



MORBIDLY ADHERENT PLACENTA: INCIDENCE, RISK FACTORS AND MANAGEMENT

Medical Science

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ABSTRACT

Morbidly adherent placenta refers to an abnormal invasion of the placenta tissue (trophoblasts) into inner or outer myometrium or through the serosa of the uterus.

Objectives: The aim of the study was to identify the incidence and investigate and quantify risk factors predisposing to morbidly adherent placenta and to study the different modes of management and the obstetric and neonatal outcome of these patients.

Methods: This was a retrospective plus prospective observational study. It was conducted in Obstetrics and Gynaecology department in MGM Hospital, Kalamboli from January 2018 to January 2020.

Results: The incidence of morbidly adherent placenta was 1 in 497 deliveries (0.2%) of total 10,946 deliveries. Majority of these patients were thirdgravidia in age above 28 years, 40% being above 31 years of age. 90% of these population had previous Caesarean section and 63% were with anterior located placenta. Elective Caesarean section was the mode of delivery in 72.7% cases between 36-38 weeks and emergency surgery was performed in remaining 27.3%. Prophylactic balloon placement in the internal iliac artery was done followed by Caesarean section (Classical/ Lower segment) in all elective cases, thus saving many of the uterus. Caesarean hysterectomy had to be done in 8 of the 22 morbidly adherent placenta cases.

Conclusion: Suspect placenta accreta in any case of previous Caesarean surgery with anterior placental location. Early admission, prophylactic corticosteroids, elective surgery around 37 weeks in a tertiary care with multidisciplinary approach helps to reduce the maternal and neonatal morbidity and mortality.

KEYWORDS

morbidly adherent placenta, placenta accreta, caesarean hysterectomy, internal iliac artery balloon, anterior placenta

INTRODUCTION

Morbidly adherent placenta refers to an abnormal invasion of the placenta tissue (trophoblasts) into inner or outer myometrium or through the serosa of the uterus and can be classified into three distinct types: **placenta accreta**, in which tissue invades the decidual surface of the myometrium; **placenta increta**, in which the placental villi invade more deeply within the myometrium, and **placenta percreta** where chorionic villi penetrate through the uterine serosa and may invade surrounding organs such as the bladder. The presence of placenta accreta/increta/percreta is associated with major pregnancy complications.^[1] One of the leading causes of maternal deaths in a developing nation like India is Obstetric haemorrhage and majority of these deaths are contributed by abnormal placentation which are rarely detected before delivery. Once a rare occurrence, morbidly adherent placenta is now becoming an increasingly common complication of pregnancy, mainly due to the increasing rate of Caesarean delivery over the past 50 years.^[2] The reported incidence of placenta accreta has increased from approximately 0.8 per 1000 deliveries in the 1980s to 3 per 1000 deliveries in the past decade.^[3] Post partum haemorrhage from morbidly adherent placenta is the most common indication of peripartum hysterectomy.

The aims of this study were to investigate and quantify the associated risk factors of morbidly adherent placenta, to enumerate possible measures and to identify the same in early pregnancy for a favourable maternal and perinatal outcome.

MATERIALS AND METHODS

This was a retrospective plus prospective observational study. It was conducted in Obstetrics and Gynaecology department in MGM Hospital, Kalamboli from January 2018 to January 2020.

This study included all pregnant women of any parity, with more than 28 weeks of gestation with evidence of any type of morbidly adherent placenta diagnosed antenatally on USG colour Doppler or Magnetic Resonance Imaging (MRI) or diagnosed intra-operatively in this institution for the same.

Hospital medical records were studied and collected for the retrospective cases. For the prospective cases, a detailed history and physical examination of the patient was done and their USG colour Doppler and MRI findings were documented.

The age group of the presenting patients, average gestational age at time of delivery, history of previous Caesarean section or any other

intrauterine procedure like myomectomy, dilataion and curettage/evacuation, manual removal of placenta, mode of delivery in present pregnancy, need of any intervention like internal artery balloon placement or ligation, compression sutures or hysterectomy, duration of hospital stay and also neonatal outcome were the parameters studied.

All of the patients were followed up to 3 months post-parum with betaHCG levels and Doppler ultrasound quarterly for placental volume.

RESULTS

There were 10,946 deliveries in total in the study period, of which 22 patients had morbidly adherent placenta, giving us an incidence of 0.2% (1 in 497.5 deliveries) of which 16 patients were antenatally diagnosed, 4 cases were of morbidly adherent placenta diagnosed post vaginal delivery and 2 were uninvestigated, referred cases. In total 27.27% of patients in the study belonged to age group 25-27 years and 40.9% were above 31 years of age. Also 77.27% (17) of these patients were thirdgravidia.

In total 81.81% (18) of patients had undergone previous caesarean section, of which 9% (2) had previous 1 Caesarean section, 68% (15) had previous 2 Caesarean sections, 4.54% (1) had previous 3 Caesarean sections. Of all the patients who had previous Caesarean sections, 30% (6) had undergone both Caesarean sections and emergency curettage. Among the remaining 18.19% (4) who did not have history of previous Caesarean section, two patients were multigravidas with history of 2 emergency curettage for incomplete abortions, one patient was a multigravida with previous two normal vaginal deliveries and 1 Caesarean section, one was a primigravida with history of laparoscopic myomectomy.

In regards to the location of the placenta in relation to morbidly adherent placenta, 63.63% (14) of cases had anteriorly located placenta, 27% (6) had co existing placenta previa and 9.09% (2) had posteriorly located placenta. Placenta accreta was found in 59% (13), placenta increta in 27.27% (6), and placenta percreta in 13.63% (3). Morbidly adherent placenta was diagnosed by Ultrasound with colour Doppler and confirmed with MRI antenatally in 72.72% (16) cases, intra-operatively 9.09% (2) in and postnatally in 18.18% (4) cases.

The average gestational age at delivery was 36 to 38 weeks in 77.27% (17) patients. Caesarean section was the most frequent mode of delivery (81.81%, 18) with lower segment Caesarean section more

frequent than classical Caesarean section (in view of placenta previa). Antenatally diagnosed cases i.e 72.72% (16) were posted for elective Caesarean section with a multidisciplinary team (obstetrician, anaesthetist, urologist, intensivist, interventional radiologist, neonatologist, blood bank team). The patients who had vaginal deliveries (18.18, 4) were diagnosed with morbidly adherent placenta in post-partum period.

Table 1: Incidence, demographic profile and risk factors for morbidly adherent placenta.

Serial No.	Demographic variable		No. of patients	Percentage
1	Morbidly adherent placenta	Placenta accreta, increta, percreta	22	1 in 497.5 deliveries
2	Age			
		22-24	3	13.6
		25-27	6	27.27
		28-30	4	18.18
		>31	9	40.9
3	Gravida			
		Gravida 1	1	4.54
		Gravida 2	2	9.09
		Gravida 3	17	77.27
		Gravida 4	2	9.09
4	Registration status			
		Registered	18	81.81
		Unregistered	2	9.09
		Transferred	2	9.09
5	Associated risk factors			
		Previous Caesarean	18	81.81
		Previous Curettage	2	9.09
		Both	6	27
6	Placental location			
		Anterior	14	63.63
		Posterior	2	9.09
		Placenta previa	6	27
7	Type of Placentation			
		Accreta	13	59
		Increta	6	27.27
		Percreta	3	13.63
8	Time of diagnosis			
		Antenatal	16	72.72
		Intra-operative	2	9.09
		Postnatal	4	18.18
9	Gestational age at delivery			
		34-36	1	4.54
		36-38	17	77.27
		>38	4	18.18

Seventy seven per cent (17) of the patients received 2-4 units of blood. The average blood loss in patients was 1800-2000 mL. Seventy-two percent of the patients (16) underwent prophylactic balloon placement in the internal iliac artery followed by Caesarean section, of which 3 patients had to undergo partial resection of uterus at the placental implantation site and hysterectomy had to be performed on other 2 of in spite of preventive measures. Nine percent of patients (2) who were transferred cases underwent Caesarean section with internal iliac artery ligation followed by obstetric hysterectomy. Eighteen percent of the patients (4) who were diagnosed post-natally underwent hysterectomy. In total peripartum hysterectomy was performed on 36% (8).

Table 2: Treatment modality (IIL- internal iliac artery ligation, balloon- prophylactic balloon placement in internal iliac artery)

Serial No.	Treatment Modality	No. of patients	Percentage (%)
1	Other procedure without hysterectomy	14 (balloon-14)	63.63
2	Hysterectomy with other procedures	4 (balloon -2, IIL-2)	18.18
3	Hysterectomy with no other procedures	4	18.18

There were 40.9 % (9) of patients who required ICU admissions, 22.7 % (5) patients had disseminated intravascular coagulation (DIC).

Complications were commonly seen in patients who were transferred from other hospitals, unregistered patients and one registered patient who was diagnosed with placenta percreta post-natally. There were 2 mortalities in the study (1 of which was a referred case, previous 2 lscs, uninvestigated with uncontrolled hypothyroidism presented with bleeding per vagina, persistent tachycardia and scar tenderness and other was VBAC who was diagnosed with placenta percreta post-natally).

The average ICU and hospital stay was 1.17 and 12.35 days respectively. Thirteen percent (3) of the patients had surgical site infection.

Table 3: Maternal outcome- morbidity and mortality

Serial No.	Complication	No. of patients	Percentage (%)
1	DIC	5	22.7
2	ICU admission	9	40.9
3	Atonic PPH	3	13.63
4	Bladder/ Ureter Injury	2	9.09
5	Surgical site Infection	3	13.63
6	Death	2	9.09

Ninety-five percent (21) of patients had live births, 4.5% (1) had macerated stillbirth. 18.18% (4) of the babies were preterm (<37 weeks), antenatally diagnosed cases were posted electively at 37 weeks of gestation. The average birth weight of babies was 2.72 kg. Thirty-one percent (7) of the babies required NICU admission at birth for respiratory distress or low birth weight.

DISCUSSION

Morbidly adherent placenta covers placenta accreta, increta, and percreta, which implies an abnormal implantation of the placenta into the uterine wall and is one of the most devastating complications in pregnancy. The most frequently involved extrauterine organ in placenta percreta is the bladder and it is associated with increased morbidity and mortality. Morbidly adherent placenta is a potentially life threatening condition and requires a multidisciplinary approach.

In this study, as well as studies by Aggarwal et al^[4] and Obajimi et al^[5], it is evident that morbidly adherent placenta usually occurs in subsequent pregnancies, explaining the older age group and higher gravidity of the patients. The most important risk factors in this study were history of previous caesarean section with anterior located placenta. In 1970 it was 1/7000, from 1985-1994 it increased to 1/2510 and from 1992-2002 reported incidence is 1/533.^[6] The prevalence of placenta accrete reported a range from 0.04 to 0.9 %. Differences in the study population account for this wide range.^[7] The incidence in Richa et al^[8] study was 0.04% and Leena et al^[9] study was 0.05%. our incidence of morbidly adherent placenta was 0.2% from January 2018 to January 2020. The placenta accreta spectrum has become an important contributor to severe maternal morbidity. The true incidence is difficult to ascertain, but likely falls near 1/1000 deliveries.^[10]

A majority of morbidly adherent placentae are diagnosed during the third stage of labour or during caesarean section which results in adverse consequences including exsanguinating haemorrhage.^[11] Silent abnormal placentation was found in 21.2 % of peripartum hysterectomy specimens in a study by Suwannarurk et al.^[12]

Grayscale ultrasonography is 77–87% sensitive and 96–98% specific for the diagnosis of placenta accreta. The presence and increasing number of lacunae within the placenta at 15–20 weeks of gestation have been shown to be the most predictive ultrasonographic signs of placenta accreta. These lacunae may result in placenta having a Moth eaten or Swiss cheese appearance.^[13] Women with these findings early in pregnancy should undergo follow-up imaging in the third trimester with attention to the potential presence of morbidly adherent placenta. Ultrasonography and MRI were done in registered antenatal cases who were diagnosed with morbidly adherent placenta. We are of the opinion that Magnetic resonance imaging may be helpful if ultrasound is inconclusive or if there is suspicion that the placenta has invaded the parametrium or surrounding organs. MRI was more accurate in diagnosis of posterior and lateral location of placenta and also in focal accreta. It was also useful in surgical planning of placenta percreta. Women with a anterior located placenta or placenta previa overlying a uterine scar should be evaluated for the potential diagnosis of morbidly adherent placenta. .

Management by a multidisciplinary team and delivery in a tertiary care facility, improve outcomes and lower complication rates.^[13] Given the best-available evidence, optimal time for delivery is believed to be between 34 and 35 weeks in most cases.^[7] The average gestational age at delivery was 36 to 38 weeks in our study. The RCOG recommends planned delivery around 36-37 weeks of gestation with corticosteroid cover is a reasonable compromise. However, cases of elective term deliveries after a predelivery diagnosis of placenta accreta have been reported. In a study involving 99 cases of placenta accreta diagnosed before delivery, 4 of 9 with delivery >36 weeks required emergency delivery for hemorrhage.^[14] We did elective surgery in 16 and emergency surgery in 6 cases. Planned delivery is associated with less intraoperative blood loss than emergency delivery.^[15] If there is no antepartum bleeding or other complications, planned late preterm delivery is acceptable to reduce the likelihood of unscheduled emergent delivery at term. The average blood loss in our study was 1800-2000ml.

The recommended management of suspected morbidly adherent placenta is planned preterm Caesarean section with the placenta left in situ because attempts at removal of the placenta are associated with significant haemorrhagic.^[7] However, surgical management of placenta may be individualised.^[13] In our study conservative surgery was done in 63.63% (14) and Caesarean hysterectomy was done in remaining 36.36% (8) cases. Preoperative consultation with anesthesiology and notification of the blood bank are indicated before scheduled surgery when placenta accreta is diagnosed antenatally. Additional surgical services such as gynecologic oncology, urology, general surgery, and/or vascular surgery may provide additional surgical expertise if needed. When prenatal imaging has identified involvement of the lower segment by the placenta accreta, some have suggested that perioperative ureteric stent placement can facilitate palpation of the ureters intraoperatively to allow early identification of ureteral trauma. While 1 retrospective cohort study of 76 cases suggested that preoperative stent placement reduced "early morbidity" (defined as ≥ 1 maternal intensive care unit admission for >24 hours, transfusion of ≥ 4 U of packed red blood cells, coagulopathy, ureteral injury, or early reoperation), ureteric trauma was not significantly reduced with this approach (0% vs 7%; $P = .31$).^[16] The role of preoperative ureteric stent placement when placenta accreta is suspected remains to be determined. Pre operative prophylactic artery catheterization reduce blood loss and assist in preserving fertility.^[17] If considered necessary, the catheter balloon should not be inflated before the infant is delivered as this can be anticipated to reduce placental perfusion. Intraoperative common iliac artery occlusion was performed when there was significant hemorrhage. Intraoperatively, attention should be paid to abdominal and vaginal blood loss. Early blood product replacement, with consideration of volume expansion, increasing oxygen-carrying capacity, and normalization of coagulation factors, can reduce perioperative complications. Postoperative complications of placenta accreta include DIC, fistula formation, ureteric stricture, urinary stasis, infection, pelvic and renal abscess formation, renal compromise, transfusion reaction, sepsis, ARDS, multiorgan.^[9] When surgery for placenta accreta is planned, the potential need for postoperative intensive care unit admission should be considered. Maternal morbidity had been reported to occur in up to 60 % and mortality in up to 7 % of women with morbidly adherent placenta.^[16] Considering this risk of substantial morbidity (including coagulopathy, severe haemorrhage, infection, sepsis, ureteral injury, need for blood transfusion/hysterectomy) and mortality, uterus-preserving treatment may have a role in carefully selected patients who desire future fertility.^[18] Several adjuvant techniques have been proposed alongside surgery. These include methotrexate treatment and/or placement of preoperative internal iliac artery balloon catheters for occlusion and/or arterial embolization to reduce intraoperative blood loss and transfusion requirements.^[19] When conservative management is successful, it results in gradual resorption of the placenta or delayed delivery of the placenta.^[20]

CONCLUSION

Suspect placenta accreta in any case of previous caesarian surgery with anterior placental location, so there is a need to keep the primary caesarean section rates down. Antenatal diagnosis of morbidly adherent placenta through imaging (ultrasound colour Doppler and MRI) allows for multidisciplinary planning. Adherent placenta should be suspected even in first trimester in women with known high risk factors who are undergoing MTP or suction evacuation.

Interventional radiological procedures help in preserving the uterus and hence the future fertility career of the patient. Early admission, prophylactic corticosteroids, elective surgery around 37 weeks in a tertiary care with multidisciplinary approach helps to reduce the maternal and neonatal morbidity and mortality. Although the gap between the developed and developing nations with regard to maternal mortality and morbidity may have narrowed, but still a lot of dedicated work is required to bridge these differences.

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