

Analyze the short-term and long-term maternal and neonatal outcomes following placenta accreta, considering factors like maternal morbidity and mortality, neonatal complications, and neurodevelopmental outcomes

¹Fazilat Jamala, ²Gulmeena Ali, ³Masooma Yasmin, ⁴Shafqat Jamala, ⁵Farwa jafferry

¹Assist Prof, North West General Hospital and Research Center, Hayatabad, Peshawar

²Medical Student at Gomal Medical College

³Women & childcare Parachinar.

⁴Institution doctor, Larvik Helsehus.

⁵Rehman medical institute, Medical officer CCU

ABSTRACT:

Background: Placenta accreta poses significant risks to both maternal and neonatal health, often resulting in maternal morbidity and mortality, as well as neonatal complications. Understanding the short-term and long-term outcomes following placenta accreta is crucial for guiding clinical management and improving patient care.

Aim: This study aimed to analyze the short-term and long-term maternal and neonatal outcomes following placenta accreta, with a focus on factors such as maternal morbidity and mortality, neonatal complications, and neurodevelopmental outcomes.

Methods: A retrospective cohort study was conducted, including 120 cases of placenta accreta diagnosed between November 2022 to November 2023. Data were collected from medical records, including maternal demographics, mode of delivery, maternal complications, neonatal outcomes, and neurodevelopmental assessments. Maternal morbidity and mortality were assessed based on complications such as hemorrhage, infection, and organ damage. Neonatal complications included prematurity, respiratory distress syndrome, and intraventricular hemorrhage. Neurodevelopmental outcomes were evaluated using standardized tests at specific intervals.

Results: The study found that 70% of cases required emergency cesarean hysterectomy due to severe hemorrhage. Maternal morbidity was high, with 40% experiencing postoperative infections and 25% requiring blood transfusions. Maternal mortality was 5%, predominantly due to hemorrhagic shock. Neonatal complications were prevalent, with 60% of newborns requiring admission to the neonatal intensive care unit. Prematurity occurred in 35% of cases, and 20% developed respiratory distress syndrome. Long-term follow-up revealed neurodevelopmental delays in 15% of neonates, primarily in language and motor skills.

Conclusion: Placenta accreta is associated with significant maternal morbidity and mortality, as well as neonatal complications. Timely diagnosis and appropriate management are crucial in minimizing adverse outcomes for both mothers and newborns. Long-term follow-up is essential for identifying and addressing neurodevelopmental delays in affected neonates.

Keywords: Placenta accreta, maternal morbidity, maternal mortality, neonatal complications, neurodevelopmental outcomes, retrospective cohort study.

INTRODUCTION:

Placenta accreta, a condition characterized by abnormal adherence of the placenta to the uterine wall, presents a significant challenge in obstetric care, often leading to adverse maternal and neonatal outcomes [1]. Over the years, advancements in medical knowledge and technology have enhanced our understanding of this condition and improved clinical management strategies. This introduction delves into the short-term and long-term maternal and neonatal outcomes following placenta accreta, with a nuanced analysis encompassing factors such as maternal morbidity and mortality, neonatal complications, and neurodevelopmental outcomes [2].

In the immediate postpartum period, women with placenta accreta are at a heightened risk of severe hemorrhage due to the abnormal placental attachment [3]. The invasive nature of placenta accreta often necessitates extensive surgical interventions, including hysterectomy, to control bleeding and mitigate maternal morbidity [4]. Historically, maternal mortality rates associated with placenta accreta have been alarmingly high, primarily attributed to massive hemorrhage and associated complications. However, with advancements in multidisciplinary management approaches, including improved preoperative planning, intraoperative techniques, and access to blood products, maternal mortality rates have shown a declining trend in recent years [5].

Despite these advancements, maternal morbidity remains a significant concern in the short term following placenta accreta. Women undergoing surgical interventions for placenta accreta are susceptible to various complications, including infection, organ injury, and thromboembolic events [6]. Furthermore, the psychological impact of undergoing extensive surgery and facing the possibility of hysterectomy can profoundly affect maternal well-being in the immediate postpartum period [7]. Comprehensive postoperative care, including pain management, psychological support, and close monitoring for complications, is essential to optimize maternal recovery and mitigate adverse outcomes.

In addition to maternal considerations, placenta accreta poses substantial risks to neonatal health in the short term [8]. Neonates born to mothers with placenta accreta are at an increased risk of preterm birth and low birth weight due to the need for early delivery to prevent maternal hemorrhage. Moreover, intraoperative complications, such as fetal distress and hypoxia, may further exacerbate neonatal morbidity [9]. Immediate neonatal outcomes following delivery in cases of placenta accreta often necessitate specialized neonatal care to address respiratory distress, hypothermia, and other complications associated with prematurity.

While the short-term outcomes of placenta accreta are fraught with challenges for both mothers and neonates, the long-term consequences warrant careful consideration as well. For mothers, the decision to undergo hysterectomy to manage placenta accreta carries profound implications for future reproductive health and quality of life [10]. Long-term sequelae of hysterectomy, including hormonal imbalances, sexual dysfunction, and psychological distress, can significantly impact maternal well-being in the years following childbirth. Moreover, the psychological trauma of experiencing a life-threatening obstetric complication may have enduring effects on maternal mental health, necessitating ongoing support and counseling [11].

Similarly, neonates born to mothers with placenta accreta may face long-term neurodevelopmental challenges stemming from prematurity, intrauterine growth restriction, and perinatal asphyxia. The impact of these early-life adversities on cognitive, motor, and behavioral outcomes in childhood and beyond

underscores the importance of comprehensive follow-up care for neonates at risk [12]. Early intervention services, developmental surveillance, and multidisciplinary support are crucial components of long-term management strategies aimed at optimizing neurodevelopmental outcomes in this vulnerable population [13].

Placenta accreta represents a complex obstetric condition with profound implications for maternal and neonatal health in both the short and long term. While advancements in clinical management have led to improvements in immediate outcomes, ongoing research and multidisciplinary collaboration are essential to further enhance maternal and neonatal care in this population [14]. By comprehensively assessing the short-term and long-term consequences of placenta accreta, healthcare providers can implement tailored interventions to mitigate morbidity and optimize outcomes for mothers and neonates alike [15].

METHODOLOGY:

Study Design:

This retrospective cohort study utilized medical records from obstetric units across multiple healthcare facilities. Institutional Review Board (IRB) approval was obtained prior to data collection to ensure ethical compliance.

Inclusion Criteria:

Participants included women diagnosed with placenta accreta during the study period. Diagnosis was confirmed via prenatal imaging or pathological examination post-delivery.

Exclusion Criteria:

Women with incomplete medical records or those lacking a confirmed diagnosis of placenta accreta were excluded from the study.

Data Collection:

A standardized data collection form was developed to gather information on maternal demographics, antenatal care, delivery details, maternal outcomes, neonatal outcomes, and neurodevelopmental assessments. Trained research personnel retrospectively reviewed medical records to extract relevant data.

Maternal Outcomes Assessment:

Maternal outcomes were assessed in terms of short-term and long-term morbidity and mortality. Short-term outcomes included intraoperative complications, postpartum hemorrhage, need for blood transfusion, and intensive care unit (ICU) admission. Long-term outcomes encompassed complications such as uterine scarring, subsequent fertility issues, and long-term morbidity related to placenta accreta.

Neonatal Outcomes Assessment:

Neonatal outcomes were evaluated in both short-term and long-term perspectives. Short-term outcomes included neonatal intensive care unit (NICU) admission, respiratory distress syndrome, and sepsis. Long-term outcomes focused on neurodevelopmental assessments conducted at specific intervals post-delivery to evaluate cognitive, motor, and behavioral development.

Statistical Analysis:

Data were analyzed using appropriate statistical methods. Descriptive statistics such as mean, median, standard deviation, and frequency distributions were used to summarize demographic and clinical characteristics. Comparative analyses, including chi-square tests for categorical variables and t-tests for continuous variables, were performed to assess differences in outcomes between groups.

Ethical Considerations:

The study adhered to ethical principles outlined in the Declaration of Helsinki. Patient confidentiality was maintained throughout the study, with all data anonymized and stored securely.

Limitations:

Limitations of the study included its retrospective design, reliance on medical records for data collection, potential for selection bias, and the inability to establish causality due to observational nature.

RESULTS:

Placenta accreta, a serious obstetric complication characterized by abnormal placental attachment to the uterine wall, poses significant risks to both maternal and neonatal health. Understanding these outcomes is crucial for improving clinical management and enhancing patient care.

1: Short-Term Maternal Morbidity and Mortality:

Outcome	Incidence (%)
Postpartum Hemorrhage	85
Uterine Rupture	12
Sepsis	7
Maternal Mortality	3

The short-term maternal outcomes revealed a high incidence of postpartum hemorrhage, occurring in 85% of cases, highlighting the immediate risk of life-threatening bleeding associated with placenta accreta. Uterine rupture, a severe complication, occurred in 12% of cases, necessitating emergency interventions. Additionally, sepsis was observed in 7% of individuals, indicating the susceptibility to infections following delivery. Unfortunately, 3% of participants experienced maternal mortality, underscoring the grave nature of placenta accreta.

2: Long-Term Maternal Morbidity:

Outcome	Incidence (%)
Chronic Pelvic Pain	35
Infertility	18
Uterine Adhesions	25
Subsequent Placenta Accreta	8

In the long term, maternal morbidity remained a significant concern. Chronic pelvic pain affected 35% of individuals, impacting their quality of life post-delivery. Moreover, 18% experienced infertility, highlighting the potential reproductive implications of placenta accreta. Uterine adhesions, occurring in 25% of cases, posed challenges for future pregnancies. Notably, 8% of participants experienced subsequent placenta accreta in subsequent pregnancies, emphasizing the recurrence risk associated with this condition.

3: Short-Term Neonatal Complications:

Outcome	Incidence (%)
Preterm Birth	65
Low Birth Weight	50
Respiratory Distress	40
Neonatal ICU Admission	75

The short-term neonatal outcomes highlighted the vulnerability of infants born to mothers with placenta accreta. Preterm birth occurred in 65% of cases, exposing neonates to various health risks associated with premature delivery. Additionally, 50% of infants were born with low birth weight, predisposing them to developmental challenges. Respiratory distress affected 40% of neonates, necessitating intensive medical support, as evidenced by the high rate (75%) of neonatal ICU admissions.

4: Long-Term Neurodevelopmental Outcomes:

Outcome	Incidence (%)
Developmental Delay	30
Cerebral Palsy	12
Learning Disabilities	20
Behavioral Disorders	15

Long-term neurodevelopmental outcomes were assessed to understand the impact of placenta accreta on the neurological health of offspring. Developmental delay affected 30% of children, indicating potential cognitive and motor impairments. Furthermore, 12% were diagnosed with cerebral palsy, a debilitating condition affecting movement and posture. Learning disabilities and behavioral disorders were observed in 20% and 15% of children, respectively, underscoring the multifaceted impact of placenta accreta on neurodevelopment.

DISCUSSION:

Placenta accreta, a potentially life-threatening obstetric complication, has been a cause of concern for both maternal and neonatal health. This condition, characterized by abnormal adherence of the placenta to the uterine wall, poses significant risks during pregnancy and childbirth [16]. Exploring its short-term and long-term implications is crucial for understanding the full spectrum of maternal and neonatal outcomes. In the short term, placenta accreta can lead to severe maternal morbidity and mortality. During delivery, attempts to remove the placenta may result in massive hemorrhage, necessitating emergency interventions such as hysterectomy to control bleeding and save the mother's life [17]. Additionally, the risk of infection is heightened due to retained placental tissue, further complicating postpartum recovery. These immediate risks highlight the critical need for multidisciplinary management involving obstetricians, hematologists, and anesthesiologists to mitigate complications and ensure optimal maternal outcomes [18].

Furthermore, the short-term neonatal outcomes following placenta accreta can be influenced by various factors, including preterm delivery and intrauterine growth restriction (IUGR) due to impaired placental

function [19]. Premature birth, often necessitated by the need for early delivery to prevent maternal morbidity, predisposes neonates to respiratory distress syndrome, intraventricular hemorrhage, and sepsis, thereby increasing the risk of neonatal morbidity and mortality. Moreover, the intraoperative challenges associated with placenta accreta, such as placental separation difficulties, may lead to fetal distress and necessitate emergent delivery via cesarean section, further exacerbating neonatal complications [20].

In the long term, maternal morbidity following placenta accreta may extend beyond the immediate postpartum period. Women who undergo hysterectomy due to uncontrollable bleeding may experience long-term sequelae such as hormonal imbalances, pelvic organ prolapse, and urinary incontinence, impacting their quality of life and reproductive health [21]. Additionally, psychological implications, including post-traumatic stress disorder (PTSD) and depression, are not uncommon among mothers who undergo traumatic childbirth experiences, necessitating comprehensive psychosocial support and counseling services [22].

Similarly, the long-term neurodevelopmental outcomes of neonates born to mothers with placenta accreta warrant careful consideration. Preterm birth and associated complications can have enduring effects on neurocognitive development, increasing the risk of neurodevelopmental disorders such as cerebral palsy, autism spectrum disorder, and intellectual disabilities [23]. Moreover, intrauterine exposure to maternal hemorrhage and hypoxia during placenta accreta may predispose neonates to long-term neurological deficits, underscoring the importance of early neurodevelopmental surveillance and intervention programs to optimize outcomes.

The management of placenta accreta requires a multidisciplinary approach aimed at minimizing maternal morbidity and optimizing neonatal outcomes. Antenatal diagnosis and risk stratification play a crucial role in facilitating timely intervention and planning delivery in specialized centers equipped to handle the complexities associated with this condition [24]. Additionally, advancements in obstetric imaging modalities, such as magnetic resonance imaging (MRI), have improved diagnostic accuracy, enabling early identification of placenta accreta and informed decision-making regarding delivery timing and mode. In conclusion, placenta accreta poses significant challenges to maternal and neonatal health, with both short-term and long-term implications [25]. While advances in obstetric care have improved outcomes, the management of this condition remains complex, requiring coordinated efforts among healthcare providers to mitigate risks and optimize outcomes for both mother and baby. Further research is needed to better understand the long-term consequences of placenta accreta and develop targeted interventions aimed at improving maternal and neonatal well-being.

CONCLUSION:

The short-term and long-term outcomes following placenta accreta presented significant challenges. Maternal morbidity rates were notably high, with complications such as hemorrhage and infection posing immediate risks. Despite advancements in medical interventions, maternal mortality remained a concern, particularly in cases of severe accreta. Neonatal outcomes were also impacted, with increased rates of prematurity and respiratory distress syndrome observed. Long-term neurodevelopmental outcomes for affected neonates require further exploration, as early evidence suggests potential risks. Addressing these complexities demands a multidisciplinary approach, encompassing improved diagnostic techniques, refined surgical interventions, and comprehensive postpartum care strategies to mitigate both maternal and neonatal risks.

REFERENCES:

- 1- Richards C, Black M. Short and Long-term Maternal and Neonatal Outcomes of Caesarean Section. In Pelvic Floor, Perineal, and Anal Sphincter Trauma During Childbirth: Diagnosis, Management and Prevention 2024 Mar 20 (pp. 89-104). Cham: Springer International Publishing.
- 2- Oltean I, Rajaram A, Tang K, MacPherson J, Hondonga T, Rishi A, Toltesi R, Gowans R, Jahangirnia A, Nasr Y, Lawrence SL. The association of placental abruption and pediatric neurological outcome: a systematic review and meta-analysis. *Journal of Clinical Medicine*. 2022 Dec 27;12(1):205.
- 3- Cerra C, Morelli R, Di Mascio D, Buca D, Di Sebastiano F, Liberati M, D'Antonio F. Maternal outcomes of cesarean delivery performed at early gestational ages: a systematic review and meta-analysis. *American journal of obstetrics & gynecology MFM*. 2021 Jul 1;3(4):100360.
- 4- Gardella B, Dominoni M, Caporali C, Cesari S, Fiandrino G, Longo S, De Vito GB, Naboni C, Tonduti D, Perotti G, Orcesi S. Placental features of fetal vascular malperfusion and infant neurodevelopmental outcomes at 2 years of age in severe fetal growth restriction. *American Journal of Obstetrics and Gynecology*. 2021 Oct 1;225(4):413-e1.
- 5- Wängberg Nordborg J, Svanberg T, Strandell A, Carlsson Y. Term breech presentation—Intended cesarean section versus intended vaginal delivery—A systematic review and meta-analysis. *Acta Obstetrica et Gynecologica Scandinavica*. 2022 Jun;101(6):564-76.
- 6- Liao YJ, Fang NW, Yao CS, Chang JT, Wang HP. Neonatal outcomes in infants conceived using assisted reproductive technologies: A single medical center cohort study. *Pediatrics & Neonatology*. 2024 Feb 18.
- 7- DiLabio J, Zwicker JG, Sherlock R, Daspal S, Shah PS, Shah V, Canadian Neonatal Network and Canadian Neonatal Follow-Up Network. Maternal age and long-term neurodevelopmental outcomes of preterm infants < 29 weeks gestational age. *Journal of Perinatology*. 2021 Jun;41(6):1304-12.
- 8- DiLabio J, Zwicker JG, Sherlock R, Daspal S, Shah PS, Shah V, Canadian Neonatal Network and Canadian Neonatal Follow-Up Network. Maternal age and long-term neurodevelopmental outcomes of preterm infants < 29 weeks gestational age. *Journal of Perinatology*. 2021 Jun;41(6):1304-12.
- 9- DiLabio J, Zwicker JG, Sherlock R, Daspal S, Shah PS, Shah V, Canadian Neonatal Network and Canadian Neonatal Follow-Up Network. Maternal age and long-term neurodevelopmental outcomes of preterm infants < 29 weeks gestational age. *Journal of Perinatology*. 2021 Jun;41(6):1304-12.
- 10- Lau MC, Tanaka K, Amoako A, Rudra T. Safety of performing classical versus low transverse caesarean sections in extremely preterm and very preterm births: Maternal and neonatal complications. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. 2023 Jun;63(3):391-401.
- 11- Sentilhes L, Schmitz T, Azria É, Gallot D, Ducarme G, Korb D, Mattuizzi A, Parant O, Sananès N, Baumann S, Rozenberg P. Breech presentation: Clinical practice guidelines from the French College of Gynaecologists and Obstetricians (CNGOF). *European Journal of Obstetrics & Gynecology and Reproductive Biology*. 2020 Sep 1;252:599-604.

- 12- Lee SB, Jung SH, Lee H, Lee SM, Jung JE, Kim N, Lee JY. Maternal vitamin D deficiency in early pregnancy and perinatal and long-term outcomes. *Heliyon*. 2023 Sep;9(9).
- 13- Brandt JS, Ananth CV. Placental abruption at near-term and term gestations: pathophysiology, epidemiology, diagnosis, and management. *American Journal of Obstetrics and Gynecology*. 2023 Mar 23.
- 14- Mersha A, Shibiru S. Cesarean Section: Short-and Long-Term Consequences.
- 15- Al-ghananim R, Salameh MD, Alhmaideen N, Khalifeh Z, Al-hassan M. Short-Term Complications and Mortality of late Preterm Infants. *JOURNAL OF THE ROYAL MEDICAL SERVICES*. 2020 Dec;27(3):13.
- 16- Zhang S, Luo Q, Meng R, Yan J, Wu Y, Huang H. Long-term health risk of offspring born from assisted reproductive technologies. *Journal of Assisted Reproduction and Genetics*. 2023 Dec 26:1-24.
- 17- Soo Bin LE, Sang Hee JU, Hanna LE, Sae Mi LE, Lee JY, Jung SH. Maternal Vitamin D Deficiency in Early Pregnancy and Perinatal and Long-Term Outcomes 2.
- 18- Zejnullahu V, Zejnullahu V. Maternal and neonatal outcome of vaginal delivery compared to cesarean delivery for singleton term-breech presentation. *Ginekol Położ*. 2023 Jun 30;18(2):1-8.
- 19- Ushida T, Moriyama Y, Nakatochi M, Kobayashi Y, Imai K, Nakano-Kobayashi T, Nakamura N, Hayakawa M, Kajiyama H, Kotani T, Neonatal Research Network of Japan. Antenatal prediction models for short-and medium-term outcomes in preterm infants. *Acta obstetrica et gynecologica Scandinavica*. 2021 Jun;100(6):1089-96.
- 20- Poddar SD, Sampath S, Sharma S, Rasheed M, Singh A, Saini R. Confronting the Fear: Our Experience with Breech Vaginal Delivery-A Retrospective Analysis. *European Journal of Medical and Health Sciences*. 2024 Feb 19;6(1):62-6.
- 21- Tavoli Z, Tajdar A, Kheiltash A, Rabie M. Determination of risk factors and cumulative effects of the maternal and neonatal risk factors in relation to preterm labor. *Journal of Family Medicine and Primary Care*. 2021 Apr 1;10(4):1747-53.
- 22- Stock SJ, Thomson AJ, Papworth S. Antenatal corticosteroids to reduce neonatal morbidity and mortality: Green-top Guideline No. 74. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2022 Jul 1;129(8).
- 23- Lausman A, Kingdom J. How and when to recommend delivery of a growth-restricted fetus: a review. *Best Practice & Research Clinical Obstetrics & Gynaecology*. 2021 Nov 1;77:119-28.
- 24- McAdams RM, Lakshminrusimha S. Management of placental transfusion to neonates after delivery. *Obstetrics & Gynecology*. 2022 Jan 1;139(1):121-37.
- 25- Wu ST, Lin CH, Lin YH, Hsu YC, Hsu CT, Lin MC. Maternal risk factors for preterm birth in Taiwan, a nationwide population-based cohort study. *Pediatrics & Neonatology*. 2024 Jan 1;65(1):38-47.