

Morbidly adherent placenta previa: clinical course and risk from emergency delivery in a series of 26 women that underwent hysterectomy

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Summary

Objectives: A retrospective review of morbidly adherent placenta previa (MAPP) to assess its clinical course and risk from emergency delivery. **Study design:** Data of all placenta previa (PP) delivered in this hospital over a period of >ten years were obtained from hospital register. **Results:** 91 women included, 26 MAPP and 65 PP. Emergent delivery and delivery for hemorrhage were significantly lower in MAPP ($p = 0.033$ and 0.046 respectively). In those beyond 35 weeks, one MAPP and 16 PP needed emergent delivery ($p = 0.015$). MAPP who needed emergent delivery had higher rate of bleeding during pregnancy and bleeding before 32 weeks ($p = 0.034$ and 0.01 respectively). Complications rate in MAPP were similar in emergency and elective delivery but for postoperative hospital stay ($p = 0.042$). All neonates delivered at ≤ 34 weeks and two out of six delivered at 35-36 weeks and admitted to NICU. **Conclusion:** The authors conclude that in this study group majority of MAPP were stable and emergent deliveries had more frequent history of bleeding before 32 weeks. Timing of delivery should take into consideration history of bleeding and availability of NICU resources in stable patients.

Key words: Morbidly adherent placenta previa; Placenta previa; Late preterm delivery; Perinatal outcome.

Introduction

Placenta previa (PP) and morbidly adherent placenta previa (MAPP) (accreta, increta, and percreta) are high-risk obstetric problems that are on the increase globally, with the rising incidence of its main risk factor: repeat cesarean section (CS) [1-3]. PP is a known risk factor for preterm delivery. Causes for preterm delivery in PP include emergency delivery for acute hemorrhage, onset of preterm labor, and planned preterm delivery [4]. Major part of patients with PP is stable and pregnancy can be carried safely to 37 weeks of gestation or more before delivery [5]. MAPP has high maternal morbidity and mortality due to complicated surgical procedures, severe hemorrhage, and massive blood transfusion [6,7]. There is consensus to deliver MAPP earlier. To reduce risk of emergency delivery investigators as Belfort *et al.* and Robinson *et al.* recommended delivery at 34-35 weeks [8, 9]. Official bodies as Royal College of Obstetricians and Gynaecologists (RCOG) recommend delivery before 36-37 and The American College of Obstetricians and Gynecologists (ACOG) at 34-36 weeks [10, 11]. Elective cesarean delivery at early term or late preterm is associated with increased admission to neonatal intensive care units (NICU), and infant death among others [12-14]. The present authors' aim was to review clinical course of pregnancy in patients with MAPP

that delivered in this hospital to assess if MAPP is as stable as PP, and effect of emergency delivery on maternal outcome. This may help in future planning of delivery of MAPP in a matter that may improve neonatal outcome, especially in areas with limited neonatal care resources without inflicting extra harm to the mother who is likely to undergo hysterectomy.

Materials and Methods

A retrospective observational study was approved by the Institutional Review Board (IRB) of Jordan University of Science and Technology and conducted at King Abdullah University Hospital (KAUH) in north of Jordan. A search of the hospital registry for all patients who underwent CS / hysterectomy for PP/MAPP during the period from March 2003 to October 2013 was undertaken. KAUH is a tertiary referral center for other peripheral and central hospitals in the area with total number of deliveries over the same period of just over 22,000. The department policy requires that all women with potential risk of MAPP are counseled regarding the risk related to MAPP and the need for hysterectomy and an informed consent form signed. Planned delivery of patients with ultrasound diagnosis of MAPP is after completed 35 weeks. Stable PP is routinely delivered after 37 weeks. Women at risk of emergent delivery and those planned to be delivered at 35-36 weeks received antenatal corticosteroids. Delivery involves multidisciplinary team with two consultant obstetricians to perform the cesarean hysterectomy. Blood bank notified with sufficient amount of PRBC and FFP are readily available. Uterine artery

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Table 1. — *Antenatal course of women with placenta previa and those with morbidly adherent placenta previa.*

	PP	MAPP	<i>p</i> value
Number	65	26	
Gestational age at delivery, mean (SD)	36.3 (1.9)	35.7 (2.6)	0.275
Bleeding during pregnancy, n. (%)	28 (43.1)	10 (38.5)	0.687
Gestational age at bleeding, n. (%)			0.846
< 32 weeks	15 (53.6)	5 (50.0)	
≥ 32 weeks	13 (46.4)	5 (50.0)	
Delivery type, no (%)			0.033
Timed	37 (56.9)	21 (80.8)	
Emergency	28 (43.1)	5 (19.2)	
Delivery because of bleeding, n. (%)	17 (26.2)	2 (7.7)	0.046
Emergency delivery ≥ 35 weeks, n. (%) ^a	16 (30.2)	1 (4.5)	0.015
Birth weight <10th centile, n. (%)	59 (7.9)	4 (15.9)	0.275

MAPP = morbidly adherent placenta previa. PP = placenta previa.

^a Calculation made from number of patients delivered after 35 gestational weeks (53 for PP and 22 for MAPP).

catheterization and embolization used in some patients where attempt to conserve the uterus is planned. In addition to well-trained obstetric and anesthetic resident team to start emergency care, a team of two consultant obstetricians is readily available for emergency delivery with easy access to all the required assistance. Demographic data and antenatal course were obtained from the records. Gestational age was calculated through accurate dating and early ultrasound. The operative notes were carefully searched for indication of delivery, procedure performed, type of resuscitation, and number of PRBC and FFP units the patient received. Admission to ICU and cause were recorded. Neonatal outcome at time of delivery including Apgar score at five minutes, birth weight, and admission to NICU were obtained. Further details regarding neonatal course, surfactant, days in NICU, and outcome were obtained from neonates medical records.

The Statistical Package for Social Sciences software was used to analyze the data. Data were described using means and percentages. Differences between percentages were analyzed using Chi-square test or Fisher's exact test wherever appropriate. Differences between two means were analyzed using independent *t*-test. A *p*-value less than 0.05 was considered statistically significant.

Results

A total of 91 patients were included (26 MAPP, all had previous cesarean scar all underwent hysterectomy and 65 patients with PP used as control were all delivered by CS apart from two that underwent hysterectomy). None of these women had significant medical illness. The mean age for women with MAPP was 34.9 (5.1) years, their mean parity was four (1.6), and number of previous CS was 2.8 (1.5). The mean gestational age at delivery was 35.7 weeks, the earliest was 26+6 weeks, 13 patients were at 37 weeks, and one patient went beyond 38 weeks.

Table 1 depicts the clinical course of pregnancy in MAPP compared to those with PP. The mean gestational age at delivery was similar. The rate of bleeding during pregnancy was not significantly different (*p* = 0.687) and so was the

Table 2. — *Maternal characteristics and outcomes of women with MAPP according to type of delivery.*

	Delivery		<i>p</i> value	
	Timed n = 21	Emergency n = 5		
Age (years), mean (SD)	35.0	5.7	34.8	1.8
Parity, mean (SD)	4.2	1.4	3.0	1.9
Previous C/S, mean (SD)	3.0	1.5	2.0	1.6
Bleeding during pregnancy, n. (%)	6	28.6	4	80
Bleeding < 32 weeks gestation, n. (%)	2	9.5	3	60
FF plasma, mean (SD)	7.0	8.1	4.2	4.6
PRBC, mean (SD)	8.0	6.7	5.8	2.5
Bladder injury, n. (%)	5	23.8	1	20.0
ICU admission, n. (%)	5	23.8	1	20.0
DIC, n. (%)	2	9.5	0	.0
Length of stay in hospital post-operatively (days), mean (SD)	5.1	2.1	8.0	4.6

Table 3. — *Perinatal outcome in women with morbidly adherent placenta previa delivered electively according to gestational age at delivery.*

	35-36 weeks n = 8	≥ 37 weeks n = 14	Total n = 25
Apgar score at 5 min., mean (SD)	9.0 (0.8)	8.8 (0.6)	8.7 (0.8)
Birth weight (grams), mean (SD)	2755 (428.1)	2990 (428.1)	2675.7 (688.6)
Admission to NICU, n. (%)	2 (25)	2 (14.3)	7 (28.0)
Surfactant, n. (%)	1 (12.5)	1 (7.1)	4 (16)
Neonatal deaths, n. (%)	0 (0)	1 (7.1)*	3 (12)
NICU days, mean (SD)	8.5 (0.7)	16.5 (14.8)	13.3 (7.0)

* Delivered at 37 weeks, had omphalocele and low birth weight, developed RDS, and died at 27 days because of infection.

onset of bleeding before 32 weeks gestation (*p* = 0.846). Emergency deliveries were significantly higher in the PP 43.1% versus 19.2% (*p* = 0.033) also emergency delivery because of hemorrhage (29.2%) in PP versus 7.7% (*p* = 0.046). Three patients in MAPP delivered because of labor pain compared to nine in PP (*p* = 0.789). Scar dehiscence was reported in one patient and ballooned thin lower segment in another MAPP in labor. Twenty-two out of 26 with MAPP and 53 out of 65 with PP were delivered after complete 35 weeks of gestation (84.6% and 81.5% respectively). In women who went beyond 35 weeks, only one (4.5%) in the MAPP needed emergency delivery versus 16 (30.2%) in the PP (*p* = 0.015). The rate of small for gestational age babies was similar in both groups.

Table 2 shows the maternal characteristics and outcomes of women with MAPP in timed and emergency delivery. The two groups differed significantly in the incidence of

bleeding during pregnancy, bleeding before 32 weeks, and postoperative hospital stay. Four women (80%) in the emergency delivery had bleeding during pregnancy versus six (28.6%) in the timed delivery ($p = 0.034$). Also, women who needed emergency delivery had more frequent history of bleeding before 32 weeks than in timed delivery (60% and 9.5% respectively ($p = 0.010$)). Intrapartum complications and transfusion of PRBC and FFP were not significantly different between emergency and timed delivery and so was admission to ICU, but the average stay in hospital after delivery was longer in the emergency group ($p = 0.042$). One woman died in the timed delivery group on the second day after delivery because of severe DIC and multi-organ failure.

Five babies delivered as emergency with a gestational age range of 26+6 to 35+6 weeks. Table 3 shows neonatal outcomes in relation to gestational age. Four neonates were delivered as emergency at ≤ 34 weeks one at 26+6 weeks gestation which did not respond to resuscitation, and the other three (100%) admitted to NICU all needed surfactant and there was one neonatal death because of RDS. Two out of the eight delivered at 35-36 weeks gestation and two of the 14 delivered at ≥ 37 weeks needed admission to NICU (25% and 14.3%, respectively). Of the two 35-36 weeks neonates, only one needed surfactant and there was no neonatal death, while one neonatal death was reported in 37 weeks and over group (duodenal atresia died after 27 days). Average stay in the NICU for all groups was 14.3(1.5), 8.5(0.7), and 16.5(14.8) days, respectively.

Discussion

MAPP is on the rise globally. Knowing the antenatal course of this problem as compared to PP may help to optimize timing of delivery. In the present study groups, MAPP and PP were similar in the incidence of bleeding during pregnancy and also bleeding before 32 weeks gestation. MAPP had less emergency deliveries than PP ($p = 0.033$) and less emergency delivery because of bleeding ($p = 0.046$). Patients with MAPP in whom pregnancy continued beyond 35 weeks had significantly less risk of emergency delivery than PP of same gestational age as only 4.5% MAPP had emergency delivery compared to 30.2% in PP ($p = 0.015$) (Table 1); this seems to disagree with findings by Warshak *et al.* with a higher rate of bleeding after 36 weeks [15]. There was no significant difference in small for gestational age in both groups. Ananth *et al.* [16] concluded that low birth weight in PP is mainly due to prematurity and it seems that the same conclusion applies to MAPP. These findings suggest that MAPP can be stable in majority of women.

Five patients in the MAPP needed emergency delivery Table 2. These patients had more frequent history of bleeding during pregnancy than patients who had timed delivery ($p = 0.034$). They also had more frequent history of bleed-

ing at < 32 weeks gestation where three out of five patients had history of bleeding before 32 weeks ($p = 0.046$). This agrees with Fishman *et al.* finding that bleeding before 32 weeks is a risk factor for preterm delivery in MAPP [17]. Bladder injury rate was similar in timed and emergency delivery. There was no increase in the amount of blood transfusion in the emergency group unlike findings by others [15]. Patients who had emergency delivery had longer hospital stay after delivery. Though the numbers are too small to draw firm conclusions, these findings however suggest that emergency delivery of MAPP in a properly equipped center is not necessarily associated with increased risk of maternal morbidity, similar to findings by Eller *et al.* [6]. Neonatal outcome in Table 3 shows that babies born at 35-36 weeks, although had higher admission to NICU than those delivered at 37 weeks and over, but there was less use of surfactant and no neonatal mortality as compared to those delivered at ≥ 34 weeks. No conclusions could be drawn from these small figures but probably supports the suggestion by Zlatnik *et al.* of delivery at 36 weeks and two days after steroid in stable PP [18]. Fourteen patients out of 26 with MAPP completed 37 weeks and over of pregnancy and all delivered electively; this raises the issue of the neonatal benefit versus maternal risk from waiting to term in areas with limited NIC resources.

In the management of MAPP, many questions remain unanswered. Of these among many others, what is the optimum time for delivery? Should this timing be the same for all populations irrespective of availability of NICU services if patients are stable? The weakness of this study is its small sample size and being a retrospective review. This makes its power of strength low and many of the numbers in neonatal outcome too small for statistical significance.

The authors conclude that large proportion of MAPP in this study were stable. Timing of delivery should take into consideration history of bleeding. In stable patients, planned late preterm delivery should be re-evaluated in areas with limited NICU resources.

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