >Percreta: 25% (n=15)
Diagnosis method	Antenatal (Ultrasound and MRI): 80% (n=48) < br>Postnatal (Histo-pathology): 20% (n=12)

Management approach	Planned cesarean hysterectomy: 70% (n=42) < br>Conservative management: 10% (n=6) < br > Other surgical interventions: 20% (n=12)
Estimated blood loss (mL)	1500 (800-2500)
Blood transfusion	75% (n=45)
ICU admission	30% (n=18)
Gestational age at delivery (weeks)	36 (34-38)
Birth weight (grams)	2500 (1900-3100)
Apgar score at 1 minute	<7: 15% (n=9)
NICU admission	20% (n=12)

Discussion

This comprehensive analysis synthesizes findings from three distinct studies focusing on the impact of Placenta Accreta Spectrum (PAS) and its management implications in different healthcare settings across the globe. The first study, based at Flinders Medical Centre (FMC) in South Australia, scrutinizes the repercussions of PAS on maternal and neonatal morbidity and mortality over a decade (2006-2016) [10,11]. With a cohort of 67 cases, resulting in a prevalence rate of 2.3 per 1000 deliveries, the study accentuates the pivotal role of antenatal diagnosis (in 80% of cases) via ultrasound and MRI in managing PAS effectively. Despite the absence of maternal mortality, the significant maternal morbidity—marked by extensive blood loss, the necessity for blood transfusions, and ICU admissions—underscores the critical need for a multidisciplinary approach in handling such high-risk conditions [12].

Further expanding the geographical scope, a study from China leverages the China Labor and Delivery Survey data, encompassing 75,132 births across 96 hospitals in 24 provinces during 2015 and 2016, to reveal a weighted PASD prevalence of 2.20%. This study underscores not only the geographical variability in PASD prevalence but also identifies previous cesarean sections (CS) and repeated surgical abortions as salient risk factors. The direct association between PASD and severe adverse perinatal outcomes (indicated by a WAOS ≥ 20) signals the urgent need for reducing primary CS and repeated surgical abortions to mitigate PASD risks, spotlighting the importance of targeted interventions in improving perinatal care [13].

Lastly, a retrospective examination at the Department of Obstetrics and Gynaecology, Thiruvarur Medical College and Hospital in Tamilnadu, India, of ten cases of Emergency Obstetric Hysterectomy (EOH) unveils a 0.26% incidence of EOH, primarily necessitated by PAS (60%), followed by atonic post-partum hemorrhage (30%), and uterine perforation (10%). The prevalent use of total hysterectomy (60% of cases) and the identified shift from uterine inertia to PAS as the leading cause of EOH, chiefly attributed to the rising cesarean delivery rates, highlight the crucial need for cautious surgical planning and the

potential reduction in primary cesarean rates to decrease PAS occurrences and related severe outcomes [14].

Together, these studies illuminate the intricate dynamics of PAS management, advocating for early detection, meticulous surgical planning, and a multidisciplinary treatment approach. They collectively emphasize the significance of understanding geographical prevalence variations, risk factors, and the profound implications of surgical history on PAS development, thereby guiding strategies to minimize its morbidity and mortality across varied healthcare landscapes.

Conclusion

This study highlights the intricate challenges posed by Placenta Accreta Spectrum (PAS) in tertiary care settings, highlighting the paramount importance of early and accurate diagnosis, as well as the critical need for a multidisciplinary approach in the management of PAS. The significant maternal morbidity associated with PAS, primarily due to substantial blood loss, necessitating blood transfusions, and ICU admissions, along with the potential for serious fetal outcomes, calls for meticulous planning and intervention strategies. The findings emphasize the association between the severity of PAS and increased maternal morbidity and also reveal the significant role that a history of cesarean delivery plays in the risk of developing PAS. This study advocates for enhanced diagnostic capabilities in healthcare settings and the development of comprehensive, multidisciplinary management protocols aimed at reducing the incidence and impact of PAS. Furthermore, it suggests that efforts to minimize unnecessary cesarean sections could be a crucial step toward lowering the prevalence of PAS, thereby improving maternal and fetal outcomes in such challenging healthcare environments.

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