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Original Research Article

Fetomaternal outcome in morbidly adherent placenta in a tertiary referral hospital

Amudha Paneerselvam*, Asha Sundaram

Department of Obstetrics and Gynecology, Thanjavur Medical College, Thanjavur, Tamil Nadu, India

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***Correspondence:**

Dr. Amudha Paneerselvam,

E-mail: amudha70dr@gmail.com

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ABSTRACT

Background: Morbidly adherent placenta is often associated with major pregnancy complications requiring massive blood transfusions, peripartum hysterectomy, etc. The prior number of caesarean sections and placenta previa are the critical risk factors. The aim of this study is to evaluate the fetomaternal outcome in women with morbidly adherent placenta and to quantify the risk factors predisposing to it.

Methods: This is a retrospective cohort study. The study population comprises women, who had C-section for placenta accreta, increta and percreta at Government Raja Mirasudhar Hospital, Thanjavur from May 2016 to September 2017.

Results: Eighteen women out of 21,083 who delivered during the study period had morbidly adherent placenta with an incidence of 0.085%. The mean gestational age at the time of C-section was 32.4 weeks. Twelve (66.66%) out of eighteen women had prior one C-section, two (11.11%) women had prior 2 C-section and two (11.11%) women had prior 3 C-section. 10 cases were diagnosed antenatally by radiological imaging. Seventeen out of eighteen women underwent caesarean hysterectomy (94.44%). Average blood loss was 1.8 litres. The mean intraoperative blood transfusions were 3 units of PRBC, 3 units of FFP and 1.4 units of platelet. There was no maternal mortality. The average total hospital stay was 20.46 days. 11 neonates were preterm (61%) and 5 neonates were term (27.74%). FGR was seen in 2 preterm neonates (12.5%). The NICU admission rate was 81% (n=13). The perinatal mortality rate was 31.25% (n=5).

Conclusions: As most of the women ended up in caesarean hysterectomy, early diagnosis will enable appropriate planning for blood components, anaesthetic and surgical resources, thereby reducing adverse fetomaternal outcomes. This will also allow adequate preoperative counselling of the women involved.

Keywords: Caesarean hysterectomy, Fetomaternal outcomes, Morbidly adherent placenta

INTRODUCTION

Morbidly adherent placenta is attributed to the defective decidualisation of the implantation site and the absence of both the decidua basalis and Nita Buch's layer, resulting in direct attachment of the chorionic villi to the myometrium. The incidence of morbidly adherent placenta has increased with the sharp increase in the rate of C-section over the past 2 decades.^{1,2} Placenta previa

and the number of prior C-sections is considered the two major risk factors.² Placenta accrete syndromes describe the abnormally implanted, invasive, or adhered placenta. Derivation of accrete comes from the Latin *ac + crescere* = to grow from adhesion or coalescence, to adhere, or to become attached to.³ Variants of placenta accrete syndrome are classified by the depth of trophoblastic growth. Placenta accreta indicates that villi are attached to the myometrium.

Placenta increta indicates invasion of myometrium by villi and Placenta percreta defines villi that penetrate through the myometrium and to or through the serosa.⁴ In clinical practice, these three variants are encountered in an approximate ratio of 80:15:5, respectively.⁵ In all three varieties, abnormal adherence may involve all lobules-total placenta accreta. If all or part of a single lobule is abnormally attached, it is described as a focal placenta accreta.

Morbidly adherent placenta is associated with major pregnancy complications like life threatening maternal haemorrhage, large volume blood transfusion, peripartum hysterectomy and surgical injury to adjacent organs and neurovascular structures, ARDS, acute transfusion reactions, electrolyte imbalance and renal failure.⁶ The aim of this study is to evaluate the fetomaternal outcome among women with morbidly adherent placenta and to quantify the risk factors predisposing to it.

METHODS

This study was conducted at Department of Obstetrics and Gynaecology, Government Raja Mirasudhar Hospital, Thanjavur Medical College, Thanjavur.

Study population: women, who had C-section for placenta accreta, increta and percreta at Government Raja Mirasudhar Hospital, Thanjavur. Study period: May 2016 to September 2017. Study design: retrospective study.

Methodology

The following details were collected regarding the pregnant women included in the study:

- Obstetric history:
 1. Parity.
 2. Gestational age.
 3. Past history: previous C-section, prev D and C, prev. myomectomy, prev. H/O Placenta previa.
 4. Antenatal History: H/o APH, H/o blood transfusion.
- Investigations: Hemoglobin, blood grouping and typing, coagulation profile.

Obstetric USG:

1. To determine the position of placenta and the type of placenta previa.
2. To look for features suggestive of MAP: loss of the normal hypoechoic retroplacental zone between the placenta and uterus, placental vascular lacunae.
3. Doppler colour flow to predict myometrial invasion.
4. Placental bulging into the posterior bladder wall.
5. MRI-abdomen and pelvis, when the USG findings are inconclusive.

- Operative events: The following events were recorded:

1. C-section- emergency/elective.
2. Estimated blood loss.
3. Blood and blood products transfused.
4. Procedures needed to control bleeding.
5. Operative time.
6. Injury to bowel, bladder, ureter and neurovascular injury.
7. Caesarean hysterectomy.

- Post-operative maternal morbidities.

- Total blood and blood products transfused.

- Total hospital stay.

- Neonatal outcome: The following details were recorded with regard to the neonates:

Term/preterm, birth weight, perinatal mortality and its cause, antenatal steroid administration.

RESULTS

Maternal outcome

The total number of deliveries during the study period was 21,083 of which 18 women were diagnosed with morbidly adherent placenta with an incidence of 0.085%. Fourteen women were diagnosed with placenta accreta, 3 with placenta percreta and 1 with placenta increta. The mean age of the cohort was 30.15 years with mean parity of 2.61, among whom 3 women were grand multipara. The mean gestational age at the time of C-section was 32.4 weeks. Sixteen women (88.88%) had previous C-section and 1 (5.55%) had a scarred uterus following previous uterine rupture. Twelve (66.66%) women had one prior C-section, two (11.11%) women had 2 prior C-section and two (11.11%) women had three prior C-section. The mean number of C-section was 1.22.

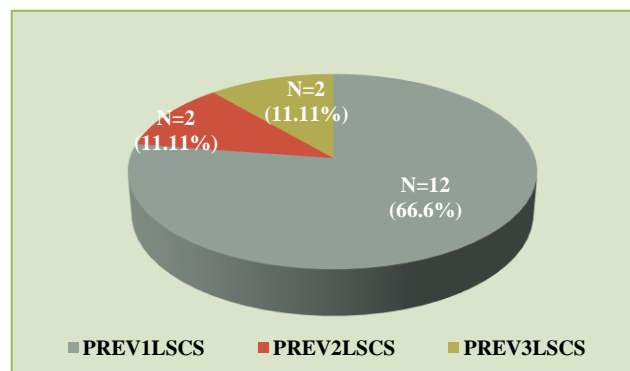


Figure 1: Incidence of MAP among women with previous C-section.

Fifteen women presented with antepartum haemorrhage and the mean antenatal blood transfusion was 1.3 units of PRBC. Eight out of 14 women with placenta accreta, 1 with placenta increta were diagnosed antenatally by USG and 1 case of placenta increta and 1 out of 3 cases of placenta percreta were confirmed antenatally by MRI.

Seventeen out of 18 women underwent hysterectomy, while in 1 woman with focal placenta accreta, uterine conservation was possible. All the 18 women had operative procedures performed on an emergency basis. Massive blood loss was a prominent feature in present study with an average blood loss of 1.8 litres, and an average operative time of 2 hours. The mean perioperative blood transfusion was 3 units of packed cells, 3 units of FFP and 1.4 units of platelets.

Intraoperative bladder injury occurred in 5 cases (27.77%) requiring an average CBD of 14 days. Partial bladder excision with vesicostomy closure was done in one case of percreta. The mean postop PRBC transfusion was 1.3 units, mean FFP transfused was 1.3 and the mean platelets transfused was 1 unit. All 18 women were managed in intensive care unit postoperatively. They had a mean pre-operative hospital stay of 6.15 days and post-operative stay of 14.31 days. There was no maternal mortality.

Neonatal outcome

Eleven out of 18 neonates were premature (61%) while 5 (27.74%) were term neonates. Neonates had an average birth weight of 1.7kg. Among the 16 women, 10 women received complete dose of antenatal steroids. The NICU admission rate was 81% (n=13). There were 2 preterm intrauterine fetal demise. Fetal growth restriction was seen in 12.5% (n=2) of preterm neonates. The perinatal mortality rate was 31.25% (n=5). Respiratory distress syndrome was the leading cause of neonatal death accounting for 80% (n=4) and sepsis in 20% (n=1).

DISCUSSION

The incidence of placenta accreta in the literature varies between 0.001% to 0.9% of deliveries. It is now an increasingly common and potentially dangerous obstetric event. In the current study the overall incidence of morbidly adherent placenta was 0.085% i.e., 1 in 1171 deliveries.

The incidence of morbidly adherent placenta reported by Wu et al was 1:533 births for the period from 1982 to 2002 which was associated with a sharp increase in c-section rates from 12.5% (1982) to 23.5%.⁷ Gielchinsky et al reported an incidence of 1:111.⁸ Hung et al reported an incidence of 1:334.⁹ In this study, previous C-section appeared to be the most important risk factor accounting for 88.8% of cases followed by placenta previa which accounted for 83.3% of the cases.

Table 1: Demographic characteristics of patients (N=18).

Characteristics	Number
Mean age (years)	30.15
Grand multiparity	3 (16.66%)
Previous 1 LSCS	12 (66.66%)
Previous 2 LSCS	2 (11.11%)
Previous 3 LSCS	2 (11.11%)
Placenta previa	15 (83.33%)
History of D and C	2 (11.11%)

Miller et al reported an incidence of 9.3% of placenta accrete among women with placenta previa.¹⁰ In present study, the incidence of placenta accreta was drastically higher among women with placenta previa (88.88%). History of D and C was noted in 2 women and previous history of rupture uterus with rent closure was present in 1 woman. Bencaiova G et al reported significant association of previous uterine intervention in the form of D and C, uterine surgery other than C-section with adherent placenta.¹¹

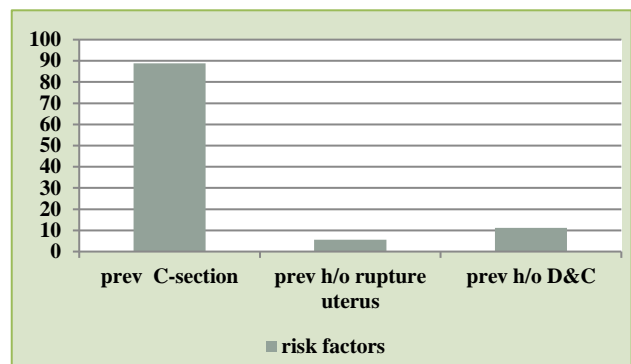


Figure 2: Risk factors for morbidly adherent placenta.

Clark et al stated that the risk of placenta accreta was 24% with a placenta previa and one caesarean delivery and that this risk increased to 67% with a placenta previa and four caesarean delivery.¹² A similar observation was made in present study wherein 16 out of 18 women had previous c-section, among whom 12 had previous 1 c-section (66.6%), 2 had previous 2 c-section and another 2 had previous 3 c-section.

Chattopadhyay SK et al reported that the risk of morbidly adherent placenta increases with the number of previous c-section.¹³ The exact pathogenesis of morbidly adherent placenta is unknown. Garini et al showed in vitro that an induced sharp decidual incision irritating the invivo process, that is c-section, significantly increased the invasive potential of trophoblast cells.¹⁴ Antenatal diagnosis was possible in 8 cases of placenta accreta and 1 case of placenta increta by USG and 1 case of placenta increta and 1 case of placenta percreta were confirmed antenatally by MRI.

The USG features observed in present study were thinning of the myometrium overlying the placenta and irregularly shaped placental lacunae. Aitken et al reported that MRI had a higher prediction rate of abnormal invasive placentation compared to ultrasound (91.9% versus 98.4%).¹⁵ Ibrahim et al found that USG and MRI had no significant difference in accuracy in diagnosing abnormal placentation (97-100% versus 94-100 %).¹⁶ They concluded that MRI had higher accuracy compared to USG in diagnosing myometrial invasion and the type of abnormal placentation (73.5% versus 47 %).^{15,16} Out of the 18 cases, 11 cases were diagnosed antenatally (61%).

Fifteen women (83.3 %) presented with antepartum haemorrhage and all of the operative procedures were performed on an emergency basis. Massive blood loss was a prominent feature with an average blood loss of 1.8 litres. Prophylactic antibiotics were given with repeat doses after 2 hours of surgery or 1500 ml of estimated blood loss to all cases as recommended by ACOG.⁶ The mean operative time was 2 hours. 17 out of 18 women underwent hysterectomy while in one woman with focal placenta accreta uterus was conserved. Jauniaux E et al reported c-hysterectomy rate of 89.7%¹⁷. The caesarean hysterectomy rate in present study was 94.4%. Eller et al reported that when accreta was suspected a scheduled C-hysterectomy without attempting placenta removal was associated with a significantly decreased rate of early morbidity compared with cases in which placenta removal was attempted.¹⁸ The average intra operative blood transfusion was 3 units of PRBC, 3 units of FFP and 1.4 units of platelets.

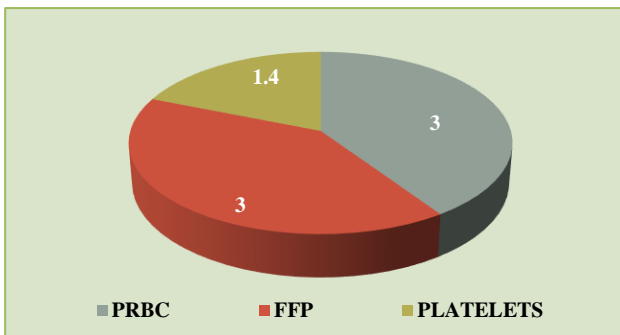


Figure 3: Mean intraoperative blood transfusion.

Intra operative bladder injury was seen in 5 cases (27.7%) requiring an average CBD of 14 days. Suprapubic cystostomy was done in 2 cases. Bilateral DJ stenting was done intra operatively in 1 woman. Partial bladder excision with vesicotomy closure was done in one woman. Strategies like uterotonics administration, bilateral uterine artery ligation, internal iliac artery ligation, were attempted to reduce intra operative blood loss. The total average PRBC transfused was 5.6 units, average FFP transfused was 4.3 units and average platelets transfused was 2.4 units.

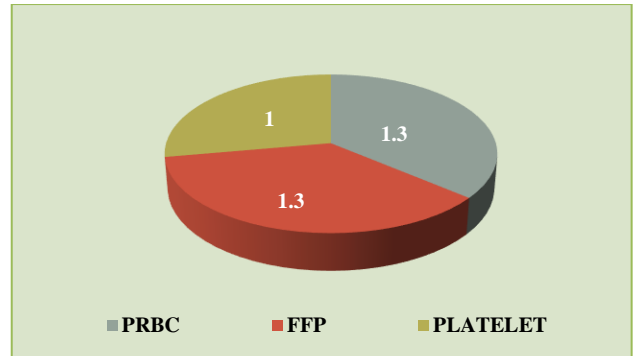


Figure 4: Mean post-operative blood transfusion.

A multidisciplinary team approach consisting of two obstetric surgeons, an anesthetist, neonatologist and urologist were routinely involved in almost all the cases in this study. Balayla et al suggested that surgical management via caesarean hysterectomy should be considered as the gold standard as it is recommended by the ACOG19. In present study this was followed. There was no maternal mortality in present study. They had a mean postoperative stay of 14.31 days with an average total hospital stay of 20.46 days. The common complication patients encountered during their postoperative stay was electrolyte imbalance.

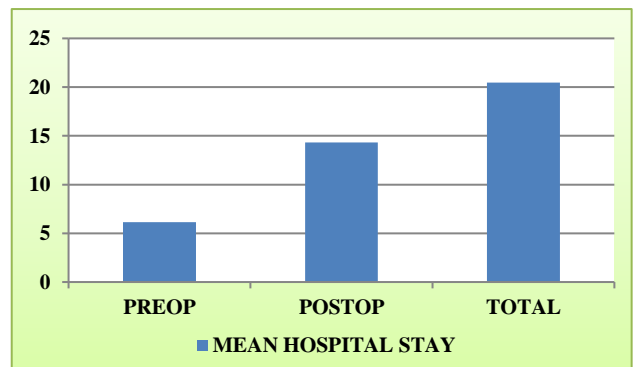


Figure 5: Mean hospital stay.

Ten out of 16 women received complete dose of antenatal corticosteroids. More than 75 % of present women were delivered before 37 weeks and the NICU admission rate was 81% (n=13). The neonates had an average birth weight of 1.7 kg. In the study done by Balayla et al the NICU admission rate was 86%.¹⁹ In present study the NICU admission rate was lower comparatively. Neonatal asphyxia and hypoxia secondary to severe haemorrhage was more marked before 34 weeks. The perinatal mortality rate was 31.25% (n=5) and there were two preterm Intrauterine death on admission. Harper LM et al reported FGR rate of 20.2% in women with complete placenta previa.²⁰ In present study the FGR rate was 12.5% (n=2) in women with complete placenta previa.

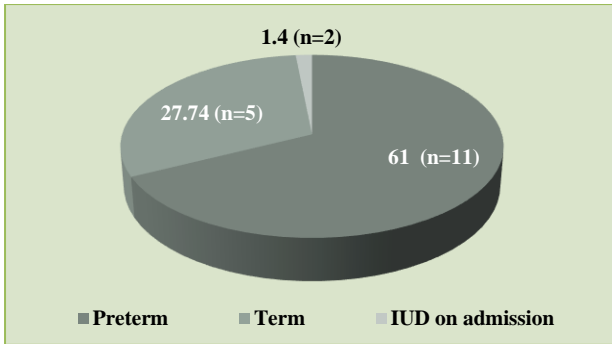


Figure 6: Neonatal outcome.

However, the study has some limitations, i.e., it was retrospective in nature and included a relatively small number of patients. The non-availability of MRI services 24*7 has significantly decreased the number of patients diagnosed preoperatively and had led to significant morbidities.

CONCLUSION

Prenatal diagnosis and adequate pre-delivery planning particularly in high risk populations, may be indicated for the reduction of adverse maternal and neonatal outcomes. Since most of the women ended up in caesarean hysterectomy, early diagnosis with appropriate investigations like MRI would lead to decrease in morbidity and more efficient management of the patient as it will allow for appropriate planning for blood components, anaesthetic and surgical resources and adequate counselling of the women involved.

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Ethical approval: Not required

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