



Morbidly adherent placenta: management and maternal outcome

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Abstract

Background: Morbidly adherent placenta (MAP) is one of the potentially life threatening conditions and most feared complications causing high morbidity and mortality in obstetrics. The objective of this study is to identify the risk factors to analyse different management options and maternal outcome in different cases of MAP.

Methods: This is a retrospective study carried out on 36 patients of MAP (Morbidly adherent Placenta) in a tertiary health centre from July 2015 to January 2017. Diagnosis of MAP was made with the help of Ultrasonography, color Doppler study and MRI in patients presenting in the OPD and emergency department. Almost all the patients were managed by operative delivery with TAH (Total Abdominal Hysterectomy) as the most common procedure done. Different risk factors for MAP, management protocols and maternal outcome were studied in these patients.

Results: 36 cases of MAP who presented in OPD and emergency were identified. In this study, frequency of MAP was found to be 1 per every 381 births. Most of the patients had previous scarred uterus and many underwent peripartum hysterectomy. Only 3 patients died in this study. The neonates of mothers whose MAP were suspected prior to delivery were born premature and required ventilatory support, admission to NICU with prolonged hospital stay.

Conclusion: MAP is more common in patients with previous Caesarean section with anterior implantation of placenta and in multiparous women. Antenatal diagnosis of morbidly adherent placenta followed by elective TAH without separating the placenta adopting multidisciplinary approach is the best surgical option to reduce maternal mortality and morbidity.

Keywords: MAP, Accreta, Increta, Percreta.

Introduction

A frequent and serious complication associated with placenta previa arises from its abnormally firm placental attachment that is called Morbidly adherent placenta (MAP). It is one of the most

feared complications causing high morbidity and mortality in obstetrics. The incidence of morbidly adherent placenta has increased, with recent estimates approximating 1 per 333 – 1 per 533

deliveries^{1,2}. The incidence of placenta accreta was approximately 1 in 4027 in 1970s, 1 in 2510 in the 1980s, 1 in 533 pregnancies in 1982- 2002 and 1 in 210 in 2006³.

MAP occurs when there is defect in the decidua basalis, resulting in an abnormal invasion of the placenta into myometrium. It is due to the absence of spongy layer of decidua, so any factor which damages decidua basalis can predispose deeper invasion of trophoblastic tissue into myometrium or behind serosa. The two important risk factors are an associated placenta previa and a previous caesarean delivery, and more likely a combination of the two. Additional reported risk factors for MAP are advanced maternal age, multiparity, previous uterine surgery, previous dilatation and curettage, previous history of MRP, uterine irradiation, uterine anomalies, IVF pregnancy, previous myomectomy, Asherman Syndrome, submucous leiomyoma, smoking etc⁴.

Placenta previa has been associated with high rate of MAP. Approximately 25% of women with placenta previa and one Caesarean delivery have MAP while 50% with placenta previa and two prior Caesarean delivery have MAP. History of previous 3 Caesarean deliveries increases the risk upto 61%.

MAP is classified according to the depth of placental chorionic villous ingrowth into the uterine wall into 3 types⁵.

- 1) Placenta accreta
- 2) Placenta increta
- 3) Placenta percreta

• **Placenta Accreta (75%):** In this, the placental villi are attached to the myometrium.

• **Placenta Increta (17%):** In this, the placental villi actually invade the myometrium

• **Placenta Percreta (7%):** In this, the placental villi penetrate through the entire myometrium and uterine serosa.

Complications associated with MAP are uterine perforation, massive hemorrhage at the time of

placental separation, hysterectomy, damage to adjacent structures (bladder, bowel, ureter), postoperative infection, postoperative bleeding requiring repeated surgery, amniotic fluid embolism, multiple transfusions and transfusion reactions, postoperative thromboembolism, DIC, multiorgan failure and mortality. Placenta percreta is a catastrophic event in which uterine rupture may occur as early as 9 and 14 weeks. It can lead to the destruction of adjacent organs, most often the bladder, and surgical injury to other pelvic structures. 76% cases of percreta are associated with placenta previa.

Signs of MAP may be seen as early as in the first trimester. Women with low lying placenta early in pregnancy should undergo follow-up imaging later in the second and third trimester with attention to the potential presence of placenta accreta⁶. Second and third trimester gray-scale sonographic characteristics that indicate MAP include loss of continuity of the uterine wall, multiple vascular lacunae (irregular vascular spaces) within placenta, giving Swiss cheese appearance adjacent to the placental implantation site, lack of a hypoechoic border (myometrial zone) between the placenta and the myometrium, bulging of the placental/myometrial site into the bladder and increased vasculature evident on color Doppler sonography⁷.

MR imaging can be used as an adjunct to sonography to define anatomy, degree of invasion, and possible ureteral or bladder involvement. Lax and coworkers identified three MR imaging findings that suggested accreta. These include uterine bulging, heterogenous signal intensity within the placenta, and dark intraplacental bands on T2-weighted imaging.

MAP may lead to massive obstetric hemorrhage resulting in complications such as DIC, need of hysterectomy, renal failure and death.

Other presentations are acute abdomen, shock from rupture uterus, APH and complications of third stage of labor.

Optimal management of women with MAP involve early recognition of high risk women

based on clinical risk factors, accurate pre-operative diagnosis, detailed counselling and meticulous planning and delivery.

Materials and Methods

This is a retrospective study carried out in patients of MAP in tertiary care centre over a period of one and half year from July 2015 to January 2017. All cases presenting in emergency and OPD were diagnosed by USG, color Doppler or MRI for MAP. Data recorded included demographic characteristics, details of medical and obstetric history and information about intrapartum and postpartum events including maternal and neonatal outcome. Descriptive analysis was used to report the frequency of maternal and neonatal adverse outcomes. Operative delivery was carried

out in almost all the patients. Three different surgical management protocols namely total abdominal hysterectomy, subtotal abdominal hysterectomy and systematic devascularisation were carried out in different patients. The requirement for blood transfusion, ICU care, postnatal complications, hospital stay, prolonged follow-up and total no of deaths were recorded.

Results

Out of 13720 births, 36 cases of MAP diagnosed by USG, color Doppler or MRI who presented in OPD and emergency were identified. In this study, frequency of MAP found to be 1 per every 381 births as shown in table 1.

Table 1 Incidence and clinical presentation of patients

Characteristic	Number of patients
Total number of births in given period	13720
No. of patients with MAP during this period	36
Incidence of MAP	1 in 381
Presented with APH	3
Presented with retained placenta	5
Suspected to have MAP before delivery	22
Diagnosed intraoperatively	6

Out of 36 patients of MAP, 3 presented with APH, 5 presented with retained placenta, 22(61.1%) were suspected to have MAP before

delivery and 6 patients were diagnosed intraoperatively as MAP.

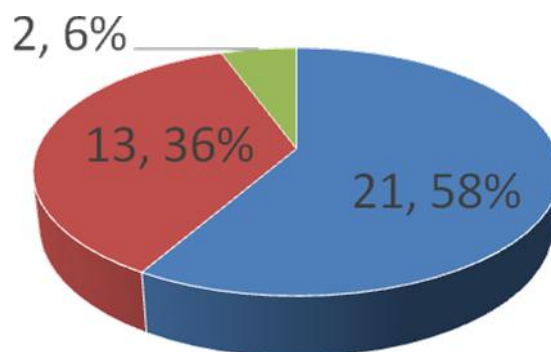
Table 2 Patient profile

Characteristic	No. of patients(n=36)	Percentage
Nulliparous	3	8.3%
Previous vaginal delivery	7	19.4%
Previous scarred uterus	26	72.2%

Out of total 36 patients of MAP, 3 were nulliparous(8.3%), 7 (19.4%) were with previous vaginal delivery and 26(72.2%) were with previous scarred uterus. This indicates that MAP

is more common in multiparous women and women with previous scarred uterus that include previous history of caesarian section, myomectomy, hysterotomy etc.

Chart 1 Management options



- TAH(total abdominal hysterectomy)
- Subtotal Abdominal Hysterectomy
- Systematic devascularisation

As shown in above chart, 21(58%) underwent TAH(Total abdominal hysterectomy), 13(36%) underwent Subtotal abdominal hysterectomy and 2(6%) underwent Systematic devascularisation. In the latter group (systematic devascularisation), treatment included uterine artery ligation(2),

balloon tamponade (1), B-lynch (1), usage of two or more uterotonics (1) with periodic follow up of patients that include ultrasonography to check placental resorbtion, beta-hcg levels measurement and methotrexate therapy.

Table 3 Maternal outcome

Characteristics	No of patients (n=36)	%age
Hysterectomy	34	94.4%
ICU admission	16	44.4%
Ventilatory support	7	19.44%
Prolonged hospital stay	34	94.4%
Resurgery	1	2.7%
DIC	3	8.3%
Bladder injury	10	27.7%
Total no of deaths	3	8.3%

Out of 36 patients, 34(94.4%) underwent hysterectomy. 16(44.4%) needed ICU care, 7(19.44%) needed ventilatory support and only 3(8.3%) died in this study. 34(94.4%) required prolonged hospital stay. Average hospital stay in

this study is 17 days in post operative period. 10(27.77%) patients required bladder repair and 3(8.3%) went into DIC. 1 case with subtotal hysterectomy for placenta percreta with bladder invasion had to undergo re-surgery.

Table 4 Average no.of transfusion

Characteristic	Number of units transfused
Average no of blood units transfused per patient	6 units
Average no of FFP transfused per patient	5 units

Average no of blood units transfused per patient was 6 units and average number of FFP transfused per patient were 5 units per patient in this study.

Discussion

MAP have evolved into one of the most serious problems in obstetrics. Incidence of MAP in our study is 1 in 381 births whereas researchers have reported the incidence of MAP as 1 in 533 pregnancies⁸. Incidence in our study is higher than previous studies because ours is a referral tertiary care centre. The occurrence of MAP is associated with substantial morbidity with majority of patients requiring blood transfusion, unanticipated surgery, ICU admission and ventilatory support. According to recent study conducted by Desai R et.al. "Morbidly adherent placenta and its maternal and fetal outcome", 60% underwent hysterectomy, 90% had prolonged hospital stay, 80% required blood transfusion, 50% required FFP transfusion, 10% required bladder repair and 10% was the mortality rate which is comparable to our study⁹. In a metaanalysis of placenta percreta with bladder invasion published by Washecka and Behling there was three maternal deaths out of 54 cases¹⁰. All women with vaginal bleeding after 20 weeks of gestation should be suspected of having MAP. Mostly the diagnosis of MAP is made by ultrasonography nowadays. Grey scale ultrasound and color Doppler examination are both highly accurate for diagnosis of placenta accreta¹¹. But MRI is the gold standard investigation for diagnosis of accreta. The UK National Screening Committee supports practice of identifying women whose placenta encroaches on the cervical os at routine 20 weeks antenatal screening scan and referring patients with

previous caesarean delivery to tertiary centre will help in timely diagnosis¹².

Most(72.2%) of the patients with MAP in our study were multiparous with previous caesarean section. Wu S, Kocherginsky M, Hibbard JU in their study "Abnormal placentation:twenty year analysis" found that in the presence of a placenta previa, the rise of placenta accreta was 3%, 11%, 40%, 61% and 67% for the first, second, third, fourth, and fifth or greater repeat caesarean respectively¹³. Therefore, efforts should be made to reduce the rate of primary caesarean section so that morbidity and mortality related to MAP can be reduced. If the caesarean rates continue to increase, the annual incidence of placenta previa, MAP and maternal death will also rise substantially¹⁴. Women with MAP should be admitted and managed in tertiary care centre and delivery should be carried out by 36 weeks or earlier after attaining fetal lung maturity with proper facilities like appropriate surgical, anesthesia and blood bank capabilities along with availability of NICU ,experienced and senior gynaecologists and surgeons and interventional radiologists at the time of delivery.

Operative delivery was carried out in almost all cases in our study. 94.4% patients in our study underwent hysterectomy with TAH(58%) as commonest procedure. According to previous research, this condition present worldwide as the primary indication for emergency postpartum hysterectomy, accounting for upto 50% of all emergency peripartum hysterectomies nowadays^{15,16,17}. Camstock CH demonstrated in his study "The antenatal diagnosis of placental attachment disorders" that hysterectomy is the gold standard in management, particularly for women who do not wish to continue their fertility¹⁷.

Robinson et al proposed that there is more benefit of planned as compared to emergency peripartum hysterectomy¹⁸. Seago et al demonstrated that women undergoing planned caesarean hysterectomy did not have any demonstrable increase in intraoperative or postoperative complications when compared with the caesarean delivery plus later hysterectomy group¹⁹.

Planned delivery results in shorter operative time, lower intraoperative complications, lower frequency of transfusion, less post operative complications and lower rate of intensive care unit admission. Every effort should be made to reduce blood loss as much as possible, anaemia should be corrected prior to the surgery and arrangement of properly cross-matched blood and components should be made. Average rate of blood transfusions in our study is 6 units PRBC and 5 units of FFP per patient. Around 44.4% of patients in our study required ICU admission and 19.44% required ventilatory support.

Maternal mortality rate in our study is 8.3% which is comparable to the rate of 7-10% as mentioned in literature²⁰.

Most common newborn complication was prematurity and average gestational age in our study is 33.4 weeks. The neonate of mother whose MAP were suspected prior to delivery were born premature and required ventilator support, admission to NICU with prolonged hospital stay.

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