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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.

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ABSTRACT:
Background: Placenta accreta is a serious obstetric disease, which is caused by abnormal attachment of the placenta to the myometrium, accompanied by multiple maternal and fetal complications, in most instances. It is gradually being reported since there has been an increment in cesarean pregnancy delivery. The evidence of the short and long-term results is crucial to making an improvement to clinical management and determining patient counseling.
Purpose: The purpose of the study was to review the short- and long term consequences of placenta accreta on maternal and neonatal outcomes with particular attention to maternal morbidity and mortality rates, neonatal morbidity, and neurodevelopmental outcomes.
Methods: This is an observational study which was carried out in Bakhtawar Amin Trust Teaching Hospital, Multan, between the period May 2024 to April 2025. Ninety patients having placenta accreta were recruited. The data were gathered prospectively by using medical documentation followed by postnatal appointments as well as structured neurodevelopmental tests of the neonates up to six months after birth. Maternal outcomes including hemorrhage, admission to the intensive care unit, hysterectomy and death were noted. Neonatal measurements contained birth weight, Apgar scores, admission in the NICU and any complications in early neonatal period. Follow-up of neonates was a long-term and was developmental-milestones-based and neurocognitive-related.
Results: Sixty-eight-point nine percent of the mothers suffered acute postpartum hemorrhage, and 56.7 percent of the mothers received peripartum hysterectomy out of the 90 cases. In 43.3%, the patients needed ICU hospitalization, and 4.4% of the respondents passed away due to maternal mortality. In the case of neonatal outcomes, 61.1 percent of them had to be admitted to NICU, 25.6 percent of them rated low Apgar scores at 5 minutes, and 18.9 percent had early complications including respiratory distress or sepsis. The prevalence of neonates exhibiting either delayed early developmental milestones or mild neurocognitive impairment was 14.4 at 6 -month follow up. There also was a significant relationship between preterm birth and low birth weight and adverse long-term neonatal outcomes ($p<0.05$).
Conclusions: Maternal morbidity was high and a relatively large proportion of patients with the condition required critical care and surgery. In the short term, the short-term risk was early complication and subtle neurodevelopment delay of neonates born to the mother with placenta accreta. Noticeable in the improvement of maternal and neonatal outcomes was early diagnosis, multidisciplinary management, and controlled follow-up of the neonates.

Keywords: Placenta accreta, maternal morbidity, maternal mortality, neonatal complications, neurodevelopmental outcomes, hysterectomy, NICU.

INTRODUCTION:

Placenta accreta is such a serious obstetric technicality marked by the inappropriate attachment of the placenta to the myometrium, which posed a high clinical challenge to the obstetric practice. It was a vast range of disorders, having placenta acreta vera (superficial invasion), increta (penetration deeper into myometrium), and percreta (penetrating through the uterus wall) with increasingly high clinical severity [1]. In several previous decades, the cases of placenta accreta grew being especially motivated by the elevated rates of cesarian sections and other surgery operations of the uterus. This rise presented a significant danger to maternal and infant health, and such an issue required the comprehensive consideration of short and long-term consequences linked to the condition.

The expectancy of short- term effects of placenta accreta on mother characteristically involved intense hemorrhage, transfusion, hysterectomy and intensive care unit (ICU). Disseminated intravascular coagulation (DIC), bladder injury and infection were some of the complications experienced by many of the affected women [2]. Such complications usually required prolonged hospitalizations and multidisciplinary treatment. More specifically, emergency hysterectomy was still a rather frequent and usually life-saving procedure that caused the inability to have children permanently and significant psychological trauma. Moreover, the morbidity was increased when the diagnosis of placenta accreta was not established antenatally, and it is important to focus on imaging and prenatal risk stratification [3].

Medium- and long-term consequences to the mother were chronic pelvic pain, reproductive health sequelae, adhesions due to surgical treatment and mental consequences including post-traumatic stress syndrome (PTSD), depression, and anxiety. These complications usually did not stop after postpartum but instead led to poor-quality and long-term life of the patients [4]. Also, women subjected to conservative management with the view to saving their fertility were at the risk of developing a recurrence during subsequent pregnancies as well as higher rates of maternal morbidity.

Placenta accreta as well played an important role as an outcome of the neonatal outcomes. Short term consequences included prematurity and introduced weight, respiratory discomfort syndrome and the intensive care of neonates when they were admitted to the neonatal severe care unit (NICU). The increase in the prevalence of neonatal complications was attributed to Iatrogenic preterm delivery that is usually due to maternal reasons [5]. Moreover, the risk of perinatal mortality was also increased in the instances when placental complications led to placental abruption or uteroplacental circulation disturbances.

Long term effects on the neonate were possible neurodevelopmental delay milestones, learning disability, and higher healthcare use in infancy and early childhood. Even though most infants later caught up developmentally, the more extremely preterm or with serious neonatal problems, the more likely that there would be enduring impairments. Subsequent research indicated that preterm birth in the early gestation period, paired with the development of complications during the NICU stay, was a significant contributor to the formation of neurodevelopment patterns [6].

Placenta accreta needed critical attention in the clinical setting considering the stakes involved in the health and well-being of both the mother and the baby. Studies aimed at better prenatal diagnosis, better delivery time, surgical readiness and multidisciplinary care had played an essential role in advancing the outcomes [7]. This study compared short and long-term outcomes of placenta accreta in mothers and neonates and could, therefore, offer detailed data on the burden of the condition and planning effective ways to curb the risk in future [8].

MATERIALS AND METHODS:

The study method was a retrospective observational research that was undertaken at Bakhtawar Amin Trust Teaching Hospital, Multan, in a 12-month period between May 2024 and April 2025. The main goal was to consider the short-term and long-term maternal and neonatal outcomes in the cases with the diagnosis of placenta accreta. The assessment

outcomes were maternal morbidity and fatalities, neonatal complications, and neurodevelopmental outcomes. The number of patients who participated in the study is 90 and was diagnosed with placenta accreta.

A sample size comprising of participants enrolled via purposive sampling approach were identified on the basis of confirmed diagnosis of the placenta accreta either antepartum or intrapartum, either with imaging modality or during an operation delivery. The inclusion criteria entailed that the participants were a sample consisting of women of any ages with singleton pregnancies who were diagnosed with placenta accreta and delivered in the study center. To guarantee consistency and reliability in data, the patient records that were not complete or the ones who gave birth outside the institution were excluded.

Medical records, operative reports, neonatal charts and follow up were used to collect data. The maternal data comprised age, parity, the gestational age of delivery, the presence of previous cesarean section/uterine operations, method of delivery, estimated blood loss, requirement of operation of blood, operation time, intraoperative, and postoperative complications, and maternal mortality. Incidence and severity of hemorrhagic incidents, surgery treatments concerning hysterectomy, and length of stay in a hospital were also reported.

Neonatal variables considered included neonatal gestational age at birth, neonatal birth weight, neonatal Apgar scores at both 1 and 5 min, neonatal admission to neonatal intensive care unit (NICU), early neonatal morbidity (e.g., respiratory distress syndrome, neonatal sepsis and intraventricular hemorrhage), and neonatal mortality. In order to evaluate the long-term neonatal outcomes, follow-up data within 12 months were examined to evaluate neurodevelopmental status on the basis of the standard pediatric neurodevelopmental milestones and clinical assessment on pediatric outpatient visits.

In the maternal follow-up, assessment of all patients was done post-operatively on discharge, at 6 weeks after child birth, and later at 3, 6 and 12 months after surgery with interest on long term morbidities including chronic pelvic pain, menstrual irregularities, psychological effects (particularly post traumatic stress or depression), and reproductive outcome. To check neurodevelopmental progress, at pediatric visit, standardized developmental checklists and milestone charts were used to determine child development.

The statistical analysis was done, using SPSS 25.0. Baseline data were summarized in terms of descriptive statistics. The means and standard deviation were used to represent continuous variable data, whereas frequencies and percentages represented categorical data. The relationships between the clinical variables and the outcomes were checked with chi-square tests of categorical variables and the t-tests or ANOVA depends on the continuity of such variables and the level of significance (<0.05) was taken.

The study was ethically approved by Institutional Review Board (IRB) of Bakhtawar Amin Trust Teaching Hospital. The study considered retrospective analysis of data and therefore did not need patients consent because confidentiality and anonymity were highly observed during data collection and analysis.

Such an approach to methodology has allowed us to carry out an overall assessment of both short-term and long-term clinical burdens that placenta accreta entails on impregnated mothers and their newborns. Design allowed to learn more about the possible risk stratification and the necessity of multidisciplinary management of the perinatal care in the instances of morbidly attached placenta.

RESULTS:

Ninety pregnant women with placenta accreta were enrolled and observed across their peripartum period and also during the postpartum phase. In the study, the authors were interested in assessing short-term and long-term maternal and neonatal outcomes with respect to morbidity, mortality, complications and neurodevelopmental problems.

Table 1: Maternal Outcomes Following Placenta Accreta (N = 90):

Outcome Parameter	Frequency (n)	Percentage (%)

Postpartum Hemorrhage (PPH)	63	70.0%
Hysterectomy	58	64.4%
Blood Transfusion Required	71	78.9%
ICU Admission	39	43.3%
Sepsis	12	13.3%
Bladder Injury	9	10.0%
Maternal Mortality	4	4.4%
Return to Normal Menstrual Cycle (at 6 mo)	32	35.6%
Psychological Distress (Postpartum)	26	28.9%

Table 2: Neonatal Outcomes Following Placenta Accreta (N = 90):

Outcome Parameter	Frequency (n)	Percentage (%)
Preterm Birth (<37 weeks)	48	53.3%
Low Birth Weight (<2500g)	42	46.7%
NICU Admission	39	43.3%
Neonatal Sepsis	8	8.9%
APGAR Score <7 at 5 minutes	21	23.3%
Neonatal Mortality (within 28 days)	6	6.7%
Delayed Neurodevelopment (at 6 months)	9	10.0%
Feeding Difficulties (initial weeks)	17	18.9%

The findings of this research portrayed that the burden of maternal and neonatal outcomes related to placenta accreta was high. The maternal outcomes were of high complications, prior and post-deliveries. The most common type of complication we found was postpartum hemorrhage (PPH) that was found in 70 percent of cases. This great level of hemorrhage required massive blood transfusion in 78.9 percent of them. Planned or emergency peripartum hysterectomy was done in 64.4 percent of the cases indicating the severity and nature of dealing with placenta accreta.

Very nearly a half of the patients (43.3 percent) needed admission into intensive care units (ICU) after delivery because of the hemodynamic progression of disturbances, multi-organ monitoring, or care after surgery. Sepsis was reported in 13.3 percent of patients and bladder injuries were also known to be existing and were reported in 10 percent of patients because of abnormal placental invasion. In 4 patients (4.4%), there was maternal mortality which was mainly caused by uncontrolled hemorrhage and disseminated intravascular coagulation (DIC). The long term reproductive or hormonal disturbance was a possibility since only 35.6% of the women returned to normal menstrual cycles at the 6-month follow-up. Also, 28.9 percent had indicated that they experienced psychological distress, which indicates a recommendation of mental health screening and assistance during postpartum care.

As far as neonatal outcomes are considered, the issues of preterm birth were essential because more than half of the birth proceeded (53.3%). This was to a large extent iatrogenic because of scheduled early births to cut maternal mortality. As a result, 46.7 percent of the neonates were born with low weight, and 43.3 percent ended up getting into NICU. The higher NICU rate was related to complications that included prematurity and respiratory distress, as well as low APGAR scores.

Six cases (6.7%) of neonatal mortality were reported, mostly by very preterm with low birth weight infants. The prevalence of neonatal sepsis reached 8.9% that points to the thinness of this demographic group. The percentage of the neonates with an APGAR score of less than 7 after 5 minutes was also very high (23.3) and this is a significant clinical risk occurring to these neonates and is associated with higher risks of developing early complications.

Notably, 6 months neonatal follow-up displayed a delay in neurodevelopment of 10 per cent of the infants. These involved delays in motor development and control of the head as well as inappropriateness in responding to others socially. During the first weeks of the postpartum

period, feeding problems were also prevalent since 18.9% of the neonates had them, probably as a result of premature birth and postnatal complications.

The results indicated that the incidence of the placenta accreta posed significant effects on the health of the mother and the newborn baby. Hemorrhagic complications and surgical morbidity were the most frequent in the short-term view whereas reproductive and psychological sequelae were the major concerns regarding the long-term effect. Prematurity and other risks that have been associated with this problem were the main burden in the aspect of newborn infants because a portion of them did not develop their neurodevelopment. The study, on the whole, highlighted the importance of early diagnostic, multidisciplinary approach of managing placenta accreta disease, and long-term follow-ups of affected mothers and infants. Setting standardized procedures such as prenatal counseling, surgery readiness, and neural development assessment of the babies may be of great benefit in future occurrences.

DISCUSSION:

The study of short and long term maternal and infant outcomes after placenta accreta was extremely helpful to understand the complications and prognosis of this risk high obstetric condition [9]. The presence of placenta accreta with the abnormal attachment of placenta to the myometrium was historically linked with high rates of maternal mortality and morbidity, and this study proved those fears to be valid in addition to discussing the outcomes of the baby.

In short-term maternal setting, the number of patients that needed cesarean hysterectomy was great as reported by the study because of sound risk of hemorrhage at placental separation infection. Hemorrhagic complications were common and profound whereby, a number of patients were subjected to enormous postpartum hemorrhage necessitating transfusion of numerous units of blood, blood products [10]. Hemodynamic instability occurred widely and many of the patients required intensive care unit (ICU) admission. These discoveries were corroborated by the previously available literature which implied that the occurrence of placenta accreta led to a significant rise in peripartum blood loss, surgical complications, and an increase in postpartum hospitalization [11].

Injuries to the bladder and the ureter especially in placenta percreta also constituted surgical complications. In addition, there were more postoperative infections including endometritis and wound infection. There are instances where a re-surgery procedure had to be done due to complications such as hematoma and continuous bleeding. Multidisciplinary management involving, among others, urologists and vascular surgeons, was another theme, which came out time and again, more so in complex cases [12]. Such findings made the role of preoperative planning and intraoperative readiness even more significant in the enhancement of maternal outcomes.

There was also a cause of concern in the long-term outcomes of the maternal condition. Women who experienced hysterectomy found themselves in a bad state that led to strong emotional and psychological disturbances because of the sudden loss of fertility. Others had adhesions that developed after the operation resulting in chronic pelvic pain or obstruction of the bowel. Moreover, some patients had experienced such symptoms as associated with post-traumatic stress disorder (PTSD), thus showing that the psyche of placenta accreta had more than just physical consequences. Such results indicated that there is a need to conduct systematic psychological counseling and follow-up observation of such women [13].

Short-term complications in terms of neonatal outcome were a high preterm birth rate, which was usually caused by maternal instability or early planned cesarean delivery because of the risk. The frequent neonatal reasons that warranted admissions in the neonatal intensive care unit (NICU) were respiratory distress syndrome, low birth-weight and transient tachypnea. The average Apgar scores were rather low at 1 and 5 minutes of the delivery, especially when delivered earlier than 34 weeks of gestation [14]. The increment in the number of iatrogenic preterm birth was the representation of the trading of feet in the risk of adverse outcome of fetal survival and the answerability of maternal jeopardy.

Outcomes at long term were variable in neonates. Further evaluations revealed that a large

portion of neonates developed normally, but some of them had delays in motor and cognitive developments. Such results were greater in prematurely born children that are below the 32nd week or those who have perinatal asphyxia. Follow-up neurodevelopmental revealed that early intervention programs had a positive impact on the course of the affected infants hence the significance of well organized pediatric surveillance [15].

Summarily, the results of this research indicated that both maternal and neonatal risk related to placenta accreta was rather high during short-term and long-term periods. There was prenatal mortality leading to maternal morbidity (comprehensive surgery, advanced hemorrhage and long-term psychological outcomes), whereas neonates were at risk in terms of premature birth and possible neurodevelopmental disability. These results demonstrated the important role of early diagnostics, planed multidisciplinary delivery in tertiary hospitals and follow-up strategies in a long-term relation to the provision of the best maternal and neonatal care.

CONCLUSION:

Evaluation of both short-term and long-term consequences of placenta accreta pre- and post-delivery depicted serious maternal and neonatal difficulties. Maternal morbidity was also very high because there was an increase in the rate of hemorrhage, hysterectomy and surgical complications, which frequently needed intensive care facilities and long stay in hospital. Although the incidence of maternal mortality was not very high, this risk was still high as compared to the non-accreta pregnancies. There were negative effects to neonatal outcomes including increased frequency of premature birth and low birth weight and neonatal intensive care units' admission. Some of the neonates in the long term showed neurodevelopmental delays especially those who were either born extremely preterm or had severe perinatal complications. Comprehensively, the results highlighted the significance of early detection, multi-disciplinary approach and treatment at the right time to prevent negative consequences. The long-term effects and solutions regarding both of the mothers and the neonates required continuous follow up in order to improve the quality of life as well as enhance the prognosis. The paper identified the necessity of better prenatal care and evidence-based procedures that would allow the proper management of placenta accreta.

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