

Original Article

Frequency and Clinical Outcome in Patients with Placenta Accreta Spectrum

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Abstract

Objective: To determine the frequency and maternal and fetal outcomes in patients with placenta accreta spectrum. **Materials and Methods:** This cross sectional study was conducted in department of Obstetrics & Gynaecology Unit – 1 from January 2018 – December 2021. All women who came for delivery with alive fetus during the study period were included in the study. The researcher filled a structured questionnaire designed to collect data. Data was entered and analysed using SPSS version 22.

Results: 305 cases with placenta accreta spectrum were reported during the course of study. Frequency of placenta accreta spectrum was 9.3/1000 deliveries. Significant association was seen in maternal mortality with patients who were diagnosed with placenta accreta spectrum during cesarean section (p-value = 0.000), patients having emergency cesarean deliveries (p-value= 0.009), patients requiring massive transfusion owing to excessive blood loss (p-value=0.01) and in cases requiring uncrossed blood or where blood products were not available in time (p-value=0.000). 15.1% of babies had early neonatal death. Early neonatal death was associated with preterm delivery (p-value=0.000), low birth weight (p-value= 0.000) and low apgar score at 1 and 5 minutes of birth (p-value=0.000).

Conclusion: Placenta accreta spectrum is associated with high risk of maternal and perinatal morbidity and mortality.

Key words: Placenta accreta spectrum, morbidly adherent placenta, maternal morbidity, mortality.

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Introduction

Placenta accreta spectrum occurs when there is an invasion of chorionic villi into myometrium owing to a defect of the decidua basalis.¹ This includes variety of disorders ranging from abnormal adherence to deep invasion of placental tissue.² It is further divided into accreta, increta and percreta depending upon the depth of placental tissue invasion: accreta- where placenta does not intervene the decidua but adheres superficially to the myometrium; 'increta' where the placental villi penetrate deeply into the uterine myometrium up to the serosa; and 'percreta' where the placental villi go through the entire uterine wall and may invade the surrounding pelvic organs.³ Depending upon the amount

of tissue involved, placenta accreta spectrum is further divided into total, partial or focal.

Studies have shown various risk factors associated with increased risk of placenta accreta spectrum. Women who have a previous Cesarean section, other uterine surgery, an IVF pregnancy and placenta previa diagnosed during antenatal period are at increased risk of having placenta accreta spectrum.⁴ Elevated risk of placenta accreta spectrum is also seen with increasing maternal age in women without previous cesarean delivery.⁵

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Placenta accreta spectrum can often be a nightmare for obstetricians. It is a high risk condition associated with major pregnancy complications like life threatening maternal haemorrhage, need for massive blood transfusion, peripartum hysterectomy and surgical injury to adjacent organs. Additionally it may lead to need for admission in ICU, ARDS, non-invasive/invasive ventilation, acute transfusion reactions, electrolyte imbalance and acute kidney injury or renal failure.^{6, 7}

Incidence of placenta accreta spectrum has increased over the last two decades. Although it is difficult to determine its true incidence but likely falls near 1/1000 deliveries.⁸ A study conducted in 2014 A Ansar et. Al. showed incidence of morbidly adherent placenta to be 1.83/1000 deliveries.⁹ Overtime the frequency has risen to 9.76% as reported by Nissa FU et. Al. in a study conducted in 2017.¹⁰

Placenta accreta spectrum can be managed by a planned cesarean hysterectomy¹¹ or where uterine conservation is required, procedures like Tripple P, uterine wall local resection and reconstruction of uterus, methotrexate therapy while leaving placenta in situ or manual removal of placenta can be done.¹²

Overall in Pakistan, due to lack of adequate health facilities, uterine conservation procedures are seldom done. Jinnah Postgraduate Medical Centre (JPMC) is one of the largest tertiary care public sector hospital of the country with 31 departments and 1600 beds. It receives an inflow of over 1 million patients/year, 60,000 admissions, 30,000 surgeries and 15000 deliveries, all free of charge. Jinnah Postgraduate Medical Centre, though a tertiary care setup, but due to resource stricken circumstances and unavailability of required multi-disciplinary modalities, cesarean hysterectomy is the last and only resort for morbidly adherent placentas.

Although few studies have been conducted to determine the frequency of morbidly adherent placenta in past but as rate of cesarean section is increasing, the frequency of placenta accreta spectrum is likely to be increased and its impact on maternal and fetal outcome is rarely studied. The study will either re-inforce results of previous studies or will shed light on this important aspect and pave way for future studies.

Methodology

This cross sectional study was done in Jinnah Postgraduate Medical Centre, Department of Obstetrics & Gynaecology Unit 1 From January 1st, 2018-December 31st, 2021. All patients who came for delivery,

either booked, unbooked, or registered cases were included in the study. These patients either had emergency or planned delivery. They were either term, preterm or very preterm gestations with alive fetus. These patients were either diagnosed with placenta accreta spectrum during antenatal period via Doppler ultrasound performed by an expert sonologist or during cesarean section. All the surgeries were performed by highly skilled two senior consultants and were managed by senior anesthetist, all having post-FCPS experience of more than 10 years.

A structured questionnaire was used for data collection. Demographics contained information regarding patient's age, gestational age, gravida, parity and abortions. Past obstetric history regarding mode of previous deliveries, current booking status, timing of diagnosis of placenta accreta spectrum, timing of arrangement of blood products, pre-operative hemoglobin was collected. Intrapartum characteristics including mode of cesarean delivery, timing of cesarean delivery, type of uterine incision, attempt for removal of placenta was gathered. Maternal outcomes in terms of postpartum hemorrhage, massive transfusions, balloon tamponade, b- lynch, placement of hemostatic sutures, obstetric hysterectomy, bladder/bowel/visceral injury, ICU admission, ventilatory support and finally either patient was discharged or resulted in mortality was noted. Similarly, fetal outcomes in terms of fetal weight, Apgar score, admission in neonatal ICU and early neonatal death were recorded.

Data was entered and analyzed using SPSS version 22. Descriptive statistics were calculated for all variables. Continuous variables like age, gravida, parity, abortions is represented by mean±SD. Categorical variables like mode of deliveries, current booking status, timing of diagnosis of placenta accreta spectrum, timing of arrangement of blood products, pre-operative hemoglobin, mode of cesarean delivery, timing of cesarean delivery, type of uterine incision, attempt for removal of placenta, maternal and fetal outcomes are represented as frequency and percentage. To determine the association of maternal morbidity and maternal and fetal mortality with other variables, chi-square test was applied.

Results

Total 32795 deliveries were conducted in Jinnah Postgraduate Medical Centre, Department of Obstetrics & Gynaecology Unit 1, from January 2018 – December 2021. Out of 32,795 deliveries, 22143(67.6%) were

vaginal deliveries whereas 10652 (32.4%) were operative deliveries. 305 cases i.e. 2.86% of operative deliveries were associated with placenta accreta spectrum. Overall, frequency of placenta accreta spectrum was found to be 9.3/1000 deliveries. Mean age of patients was 30.862 ± 3.96153 years, with minimum age of 21 years and maximum age of 40 years. Mean gravida was 4.161 ± 1.4317 with minimum range of gravida 2 and maximum of gravida 10. Mean gestational age in weeks at the time of delivery was 35.551 ± 4.161 weeks. Out of 305 cases, 76 (24.9%) had previous 1 cesarean section or normal vaginal delivery whereas 229 (75.1%) had previous 2 or more cesarean sections. 229 (75.1%) women were either registered or booked at JPMC or any other setup and 76 (24.9%) were unbooked. 278 (91.1%) cases were diagnosed antenatally via Doppler ultrasound performed by an expert sonologist whereas 27 (8.9%) patients were diagnosed during cesarean section. 182 (59.7%) patients had normal hemoglobin ($>10\text{g/dl}$) at the time of surgery whereas 123 (40.3%) were anemic having hemoglobin less than 10g/dl . 275 (90.2%) cases had blood products arranged during antenatal period or in emergency whereas 30 patients were transfused uncrossed blood or blood was unavailable during surgery. 173 (56.7%) patients had planned elective surgery whereas 123 (40.3%) had emergency surgery.

Out of 305 cases, 139 (45.6%) had term delivery whereas 166 (54.4%) had preterm delivery. 157 (51.5%) patients were delivered via lower segment transverse incision whereas 148 (48.5%) patients were delivered via upper segment transverse incision or classical incision. Removal of placenta was either not attempted at all or successfully attempted in 207 (67.9%) patients whereas placental removal was attempted but was partially successful in 98 (32.1%) patients. Most of the patients i.e. 235 (77%) had postpartum hemorrhage, 200 (65.6%) patients had massive transfusions, 19 (6.2%) patients required balloon tamponade, b-lynch was applied in 2 (0.7%) patients, hemostatic sutures were applied in 155 (50.8%) patients, obstetrical hysterectomy was performed in 213 (69.8%) patients and bladder/bowel/visceral injury was noted in 64 (21%) patients owing to difficult surgery and poor tissue planes. Most of the patients i.e. 230 (75.4%) required ICU admission however 43 (14.1%) patients required ventilator support and 11 (3.6%) suffered mortality.

There is significant association seen between patient's mortality with timing of diagnosis of placenta accreta spectrum. Mortality is increased in patients who were

diagnosed with placenta accreta spectrum during cesarean section (p-value = 0.000). Similarly mortality is increased in emergency surgeries as compared to elective surgeries (p-value= 0.009). Higher mortality is seen in patients requiring massive transfusion owing to excessive blood loss (p-value=0.01) and in cases requiring uncrossed blood or where blood products were not available in time (p-value=0.000)

Out of 305 babies, 211 (69.2%) had normal birth weight whereas 94 (30.8%) had low birth weight. 261 (85.6%) babies had good apgar whereas 44 (14.4%) were born with low apgar scores. 244 (80%) were admitted in NICU and 46(15.1%) had early neonatal death.

Significant association is seen between early neonatal death and delivery before 36 weeks (p-value=0.000), low birth weight (p-value= .000) and low apgar score (p-value = 0.000).

Table I: Association of maternal mortality with various variables.

Variables	Death		p-value
	Yes	No	
Placenta accreta spectrum diagnosed antenatally	5	273	0.000*
Placenta accreta spectrum diagnosed during c-section	6	21	
Elective surgery	2	171	0.009*
Emergency surgery	9	123	
Need of massive transfusion	11	189	0.01*
Massive transfusion not needed	0	105	
Blood arranged before surgery	5	270	0.000*
Transfusion of limited uncrossed blood or blood products not available.	6	24	
Previous normal delivery or 1 c-section	5	71	0.109
Previous 2 or more c-sections	6	223	
Placenta removal either not attempted or successful	7	200	0.759
Placenta removal attempted and partially successful	4	94	
Post-partum haemorrhage – YES	11	224	0.066
Post-partum haemorrhage – NO	0	70	

*p-value = < 0.05

Discussion

Abnormal adherence of placenta with uterus be it partial or complete was previously termed as morbidly adherent placenta.¹³ It is mostly seen in patients with previous history of cesarean delivery or scarred uterus, however it can be present in an unscarred uterus.¹⁴ Placenta accreta spectrum is associated with increased risk of maternal morbidity, mortality, postpartum hemorrhage, obstetrical hysterectomy and prolong hospital stays.¹⁵

Incidence of placenta accreta spectrum is gradually increasing and its prevalence in US between 1998-2011 is 3.6/1000 deliveries.¹⁶ In Pakistan various studies show slightly different frequencies of placenta accreta spectrum. Tahir N. et. Al reported the incidence of placenta accreta spectrum as 4.74/1000 deliveries.¹⁷ Akhtar T et. Al reported the incidence as 1.83/1000 deliveries in 2018.¹⁸ Ansar A et. Al. showed incidence of morbidly adherent placenta to be 1.83/1000 deliveries in Jinnah Postgraduate Medical Centre in 2014.⁹ We have found a drastic increase in the incidence of placenta accreta spectrum since then. In our study we found the frequency of placenta accreta spectrum to be 9.3/1000 deliveries. This increase is very alarming as Placenta accreta spectrum is a very high risk pregnancy and a nightmare for obstetricians associated with maternal morbidity and mortality. A good number of placenta accreta spectrum is diagnosed during cesarean section that is associated with massive hemorrhage and maternal morbidity.¹⁹ In our study we found association of maternal mortality with massive hemorrhage requiring massive transfusions, diagnosis of placenta accreta spectrum during cesarean section, either non availability of blood or availability of limited quantity of uncrossed blood. Maternal mortality associated with placenta accreta spectrum ranges between 7 -10% worldwide.²⁰ In women with placenta accreta spectrum there is 60% risk of morbidity and 7% risk of mortality.²¹ In our study we found 3.6% women suffered mortality because of complications of placenta accreta spectrum. 15.1% of babies delivered to women with morbidly adherent placentas had early neonatal death. In our study we found out that early neonatal death had significant association with preterm delivery, low birth weight and poor apgar score at 1 and 5 minutes of birth.

Conclusion

Placenta accreta spectrum is associated with high maternal morbidity and mortality. Antenatal diagnosis, pre-operative arrangement of blood products, elective planned surgery can help in minimizing morbidity and mortality associated with it. Where possible delivery near term can also help in good fetal outcome.

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