

## Original Article

# Assessment of Fetomaternal Outcome in Females Presenting with Morbidly Adherent Placenta in a Large Tertiary Care Facility

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## Abstract

**Objective:** To assess fetomaternal outcome in females presenting with morbidly adherent placenta

**Methodology:** This descriptive study was conducted at Department of Obstetrics & Gynecology, Shifa International Hospital, Islamabad. A total of 50 females were recruited in from November 2022 to May 2023). Both booked and non-booked females were followed-up till delivery. Maternal outcome included hemorrhage, hysterectomy, preterm delivery and need of massive blood transfusion and ICU admission. Fetal outcome included birth weight, Apgar scores and NICU admissions. A structured proforma was used for data collection. Data analysis was performed in SPSS version 21.0.

**Results:** Mean age was  $29.92 \pm 6.59$  years. There were 8 (16%) females with placenta increta, 4 (8%) had placenta percreta while 38 (76%) had placenta accreta. Antepartum hemorrhage was noted in 29 (58%) cases, hysterectomy was done in 25 (50%), preterm delivery in 28 (56%) cases, massive blood transfusion in 24 (48%), need for ICU care in 23 (46%) cases and need for neonatal care in 19 (38%) cases. Further analysis revealed that antepartum hemorrhage, need of ICU admission, low birth weight, and need of NICU admissions were more frequent in women with increta/percreta placental abruption, however, not statistically significant (p-value, 0.71).

**Conclusion:** The maternal complications rate was very high in women with morbidly adherent placenta. Prematurity and need for neonatal intensive care unit were the most frequent fetal complications in this study.

**Keywords:** Fetomaternal complications, blood transfusion, morbidly adherent placenta, antepartum hemorrhage, hysterectomy.

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## Introduction

One of the most dreaded problems in obstetrics is a morbidly adherent placenta, along with its variations, which lead to high rates of morbidity and death. Obstetricians need to be aware that the prevalence of morbidly adherent placentas, which were once believed to be extremely rare, is increasing in modern obstetric practice. The main clinical issue, massive obstetric hemorrhage, is a potentially fatal illness with up to 10% mortality and morbidity rates.<sup>1</sup>

The placental attachment point in pregnant females has a significant impact on pregnancy outcomes. When the placenta is located on the anterior wall, clinicians should be aware of the risk of severe postpartum hemorrhage and adverse pregnancy outcomes. The placenta adhering to the site of the uterine incision should alert doctors to placenta accreta spectrum disorders.<sup>2</sup>

Pregnant women are more likely to experience placental insufficiency issues, which highlights the

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importance of careful surveillance. Such vigilance may help minimize maternal, fetal, and neonatal complications.<sup>3,4</sup> Antenatal detection of a morbidly adherent placenta enables multidisciplinary planning to reduce potential maternal or newborn morbidity and death.<sup>5</sup> Up-to-date information is essential for optimal management of women with morbidly adherent placentas because it enables for better preparation for the complications that may arise during delivery.<sup>6-9</sup>

According to one study, 83.3% of eighteen females with morbidly adherent placenta suffered antepartum hemorrhage, 94.4% had a hysterectomy, and 61.1% experienced preterm delivery.<sup>7</sup> Another study found that out of 20 females, 60% had antepartum hemorrhage, 50% required ICU care, 85% underwent hysterectomy, and 55% experienced preterm delivery.<sup>8</sup> Blood transfusion was necessary in 66.5% of cases, ICU admission in 31%, hysterectomy in 69.6%, neonatal ICU admission in 50.6%, and preterm delivery occurred in 67% of cases.<sup>6</sup>

Previous evidence and national data reports unacceptably high rates of maternal and neonatal morbidity and mortality in Pakistan. There is a need of integrated efforts to investigate and target various causes of poor pregnancy outcomes. Assessing the frequency of fetomaternal consequences in females who arrive with a morbidly adherent placenta is the purpose for this study. Literature indicates that outcomes of morbidly adherent placenta are often severe, highlighting the need for proper screening and management protocols to control its complications. However, limited local data exist. Thus, keeping in view the previous reports, it is hypothesized that in women with MAP the fetomaternal outcomes are poor. Therefore, this study aimed to assess the results of pregnancies with morbidly adherent placenta in a selected local population, to find out their fetal and maternal outcomes.

## Methodology

This descriptive study was carried out at Shifa International Hospital's Obstetrics & Gynecology Department in Islamabad, over a duration of six months, following approval of the study synopsis (5<sup>th</sup> November 2022 to 5<sup>th</sup> May 2023). The sample was 50 cases, which was determined utilizing a 14% margin of error, and a 95% confidence interval, and an anticipated proportion of 50% ICU care requirement for female patients with morbidly adherent placenta. To

recruit participants, a non-probability consecutive sampling method was employed.

Females aged 18–40 years, with parity less than 5, who presented after 20 weeks of gestation based on last menstrual period (LMP), and were diagnosed with morbidly adherent placenta were included in the study. All the women with a history of previous abortion, intrauterine growth restriction in prior offspring were excluded. Similarly, those with uterine procedures in previous deliveries for hemorrhage, renal disease (creatinine >1.2 mg/dL), or anemia (Hb <8 g/dL) were also excluded from the study.

Patients were selected and recruited from the emergency room. Demographic information, including age, parity, BMI, gestational age, and adherent placenta type, was documented following informed consent. There were females who were booked and those who weren't. In the event of vaginal bleeding or labor pains, booked patients were instructed to go to the labor room. The patients were followed until delivery, and preterm delivery was noted if delivery occurred before 37 weeks of gestation. Hysterectomy was done when there was potentially fatal bleeding during or soon after delivery. All relevant data were documented using a specially designed proforma. The study outcome was measured as maternal outcomes that included hemorrhage, preterm birth, hysterectomy, mass blood transfusion, need for ICU admission and requirement of a redo surgery. The fetal outcomes were assessed as birth weight, apgar score, and need of NICU admission.

SPSS version 21 was utilized for data entry and analysis. Qualitative characteristics like the type of adherent placenta and outcomes like antepartum hemorrhage, hysterectomy, and preterm delivery were provided as frequencies and percentages while quantitative data like BMI, gestational age, and age were stated as mean  $\pm$  standard deviation. Parity was also analyzed as an occurrence. Stratification was performed for age, gestational age, parity, BMI, and type of adherent placenta. After stratification, fetomaternal outcomes were compared using the chi-square test; a p-value of less than 0.05 was considered statistically significant.

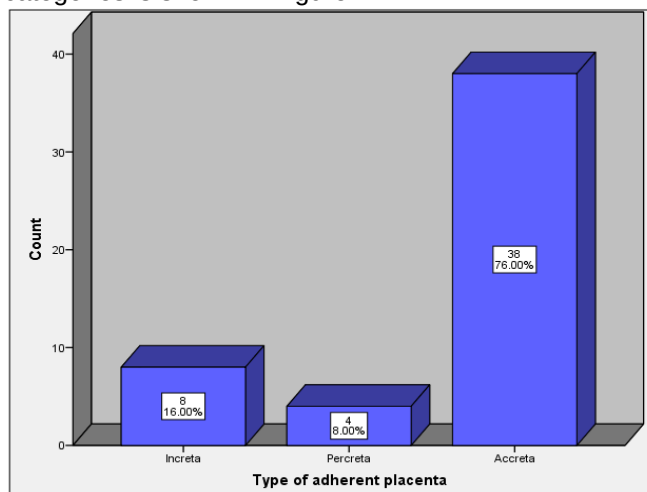
## Results

The mean age was  $29.92 \pm 6.59$  years while mean BMI was  $26.50 \pm 4.30$  kg/m<sup>2</sup>. Regarding parity, 5 (10%) females had primiparity (1–2 pregnancies), while 45

(90%) had multiparity (3–4 pregnancies). While booking, the average gestational age was  $26.72 \pm 2.93$  weeks. Regarding delivery results, 28 (56%) had preterm delivery, which was divided into three categories: 6 (12%) <28 weeks, 7 (14%) 28–32 weeks, and 15 (30%) 32–34 weeks. (Table I)

| Table I: Baseline Characteristics. (n=50) |              |            |
|-------------------------------------------|--------------|------------|
|                                           | No. of Cases | Percentage |
| Age (years)                               |              |            |
| Mean ± SD                                 | 29.92 ± 6.59 |            |
| Gestational Age at Booking (weeks)        |              |            |
| Mean ± SD                                 | 26.72 ± 2.93 |            |
| Gestational Age Categories (weeks)        |              |            |
| Less than 28                              | 6            | 12.0%      |
| 28–32                                     | 7            | 14.0%      |
| 32–34                                     | 15           | 30.0%      |
| More than 34                              | 22           | 44.0%      |
| Parity                                    |              |            |
| Primi parity                              | 5            | 10.0%      |
| Multi parity                              | 45           | 90.0%      |

There were 38 (76.0%) cases of Accreta while 4 (8.0%) had Percreta and 8 (16.0%) were found with Increta. The distribution of morbidly adherent placenta categories is shown in Figure I.



**Figure I: Distribution of type of adherent placenta.**

Antepartum hemorrhage occurred in 29 (58%) cases, and 25 (50%) females underwent hysterectomy post-delivery. Massive blood transfusion was needed in 24 (48%) cases, and 23 (46%) needed ICU care. Regarding neonatal outcomes, overall birth weight averaged  $1820.58 \pm 435.67$  grams with 34.0% classified as low birth weight (<2500g) and 66.0% as normal birth weight ( $\geq 2500$ g). Apgar scores averaged  $6.90 \pm 1.50$ . There were 33 (66%) cases who required neonatal care in this study and this was found significantly high. (Table II)

**Table II: Maternal and neonatal outcomes of study patients.(n=50)**

|                              | No. of Cases     | %     |
|------------------------------|------------------|-------|
| MATERNAL OUTCOMES            |                  |       |
| Natural Outcome              | 25               | 50.0% |
| Antepartum Hemorrhage        | 29               | 58.0% |
| Hysterotomy                  | 25               | 50.0% |
| Preterm Delivery             | 28               | 56.0% |
| Massive Blood Transfusion    | 24               | 48.0% |
| Need for ICU Care            | 23               | 46.0% |
| Need for Another Procedure   | 11               | 22.0% |
| NEONATAL OUTCOMES            |                  |       |
| Birth Weight (grams)         |                  |       |
| Mean ± SD                    | 1820.58 ± 435.67 |       |
| Apgar Score of Neonate       |                  |       |
| Mean ± SD                    | 6.90 ± 1.50      |       |
| Birth Weight Categories      |                  |       |
| Normal Birth Weight (≥2500g) | 33               | 66.0% |
| Low Birth Weight (<2500g)    | 17               | 34.0% |
| Need for Neonatal ICU        | 19               | 38.0% |

**Table III: Fetomaternal Outcomes by Type of Morbidly Adherent Placenta.(n=50)**

|                              | MAP categories    |                             | p-value |
|------------------------------|-------------------|-----------------------------|---------|
|                              | Accreta<br>(n=38) | Percreta/<br>Increta (n=12) |         |
| MATERNAL OUTCOMES            |                   |                             |         |
| Natural Outcome              | 20 (52.6%)        | 5 (41.6%)                   | 0.589   |
| Antepartum Hemorrhage        | 21 (55.3%)        | 8 (66.7%)                   | 0.485   |
| Hysterotomy                  | 19 (50.0%)        | 6 (50.0%)                   | -       |
| Preterm Delivery             | 22 (57.9%)        | 6 (50.0%)                   | 0.631   |
| Massive Blood Transfusion    | 21 (55.3%)        | 3 (25.0%)                   | 0.067   |
| Need for ICU Care            | 17 (44.7%)        | 6 (50.0%)                   | 0.750   |
| Need for Another Procedure   | 8 (21.1%)         | 3 (25.0%)                   | 0.774   |
| NEONATAL OUTCOMES            |                   |                             |         |
| Birth Weight (grams)         |                   |                             |         |
| Mean ± SD                    | 1789.8 ± 421.1    | 1917.8 ± 485.1              | 0.381   |
| Apgar Score of Neonate       |                   |                             |         |
| Mean ± SD                    | 6.95 ± 1.54       | 6.75 ± 1.42                 | 0.696   |
| Birth Weight Categories      |                   |                             |         |
| Normal Birth Weight (≥2500g) | 25 (65.8%)        | 8 (66.7%)                   | 0.915   |
| Low Birth Weight (<2500g)    | 13 (34.2%)        | 4 (33.3%)                   |         |
| Need for Neonatal ICU        | 14 (36.8%)        | 5 (41.7%)                   | 0.764   |

Further in-depth analysis was done to view maternal and neonatal parameters according to adherent placenta categories of Accreta and Percreta/Increta. It was witnessed that proportionately more women 20/38 (52.6%) who had Accreta gave natural birth when compared with Percreta/Increta category 5/12 (41.6%), however, this difference was not statistically significant (p-value, 0.68). Similarly, antepartum hemorrhage was noted in more cases of Percreta/Increta 8/12 (66.7%)

but did not differ 21/38 (55.3%) significantly with Accreta category (p-value, 0.71). Preterm delivery was more frequent in Accreta category 22 (57.9%) compared to 6 (50.0%) Percreta/Increta cases. A close to significant association was found between massive blood transfusion and Accreta category 21/38 (55.3%) when compared with the Percreta/Increta 3 (25.0%) cases and this difference was almost statistically significant (p-value, 0.06). The average neonatal birth weight was greater in Percreta/Increta category than Accreta cases (1917.8 vs 1789.8 grams), however, this difference was not significant (p-value, 0.38). Similarly, mean apgar score was found slightly higher in Accreta category, but not statistically significant. Moreover, proportionately need for NICU admissions was required by fewer neonates born to mothers with Accreta 14 (36.8%) than those in Percreta/Increta category 5 (41.7%), however, this difference was also not proven significant statistically (p-value, 0.89). (Table III)

## Discussion

This study highlights an increasing frequency of women presenting with morbidly adherent placenta in the local settings. The study also reveals and validates a compromised status of maternal and fetal outcome in morbidly adherent placenta cases. These findings align with the previous and recent literature on the topic. The occurrence of morbidly adherent placenta, once considered rare, has been gradually increasing in modern obstetric practice, necessitating heightened awareness among obstetricians. Placenta accreta was always thought to be uncommon, but in the last 50 years, its frequency has risen tenfold, from 1 in 2,500 to 1 in 500 births.<sup>11</sup> Rising rates of Caesarean sections and short inter-pregnancy intervals are significant contributors to the increase in placenta accreta.<sup>12,13</sup> Comparatively, in the current study also the most prevalent kind was placenta accreta, followed by placenta increta and placenta percreta.

This analysis revealed that 70% of MAP patients had placenta previa and prior Caesarean section, which are the two most significant underlying causes. This finding aligns with the previous literature, where Sultan et al. reported a 12% risk of morbidly adherent placenta in women with a history of C-sections and placenta previa, with the probability increasing compared to the number of prior surgeries.<sup>14</sup> In another study, Usta IM and colleagues reported that the risk of placental abruption increased from 33.3% to up to 50% with previous 4 and 5 C-sections, respectively and along

these causes, a history of curettage and grand multiparity also contributed to MAP.<sup>15</sup>

Although the precise cause is still unknown it is well accepted that placental invasion into the myometrium is made possible by damage to the decidua basalis.<sup>16</sup> This invasion can occur through the uterine serosa (placenta percreta), the deep myometrium (placenta increta), or superficially (placenta accreta), with possible involvement of nearby organs.<sup>17-21</sup>

Almost two-third of the current study cases experienced antepartum hemorrhage, one-half cases had hysterectomy, and needed massive blood transfusion, and also a little less than 50% of these women required ICU care. Hemorrhage poses a life-threatening risk with high maternal mortality rates reaching up to 10%.<sup>10,11</sup> A previous study by Paneersevam et al. witnessed antepartum hemorrhage in 83.3% and of their cases, 94.4% of women required hysterectomy as well.<sup>7</sup> These rates are comparatively even higher than the current study findings. Close to 50.0% of current study women required massive blood transfusion, in the study by Bailit et al. almost two-third of their cases required massive blood transfusion.<sup>3</sup> Severe obstetric hemorrhage remains the most critical clinical concern in MAP. Thus, filtering MAP cases early on and targeting with appropriate preventive measures for hemorrhage are crucial.

In the present study, preterm delivery was noted in 56% of cases, and neonatal ICU care in 38%. The findings of Paneerselvam et al. were similar, who also witnessed that 61.1% of their patients had preterm deliveries, 94.4% had hysterectomy, and 83.3% of patients suffered antepartum hemorrhage.<sup>7</sup> In another study, Bailit et al. noted neonatal ICU admissions in 50.6% cases while preterm delivery was reported in 67% of their cases of morbidly adherent placenta.<sup>3</sup> Keeping in view the high rates of associated mortality, the increased frequency of MAP cases is a huge challenge and needs close monitoring and timely management. There is also need to put a deep insight in trends and causative pattern of MAP cases, so that interventions and initiatives could be planned for their prevention.

In the present study in-depth analysis revealed that within MAP sub-categories of Accreta and Percreta/Increta some proportionate differences were observed in terms of maternal and fetal outcomes, but these differences could not be proven statistically significant due to unmatched number of cases in the



compared categories in this study. It was witnessed that antepartum hemorrhage was more common in Percreta/Increta (66.7%) but did not differ (55.3%) significantly with Accreta category (p-value, 0.71). Preterm delivery was more frequent in Accreta category (57.9%) compared to (50.0%) Percreta/Increta. A close to significant association was found between massive blood transfusion as in Accreta category (55.3%) required it compared to (25.0%) in the Percreta/Increta category and this difference was almost statistically significant (p-value, 0.06). The average birth weight was found greater in Percreta/Increta category than Accreta cases (1917.8 vs 1789.8 grams), but not significant (p-value, 0.38). Similarly, mean apgar score was found slightly higher in Accreta category. Moreover, proportionately need for NICU admissions was required by fewer neonates born to mothers with Accreta 14 (36.8%) than those in Percreta/Increta category 5 (41.7%), however, this difference was also not proven significant statistically (p-value, 0.89). These findings are in line with previous evidence. A study by Zhang H et al reported that since accreta is still superficial it has less maternal and fetal complications whereas placenta increta and percreta are related to serious complications. Percreta and increta are associated with a greater risk of emergency surgery, more blood loss, and increased need for neonatal intensive care unit (NICU) admission compared to accreta.<sup>22</sup> However, surprisingly in the present study greater number of women having placenta accreta required mass blood transfusion than those having increta/percreta (55.3 vs 25.0%). There is a need of further in-depth data collection and analysis keeping in view different placental abruptions and their causes in context.

The placenta remains in place as part of conservative therapy, which may also include parenteral methotrexate, bilateral uterine artery embolization, or both. Prior to surgery, an interventional radiologist can place balloon occlusive devices in both internal iliac arteries.<sup>13</sup> Edwin claims that when the placenta left in situ declines in size on the fifth postoperative day and is seen by a Doppler ultrasonography, there is no placental tissue left after 20 weeks. The conservative management of placenta accreta and increta no longer only involves the use of radiation surgery.<sup>10, 12</sup>

The high morbidity linked to adherent placenta that is undiagnosed during the antenatal span, which resulted in extensive hemorrhage from the placenta's piecemeal removal, is clearly described in a case series about

morbidity adherent placenta. On the other hand, in individuals who were identified, the placenta was left in the uterus and a scheduled hysterectomy was carried out with controlled bleeding, which decreased morbidity. Research continuously demonstrates that placenta previa and a history of Caesarean procedures significantly increase the risk of a placenta that is morbidly adherent.<sup>17</sup> Chattopadhyay et al. were the first to define pernicious placenta previa, which is placenta previa with a history of Caesarean cut and is frequently linked with obstetric hemorrhage and other poor outcomes for both the mother and the fetus.<sup>18</sup> This evidence has been reported from other areas like China as well where 2.1% women experienced it.<sup>23</sup>

In brief, based on the above findings and comparative evidence it can be said that MAP is linked to serious complications and must be identified and monitored early on so that it could be managed appropriately and in a timely manner. The advantages of this study lie in detailed outcomes of maternal and fetal outcome after women with morbidly adherent placenta were selected. Since MAP is increasing in the local settings as well, if identified and monitored with advanced technology, the complications of MAP could be appropriately managed and the rates of severe morbidity and mortality in these women could be brought down. There were no significant limitations in this study.

## Conclusion

This study validated previous findings which also noted that feto-maternal complication rate is significantly high in females with morbidly adherent placenta. In this study, the maternal complications included antepartum hemorrhage, hysterectomy, and preterm delivery. The neonatal outcomes observed were low apgar score, low birth weight and need for NICU admission. This research provides evidence for our local setup, highlighting the need to establish proper screening and management protocols to reduce maternal and neonate morbidity and mortality.

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