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Outcomes of pregnancies with a morbid adherent placenta from a tertiary referral Centre in North India

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Abstract
Morbid adherent placenta (MAP) is an abnormality of placental implantation that is an important cause of maternal and fetal mortality. The maternal mortality may reach up to 7% and is associated with multiple maternal morbidities e.g. massive transfusions, infections, urologic injuries and fistula formation.
The present study was a retrospective observational study done to evaluate the profile and outcome of pregnancies diagnosed with MAP over three years.
Forty nine patients were diagnosed with MAP. The incidence was 1.21 per 1000 pregnancies. A majority of patients were multi gravidas and had a history of previous caesarean section(CS). Placenta previa was present in 61.2% patients. Forty seven patients had to undergo a hysterectomy and 75% of patients had to undergo the internal iliac artery ligation to achieve hemostasis. 31 patients (63.2%) required intensive care admission and monitoring. There was one death in our cohort.
MAP is an important cause of maternal morbidity and mortality and its incidence has been on the rise due to increased CS deliveries. CS and placenta previa are important risk factors for MAP. Early recognition of at risk pregnancies and subsequent risk based counselling and management can help optimise the outcomes in MAP.

Keywords: Morbid adherent placenta, pregnancy, outcomes

Introduction
Abnormalities in placental implantation within the uterine wall could be of three grades based on the histopathology findings: placenta accreta in which the placental villi penetrate only to the surface of the myometrium. Placenta increta is the invasion of placental villi into the myometrium. Placenta percreta is at the most severe end of the spectrum characterised by invasion of villi beyond the myometrium to the uterine serosa and in some cases involving adjacent organs such as the bladder. Placenta accreta is the commonest of these and there has been a recent increase in the incidence of placenta accreta keeping in trend with the increase in the incidence of caesarean delivery rate. Other predisposing factors associated with abnormal placental implantation are placenta previa, curettage, and prior uterine surgery like myomectomy [1].
These three abnormalities of placental implantation are collectively called morbid adherent placenta (MAP). In MAP the maternal mortality may reach up to 7% and is associated with multiple maternal morbidities e.g. massive transfusions, infections, urologic injuries and fistula formation [2]. Early recognition of at risk pregnancies and subsequent risk based counselling and management can help optimise the outcomes in MAP [3].
The purpose of this study is to evaluate the demographic profile, risk factors and maternal outcomes in women with MAP at our centre.

Methods
The study was a retrospective observational study. All patients with a diagnosis of MAP during the study period from January 2017 to December 2019 who were admitted in the Department of Obstetrics and Gynaecology, Lady Hardinge Medical College & Smt Sucheta Kriplani Hospital, New Delhi were included.
Data of all patients was collected by a detailed review of the medical records and the outcomes were analysed. The diagnosis of MAP was either by antenatal imaging, or peroperatively or by histopathology examination (HPE) of the specimen. The variables recorded for each patient were: age of the patient, diagnosis at admission, gestational age, obstetric history, history of

previous caesarean section (CS) or any other surgery, details of surgery, transfusion requirement, need for intensive care admission and final outcome.

Results

Forty nine patients were diagnosed with morbid adherent placenta during the period from January 2017 to December 2019. The total number of deliveries during this time period were 13,167 in the year 2017; 13,498 for year 2018 and 12, 379 in 2019. The corresponding number of CS performed were 4110, 4310 and 3663 respectively. There were 49 MAP amongst a total of 39,044 deliveries during the study period, making an incidence of 1.25 per 1000 pregnancies.

The mean age of the patients was 28.1+ 4.2 years. Twenty one pregnancies (42.8%) were booked pregnancies and 28 were un-booked. Ten patients were second gravidas or less whereas the rest were more than second gravida (79.5%). 22 patients had a previous abortion of which 7 had a previous dilatation and curettage. 43 patients (87.7%) had a history of previous CS (23 had >2 CS in the past). The median gestation age was 35 (32-36) weeks. The mean birth weight of the live babies at birth was 2.27 kg.

36 patients were anemic (73.5%) with 21 patients having mild anemia and rest moderate to severe degrees of anemia. In 35 patients co-morbidities were present that are known to predispose to MAP. 30 patients had placenta previa (61.2%) and 9 had a history of antepartum hemorrhage.

Hysterectomy was performed in 47 patients (96%). Thirty seven patients (75%) underwent internal iliac artery ligation to secure hemostasis. Thirty three patients had a blood loss of more than 3L during surgery and the mean volume of blood loss was 3.75+1.14 liters. The median random donor platelet requirement was 4(1-3) units, for fresh frozen plasma it was 4(3-4) units and for PRBC it was 5(4-6) units.

31 patients (63.2%) required intensive care admission and monitoring.

One patient of our cohort died due to post partum hemorrhage. There were three intra uterine deaths (IUD) in our series with the mean baby weight being 2.21+ 0.74kg.

Twenty three patients had placenta accrete (focal or total), 16 had placenta percreta and 10 had placenta increta on HPE of the uteroplacental/placental specimen.

Discussion

MAP is an obstetrical complication where a part or the entire placenta invades the uterine wall resulting in a number of foetal as well as maternal complications. MAP is associated with a number of maternal complications such as haemorrhage, requirement of large volumes of blood transfusion, urinary bladder invasion and an increased risk of maternal morbidity and mortality. It has become one of the most important causes of caesarean hysterectomy [4].

In our cohort the incidence of MAP was 1.25 per 1000 deliveries conducted at our hospital during the study period. Chaudhari et al in their series found that the incidence of morbidly adherent placenta was 1.32 per 1000 pregnancies [5]. A recent retrospective review by Mittal *et al*. in 2019 found a 0.09% of placenta accrete spectrum disorders and they found that the mortality was more in patients diagnosed perinatally when compared to those diagnosed antenatally [6]. In developed countries too, the rate of MAP has shown an increase over the years. In Hong Kong in a study spanning 15 years from 1999-2013, the overall rate of MAP was 0.48/1000 births which had increased from a figure of 0.17/1000 births during 1999-2003 to 0.79/1000 births during 2009-2013 [7]. Singh and Yashodhara recently found that among 6422 deliveries over a one year period, the incidence of morbid adherent placenta was 1 per 306 deliveries [8]. The incidence of MAP has increased over the last three decades parallel to the increase in caesarean delivery rate.

In our series a significant proportion of pregnancies were un-booked. Most of the patients were multi-gravidas, with 87.7% of patients having a previous history of CS. Previous CS with placenta praevia was also the commonest risk factor in the study by Singh and Yashodhara [8]. In their study too, 71.4% had no antenatal care. Similar to our findings Chaudhari et al, found that most of their patients were second gravida in the age group 26–28 years and 90% of the patients in this study had previous CS and co-existing placenta praevia was diagnosed in 63% [5]. Previous CS and coexisting placenta previa are identified to be the major predisposing factors [7].

A significant proportion of patients in our series had a history of placenta previa and were anaemic at presentation. APH was present in 9 patients. In a retrospective review of 20 cases of MAP from 2001-2006, Agarwal et al found that 70% women had previous uterine scar, and similar number had placenta previa. 60% women presented with antepartum haemorrhage and 20% with retained placenta. In their study 85% women underwent hysterectomy with 5% requiring internal iliac artery ligation. Blood loss was between one and nine litres requiring an average of six units whole blood and 4 units FFP. There were six (30%) maternal deaths [3].

In the study by Singh and Yashodhara [8] 38.9% women needed transfer to critical care. There were five (23.8%) maternal deaths. Mittal et al. in 2019 found that the mortality was more in patients diagnosed perinatally when compared to those diagnosed antenatally. About 80% of women underwent hysterectomy [6]. In our study hysterectomy was performed in 96% of patients and 37 patients out of 49 underwent the internal iliac artery ligation to secure hemostasis. 33 patients had a blood loss of more than 3 liters during surgery. ICU admission was required in 31 patients. There was only one death and 3 IUD.

To conclude, incidence of placenta accreta is increasing and previous CS and placenta previa are important risk factors, so there is a need to avoid primary CS whenever possible. The outcomes of MAP have shown an improving trend due to early recognition and risk based management.

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