

Retrospective Analysis of Morbidly Adherent Placenta in a Tertiary Care Referral Centre - A Decade of Experience

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Abstract

Introduction: Over the past few decades, the incidence of placenta accreta, increta and percreta have increased due to the increasing cesarean delivery rate. The American College of Obstetricians and Gynecologists estimated that placenta accreta complicates 1 in 2500 deliveries. It is a leading cause of intractable postpartum hemorrhage requiring emergency peripartum hysterectomy and maternal deaths.

Aims and Objectives: The purpose of this study was to evaluate the demographic profile, high risk factors, fetal and maternal outcome and management options in women presenting with morbidly adherent placenta to our hospital which is a tertiary care referral centre.

Materials and Methods: This was a retrospective study conducted in the department of Obstetrics and Gynecology, mamata medical college, khammam from January 2005 to December 2014 for a period of ten years. All the pregnant women who were diagnosed with morbidly adherent placenta were included in the study. Patients were identified from the admission and labour room registers.

Results: Forty women were having Morbidly Adherent Placenta in the study period. 50% placenta accreta, 30% placenta increta and 20% placenta percreta. The mean age was 25.5 ± 3.8 years with 10% >35 years of age. The mean parity was 2.5 ± 0.9 . Only 10% of them were booked patients. 70% had previous caesarean section and 5% had prior curettage. Placenta previa was present in 70% women. 10% women had no known risk factors. 80% presented antenatally, 20% presented postdelivery with retained placenta. 70% presented with antepartum hemorrhage, 10% had asymptomatic placenta previa at term. 5% presented with shock between 28 and 30 weeks. 85% underwent hysterectomy. Massive blood loss was present in all the women with a mean blood loss of 2.8l. An average of 8 units of whole blood and six units of fresh frozen plasma were transfused. Bladder was injured during dissection in 15% and partial cystectomy was done in 5% due to bladder involvement by percreta. 60% of the women had to be shifted to ICU. The maternal mortality in our study was 25%. All of them died due to DIC. The average gestational age in our study was 34.2 weeks. 70% of the newborns were preterm with an average birth weight of 2.1 kg. The perinatal mortality was 45%.

Conclusion: To conclude, incidence of placenta accreta is increasing and previous caesarean section and placenta previa are important risk factors, so there is a need to keep the primary caesarean section rates at a low level. Early preoperative diagnosis in the suspected women is the key to save the women's life. Adherent placenta should be suspected even in the second trimester in women with known high risk factors who are undergoing MTP or suction evacuation.

Introduction

Over the past few decades, the incidence of placenta accreta, increta and percreta have increased. This is because of the increasing cesarean delivery rate. The American College of Obstetricians and Gynecologists in 2002 estimated that placenta accreta complicates 1 in 2500 deliveries. From the review of literature, Stafford et al cited the incidence of approximately 1 in 2500 in the 1980s, 1 in 535 in 2002 and 1:210 in 2006 [1]. For some time, Zelop and colleagues [2] found it to be a leading cause of intractable postpartum hemorrhage requiring emergency peripartum hysterectomy, various forms of accreta are a substantive cause of maternal deaths from hemorrhage. Decidual formation is commonly defective in the lower uterine segment over a previous cesarean delivery scar or after uterine curettage. The high risk factors for placenta accreta include placenta previa, prior cesarean delivery, patients who underwent uterine curettage previously and gravida 6 or more [3]. The maternal mortality risk may reach 7% and the extensive surgery related morbidities include massive transfusions, infections, urologic injuries and fistula formation [4]. Optimal management of these women with placenta accreta involves early recognition of high risk women based on clinical risk factors, accurate preoperative diagnosis, detailed maternal counselling and meticulous planning at the time of delivery.

Aims and Objectives

The purpose of this study was to evaluate the demographic profile, high risk factors, fetal and maternal outcome and management options in women presenting with morbidly adherent placenta to our hospital which is a tertiary care referral centre.

Materials and Methods

This was a retrospective study conducted in the department of Obstetrics and Gynecology, mamata medical college, khammam from January 2005 to December 2014 for a period of ten years. All pregnant women who were diagnosed with morbidly adherent placenta were included in the study. Patients were identified from the admission and labour room registers. Morbidly Adherent Placenta was defined clinically or histopathologically by one of the following criteria: 1) Heavy bleeding from implantation site after piecemeal removal of the placenta at caesarean section. 2) Manual removal of the placenta partially or there was no cleavage plane between placenta and the uterus. 3) Histopathological confirmation on hysterectomy specimen. The medical records of all the women who were diagnosed to have Morbidly Adherent Placenta was reviewed. Demographic data including age, parity, gestational age and previous caesarean delivery or other uterine surgeries, details of medical and obstetric history and information on the intraoperative and postoperative events were noted on a proforma. Apart from the various demographic variables, we also obtained data on placental location, estimated blood loss, number of blood transfusions, presence of placenta accreta, procedures done to control bleeding from the surgical notes. Neonatal outcomes were reviewed from birth weights, NICU admission, stay and perinatal mortality in the NICU. The term placenta accreta has been used when placenta was attached directly to the uterine wall with no myometrial invasion, placenta increta was used when placenta was seen invading the myometrium and percreta specifies placental invasion up to or beyond the uterine serosa.

Results

Forty women met the diagnostic criteria of Morbidly Adherent Placenta in the study period. Among the 40 patients - 50% of the women had placenta accreta, 30% women had placenta increta while placenta percreta accounted in 20% of the women. The mean age of the women was 25.5 ± 3.8 years with four women (10%) had age more than 35 years. The mean parity was 2.5 ± 0.9 . One women was primigravida and none of them were grandmultiparous. Only 10% of the women were booked with our institution. 28 (70%) women had previous caesarean section scar, 5% women had undergone prior curettage, but they all had history of caesarean section also. Placenta previa was associated in 28 (70%) women. Four (10%) women had no known risk factors (Table 1).

32 out of the 40 women (80%) presented antenatally, eight women (20%) presented postdelivery with retained placenta. 28

women (70%) presented with antepartum hemorrhage, four women (10%) had asymptomatic placenta previa at term. Two women (5%) presented with shock at 28 and 30weeks respectively. They were taken up for laparotomy, intraoperatively, placental tissue was seen invading the serosa involving the previous scar of cesarean section and histopathology of the hysterectomy specimen confirmed placenta increta. Two women (5%) presented with massive hemorrhage in the second trimester following a missed abortion (Table 2).

A provisional diagnosis of placenta accreta was made preoperatively on ultrasonography (USG) in fourteen women (35%), with confirmation by MRI in three women; rest all had a intra operative diagnosis. Only three women whose diagnosis was confirmed by MRI were taken up for surgery electively, all others were operated on an emergency basis. The different therapeutic modalities which these women underwent were as follows. 34 out of the 40 women (85%) underwent hysterectomy, with additional bilateral internal iliac artery ligation in one women in view of uncontrolled bleeding despite hysterectomy and another two women required partial cystectomy due to bladder involvement. Classical cesarean section followed by total abdominal hysterectomy with placenta in situ was done in two women (5%) who had a preoperative diagnosis of placenta accreta. Massive blood loss was the prominent feature in all the women with a mean blood loss of 2.8 l. An average of 8 units of whole blood and six units of fresh frozen plasma with a range of 2-20 were transfused. Bladder was injured during dissection in six women (15%) and partial cystectomy was done in two women (5%) due to bladder involvement by percreta. 60% of the women had to be shifted to ICU with an average stay of 2.5 days. The maternal death rate was 25% in our study (Table 3).

The analysis of the maternal mortality data showed that majority of these patients had presented in an exsanguinated state with an Hb of ≤ 5 g% and some are associated with DIC and were operated during emergency hours requiring massive blood transfusion. An average of nine units of whole blood and ten units of FFPs were transfused to these women. The maternal mortality in our study was 25%, 10 patients had died due to morbidly adherent placenta. six patients underwent emergency caesarian hysterectomy at gestational age of 34 to 38 weeks. All of them died due to DIC. Average ICU stay was 12 hrs in these patients. 3 patients had PPH after the vaginal delivery, two of them had bladder resection and one of them had placenta percreta Figures 1 and 2, patient died on the table while performing hysterectomy. One patient had a missed abortion at 16 weeks of gestational age with retained placenta; manual removal of the placenta was done followed by hysterectomy. She died of DIC and sepsis in spite of the resuscitation and treatment.

Table 1: Distribution of patients on their demographic characteristics (N =40).

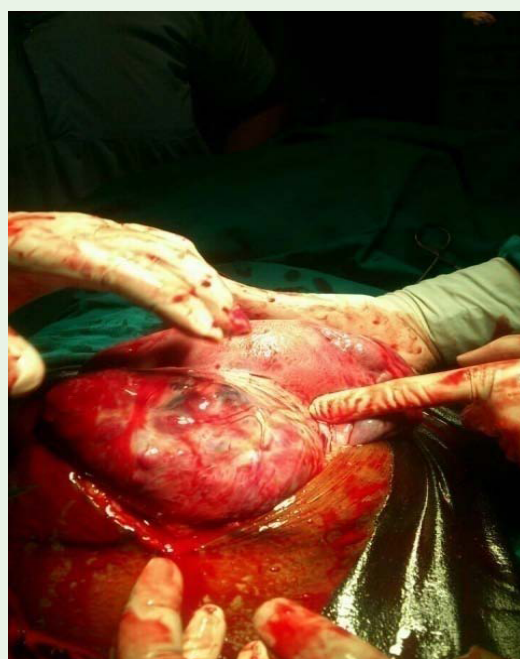
Mean Age (Years)	25.5+/-3.8
>=35 years	10%
Mean parity	2.5+/-0.9
Booked patients	10%
Previous cs	70%
Previous two cs	3%
Previous curettage	5%
Placenta praevia	70%
No risk factors	10%

Table 2: Distribution of Patients in Relation to Clinical Presentation (N=40).

Presentation	Gestational age	No.of patients (%)
Placenta praevia(pp)	28 wks to 37 wks	28(70%)
Symptomatic pp	28 wks to 37 wks	24(60%)
Asymptomatic pp	28 wks to 37 wks	04(10%)
Shock	28 wks and 30 wks	02(5%)
Threatened abortion	16 wks and 18 wks	02(5%)
Retained placenta	Post delivery	08(20%)
Total		40(100%)

Table 3: Distribution of Patients in Relation to Maternal Outcome.

Presentation	Gestational age	No.of patients (%)
Placenta praevia(pp)	28 wks to 37 wks	28(70%)
Symptomatic pp	28 wks to 37 wks	24(60%)
Asymptomatic pp	28 wks to 37 wks	04(10%)
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Threatened abortion	16 wks and 18 wks	02(5%)
Retained placenta	Post delivery	08(20%)
Total		40(100%)

**Figure 1:** Placenta Percreta.**Figure 2:** Intra Operative Findings.**Table 4:** Distribution of Patients in Relation to the Neonatal Outcome (N=39).

Gestational age	34.2+/-2.7
Preterm	70%
Mean birth weight(kg)	2.1+/-0.5
Perinatal mortality	45%

The neonatal outcome in terms of prematurity and the average gestational age in our study was 34.2 weeks. 70% of the newborns were preterm with an average birth weight of 2.1 kg. The perinatal mortality was 45% (Table 4).

Discussion

The overall incidence of placenta accreta over the 10 year study period was 1 in 1,500 deliveries showing an increasing trend. The American College of Obstetricians and Gynecologists (2002) estimated that placenta accreta complicates 1 in 2500 deliveries. The incidence of placenta accreta in the literature varies between 0.001 and 0.9 % of deliveries; a rate that depends on the definition adopted for accreta by clinical or histopathological diagnosis and the population studied, and has increased dramatically over the last three decades parallel to the increase in cesarean delivery rate [5]. Collectively termed 'Placenta accreta', three variants of the condition were recognised. Accreta is the most common form accounting for approximately 75-78% of the women, increta accounts for about 17% of the women, while percreta comprises of about 5-7% of all women [6]. Placenta previa and previous caesarean section are the two most significant risk factors in our study, each associated with 70% of the women respectively. Literature also refers these as the most important risk factors. Zaki and associates⁷ found that 10 percent of 112 consecutive cases of placenta previa had associated accreta. Hardardottir and colleagues⁸ observed that almost 50 percent of placentas in women with a prior cesarean delivery had adhered myometrial fibers detected microscopically. Miller et al reported a risk of 14 % in women of placenta previa with previous caesarean section, the risk increasing with the number of previous caesarean sections [9,10]. In our study there were 5% of patients with previous history of curettage. History of curettage and grand multiparity were also quoted in the literature as other important risk factors [11,12].

The earliest gestation at which placenta accreta was encountered in our study was 16 weeks which was a caesarean scar pregnancy with missed abortion. There were reports suggesting dilatation and curettage causing torrential hemorrhage necessitating hysterectomy and pathologic examination later revealed Morbidly Adherent Placenta¹³. According to literature the earliest gestation at which placenta accreta has been diagnosed by ultrasound was 9 weeks in a case of scar pregnancy. Lam and colleagues¹⁴ found that sonography was only 33-percent sensitive for detecting placenta accreta. Chou and co-workers¹⁵ also described successful use of three-dimensional color Doppler imaging for diagnosis of placenta percreta. Magnetic resonance imaging is used as an adjunct to sonography when there is strong clinical suspicion of an accreta. Warshak and colleagues¹⁶ described a two-step protocol in which Magnetic Resonance imaging was used when sonography was inconclusive. They reported that 23 of 26 cases of placenta accreta were accurately predicted by MRI. In our study we had three cases which were confirmed by magnetic resonance imaging for accurate diagnosis and better management.

Currently the management options for Morbidly adherent placenta include conservative and surgical approaches. The conservative strategy includes leaving the placenta in situ which is followed by medical management with methotrexate, uterine artery embolization, internal iliac artery ligation or embolization, dilatation and curettage or hysteroscopic loop resection [17,18]. However, risk of sepsis and delayed hemorrhage was also incurred. The surgical approach consists of immediate cesarean hysterectomy, avoiding placental removal during operation. Otherwise surgical management is associated with significant risk of catastrophic bleeding from abundant neovascularization and rich collaterals beyond the efficacy of hemostasis available using current techniques.

The maternal morbidity in our study was primarily related to extensive surgery and includes massive blood transfusion, infections and bladder injury. Women with Morbidly Adherent Placenta had a high incidence of bleeding complications with an average blood loss of 2.8 liters and as high as 18 Units of blood and 20 Units of Fresh Frozen Plasma were transfused. Maternal mortality in our study was 25%, which is quite high as compared to the rate of 7-10% as quoted in literature. This is because most of the women in our study were unbooked and had presented to us in a very poor general condition, there were no previous scans done and laparotomy was done on an emergency basis and the diagnosis of adherent placenta was made only intra operatively. Out of the 40 women in whom diagnosis of morbidly adherent placenta was made, ten women expired in spite of our best efforts. This is a significant finding emphasizing the role of high index of suspicion in women with known risk factors and a meticulous USG examination for accurate preoperative diagnosis. The mortality of the women with a preoperative diagnosis of Morbidly Adherent Placenta was preventable and classical caesarean section without separating the placenta could have saved the women.

Conclusion

To conclude, incidence of placenta accreta is increasing and previous caesarean section and placenta previa are important risk factors, so there is a need to keep the primary caesarean section rates at a low level. Early preoperative diagnosis in the suspected women is the key to save the women's life. Adherent placenta should be suspected even in the second trimester in women with known high risk factors who are undergoing Medical Termination of Pregnancy or suction evacuation.

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