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Maternal Outcomes in Placenta Accreta Spectrum: Experience at Lady Reading Hospital Peshawar, Pakistan

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ABSTRACT

Background: Placenta accrete spectrum includes placenta accreta, increta and percreta and results in failure of placental separation from uterine wall after delivery. It can cause massive hemorrhage and is one of the major cause of maternal mortality.
Objectives: To determine maternal outcomes in placenta accreta spectrum (PAS) at Lady Reading hospital Peshawar
Material and Methods: This cross-sectional study was carried in OBGYN department of Lady Reading hospital Peshawar from January 1st 2022 till 31st December2022. Patients with placenta accreta spectrum were included for study. These cases were recruited from antenatal OPD and from obstetric emergency unit. Mode of delivery in all cases was cesarean section. All included patients were followed till discharge to determine maternal and fetal outcomes. Information was gathered on pre designed proformas.
Results: The mean age of sample of 35 cases was 33 +-3.5 years. Mean gestational age at delivery was 34+-1.01. Sixty eight percent cases of placenta percreta spectrum had emergency cesarean delivery. Thirty four percent cases received multidisciplinary intra operative care. Hemorrhage needing blood and blood products transfusion was the commonest intra operative complication accounting for 68.6% cases. Surgical wound infection was the commonest post operative complication occurring in 31.4% cases. Two mothers died during the study period.
Conclusion: Hemorrhage is the most common complication of placenta percreta spectrum.
Keywords: placenta percreta, obstetric hemorrhage, surgical wound infection

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INTRODUCTION

Placenta accreta spectrum (PAS) includes both adherent placenta (placenta accreta) and invasive placental disorders (increta and percreta).[1] In accreta the villi are superficially attached to myometrium, in increta villi are deeply penetrated into uterine muscles while in percreta they invade myometrium , cross serosa and embed into surrounding organs like urinary bladder.[1] Regarding what leads to abnormal placentation, the usual course is stoppage of trophoblast invasion at the spongious layer of decidua. However due to absence of spongious layer of decidualized endometrium in patients with previous uterine surgery, there is loss of stop signal and hence abnormal placentation.[2]

PAS is associated with significant maternal morbidity and mortality.[3] Studies have shown a direct association between increase in cesarean deliveries and the incidence of placenta accreta spectrum worldwide. The 2016 Nordic Obstetric surveillance study found that the risk of invasive placentation increases seven-fold after one prior cesarean section.[4] Placenta previa, maternal age 35 years and above, uterine curettage, manual removal of placenta, postpartum endometritis, myomectomy and assisted reproductive techniques in particular invitro fertilization are also included as risk factors for PAS.[5]

In last 30 years incidence of morbidly adherent placenta has increased from 0.12% to 0.31%.[6] A study from Karachi reported MAP incidence of 1.83/1000 deliveries.[7]

Research at international and local level support the fact that PAS disorders have become a leading cause of peripartum hysterectomy, maternal morbidity and even mortality. KE Fitz Patrick et al studied complications and management options in patients with morbidly adherent placenta.[8] Yaqub et al in their study carried at Military Hospital Rawalpindi concluded that patients with placenta accreta are at higher risk of antepartum and postpartum hemorrhage, blood transfusion, hysterectomy, visceral injuries and disseminated intravascular coagulation.[9]

Keeping in view the rising rate of morbidly adherent placenta the current study was planned at OBGYN department of Lady Reading Hospital Peshawar. Maternal outcomes of the cases managed were observed during the study. This theme was to develop departmental protocol in management of this life-threatening condition which is on rise.

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MATERIAL AND METHODS

It was a cross sectional study carried in OBGYN department of Lady Reading Hospital Peshawar from January 1st 2022 till 31st December2022. Sampling method was non probability consecutive. Sample size of 35 was calculated using 95% confidence level, alpha 5%, and proportion of mortality in patients with morbidly adherent placenta as 8.3.[9] Approval was taken from ethical committee of the hospital. (Ref No 594/LRH/MTI dated 1st Dec 2022). Consent was obtained before collecting data in elective cases and after surgery in emergency patients. Patients with placenta accreta spectrum were included for study. These cases were recruited from antenatal OPD or in emergency. Placenta accrete spectrum as already discussed include cases where there was abnormal adherence of placenta to uterine muscles and surrounding organs.[1] In cases recruited from OPD diagnosis was made on doppler ultrasound. On ultrasound the findings were swiss cheese appearance with multiple vascular lacunae in placenta and loss of or thinning of myometrial serosal interface. In emergency scenario it was clinical diagnosis. Maternal outcomes of blood loss, blood transfusion, urinary bladder, bowel, ureter damage during surgery, wound infection, reopening laparotomy, days of hospital stay, intensive care unit admission, mortality and neonatal admission in neonatal intensive care unit were measured in study. Blood loss was estimated by using soaked gauzes (measured by substracting pre use weight from post use) and blood clots which were weighed by standardizing one milliliter of blood to one gram. Mode of delivery in all cases was cesarean section done as an elective operation or in emergency. In majority of cases total abdominal hysterectomy along with removal of placenta was done. Placenta was untouched where due to extensive urinary bladder involvement it was not possible to remove it. In these cases 50mg intramuscular methotrexate was given within a week of initial surgery when risk of bleeding has subsided. Cardiovascular and urological colleagues were involved in few cases where needed for internal iliac artery ligation and urinary bladder dissection from cervix. Maternal and fetal outcomes were entered on a predesigned proforma. Variables were presented as frequency, percentages, means and standard deviation. Chi square test was used to find out association of various factors with maternal outcome. A p- value of 0.05 was taken as significant.

RESULTS

Out of total 35 ,11 cases (31.4%) had elective cesarean section while 24 (68.6%) ended in emergency delivery. Multidisciplinary management involving urologists and cardiovascular surgeons took place in 12 (34.3%) patients. There were 4 cases (11.4%) of urinary bladder damage, 1 case (2.9%) of ureter and bowel injury. Blood loss occurred in 24(68.6%) patients requiring transfusion of blood and blood products. Nine patients (25.7%) had reopening laparotomy and 11 (31.4%) got complicated with wound infection. (Figure 01). Nineteen women (54.3%) had to stay more than 7 days in hospital after surgery. Seventeen mothers (48.6%) were shifted to intensive care unit while 3 of the newborns (8.6%) started their life journey in neonatal intensive care unit. Two (5.7%) mothers lost their precious lives in birth journey. Factors like type of cesarean, presence of MDT, reopening laparotomy, and organ injury did not show any significant association with maternal outcome. (Table 02)

Table 01. Demographic Features

	Mean +- Standard deviation	Frequencies/ Percentages
Maternal age	33 +-3.5	
Gestational age in weeks at diagnosis of MAP	33.33+-1.25	
Gestational age in weeks at intervention	34+-1.01	
Parity (2)		6(17%)
Parity (3 and above)		29(82.9%)
Previous one cesarean		10(29%)
Previous 2 or more cesarean		25(71%)
Interpregnancy interval <2 years		7(20%)
Interpregnancy interval >2 years		28(80%)
History of previous curettage YES		11(31.4%)
History of previous curettage NO		24 (68.6%)

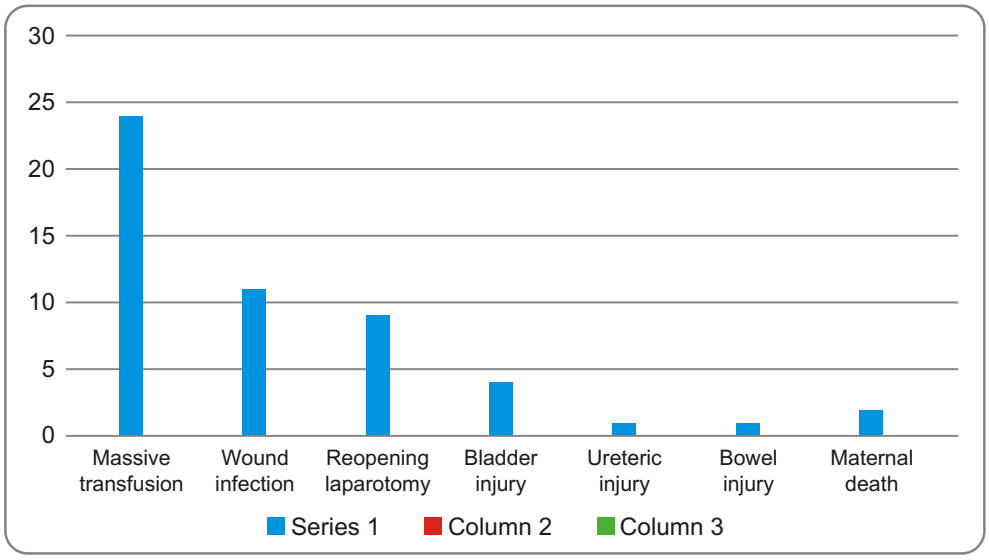


Figure 01. Maternal Complications

Table 02. Association of factors with maternal outcome

Factors	Mothers Survived	Mothers Expired	p-value
Emergency cesarean	7	01	0.34
Elective cesarean	26	01	
Absence of MDT	26	01	0.34
MDT present	07	01	
Re-opening laparotomy	08	01	0.41
No reopening laparotomy	25	01	
Placenta percreta	11	02	0.05
No percreta	22	00	
Organ injury	06	00	0.5
No organ injury	27	02	

DISCUSSION

The current study basically looked at outcome of patients with placenta accrete spectrum managed at Lady Reading Hospital Peshawar. Incidence of PAS during study period was 0.175%. Nazir N et al reported incidence of 0.017 in their study.[10]

Almost 69% of the cases were diagnosed during emergency cesarean as patient landed in labour reason being poverty, ignorance, lack of antenatal checkup and hence timely diagnosis. This figure of emergency presentation is quite big as compared to another study by Akhter T et al. The latter had 487 cases of PAS and only 15% were diagnosed intraoperatively.[11] This can be due to wide variation in case number in both studies and may be explained by difference in residential, economical and educational level of the population.

About a quarter of patients (68.6%) had blood loss and hence required transfusion. Other researchers have reported need of blood transfusion in 94.7% and 75% cases of PAS.[12,13] Studies have supported the fact that antenatally diagnosed PAS is always associated with better outcome in context of maternal mortality and morbidity as it gives opportunity for timely involvement of multidisciplinary team and prophylactic medical and surgical interventions to reduce blood loss. Massive hemorrhage and blood transfusion is very common in cases diagnosed on OT table.[14,15]

Total hysterectomy with removal of placenta was done in majority of patients. However there were 5 patients where placenta was untouched in first surgery as it was invading urinary bladder and adjacent areas. Research studies show that downward displacement of bladder can result in massive bleeding from varicosities on bladder surface and in vesicouterine pouch.[16] Bladder and ureteric injuries are also higher in such cases.[17]They were given methotrexate after one week of surgery in a dose of 50mg intramuscularly single dose. There is no consensus about optimal dose and route of administration of methotrexate. Trans abdominal and intramuscular route and doses from 50 mg to 300 mg are reported in literature.[18] However 3 had to be reopened for removal of retained pregnancy tissues as it failed to regress with medicine and patients had secondary post partum hemorrhage in a week after receiving methotrexate. 1 patient with placenta in situ and methotrexate unfortunately developed rectouterine fistula followed by sepsis and ultimately death on 33rd day of initial operation. Study by FitzPatrick and Steins et al have also reported hemorrhage, endometritis, sepsis and even maternal death with this strategy.[8,19] 1 patient with this conservative strategy did well without any complications. A study done in China where 54 cases where treated with methotrexate intravenously or local multiple point injection under ultrasound guidance reported 92.5 % success rate. However there is a huge difference in case number between our and Chinese study.[20]

Three reopening surgeries were done in first 24 hours of surgery as patients had massive bleeding from the stump and cardiovascular colleagues were involved for bilateral internal iliac artery ligation. Tayyaiba Wasim et al also reported two reopenings out of their 56 patients of morbidly adherent placenta. Both reopenings were done because of internal bleeding in their study similar to ours. In their cohort both reopening patients expired, however patients fortunately survived in our setup.[21] The two mortalities in our patients were because of sepsis and disseminated intravascular coagulation.

Out of three more patients who needed a second look surgery after 48 to 72 hours of initial operation because of abdominal distension and fluid in peritoneal cavity on ultrasound, 2 were diagnosed to have vesicovaginal fistulas and urinary bladder leak which was repaired by urologist and 1 patient was having full blown disseminated intravascular coagulation and no active bleed seen on exploration and this was the second life which was lost in this cohort of 35 patients. Other two cases of urinary bladder damage were iatrogenic injuries which occurred during dissection of bladder from lower uterine segment, both repaired by urologists at time of first surgery with successful outcome. Figure of 11.4% urinary bladder damage in the study is close to figure quoted by Tayyaiba et al.[21]

Neonatal outcome was good in the study as mean gestational age of intervention was 34 weeks which is included in late preterm birth.[22] Due to good neonatal services, steroid cover in elective cases and surfactant therapy majority of new comers coped well. Only 1 baby in neonatal intensive care died, the case was delivered in emergency and mother had extensive antepartum hemorrhage at 32 weeks. Fahmida Parveen et al also reported a healthy neonatal outcome with 87.5% cases delivering at 35 weeks of gestation.[7]

CONCLUSION

Morbidly adherent placenta is associated with significant maternal and fetal morbidity and mortality.

Ethical Consideration

This study was approved by the ethical board of MTI, Lady Reading Hospital, Peshawar, Pakistan.

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Conflict of Interest

Authors declare no conflict of interest

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DATA SHARING STATEMENT: The data that support the findings of this study are available on request from the corresponding author. The data is not publicly available due to privacy or ethical restrictions.

AUTHOR'S CONTRIBUTION

The following authors full fill authorship criteria as per ICMJE guidelines;

Syed W:	Substantial contribution to conception and design, drafting the manuscript, final approval, agreed to be accountable for all the work.
Liaqat N:	Substantial contribution to conception and design, data acquisition, drafting the manuscript, final approval, agreed to be accountable for all the work.
Shafqat T:	Analysis and interpretation of data, drafting the manuscript, final approval, agreed to be accountable for all the work.
Farrukh H:	Analysis and interpretation of data, critical revision,final approval, agreed to be accountable for all the work.

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