



PLACENTA ACCRETA SPECTRUM STUDY IN A TERTIARY CARE INSTITUTION:1-YEAR STUDY IN A TERTIARY CARE CENTER

Obstetrics & Gynaecology

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ABSTRACT

The definition of placenta accreta spectrum disorders (PAS) introduced by FIGO International Federation of Obstetrics and Gynaecology indicates the abnormal pathological adherence or invasion of the placenta. The growing world-wide incidence of this pathological entity and the possible serious correlated surgical risks have caused a significant increase in attention among the scientific committee. Previous Caesarean delivery & Placenta previa are the main risk factors for onset of PAS leading towards peripartum hysterectomy. **Objectives-** To evaluate the MATERNAL AND FETAL OUTCOME of PLACENTA ACCRETA SPECTRUM DISORDERS (PAS) in our institution and to study the risk factors, antenatal diagnosis and other factors associated with PAS. **Methods-** This is the retrospective study conducted for 1 year from January 2022 to December 2022 with the clinically diagnosed cases of PAS. The case records of all women identified as placenta accreta spectrum from hospital registers were retrieved. We identified the risk factors favouring diagnosis, peripartum morbidity and the surgical management in each case. A total of 11 patients with the diagnosis of placenta accreta spectrum were included in the study. **Results-** 11 cases were studied showing a proportion of 0.7 per 1000 live births in our institution. The average age of diagnosis was around 24-30 weeks of gestation using ultrasonography and MRI in 100% of cases. All cases were associated with risk factors such as previous caesarean section, placenta previa and multiparity. The mean duration of MICU stay is 2-3 days, 90.3% of new-borns require NICU care, 18.2% were low birth weight babies, 36.3% were very low birth babies, 27.3% were extreme low birth weight, 0% was still birth, perinatal death was 27.3%, 82% underwent elective surgery, 18% underwent emergency surgery, the median amount of intraoperative blood loss is 1770ml, 27.3% of other surgical department intervention needed. **Conclusion-** Placenta accreta spectrum can be identified antenatally with high index of suspicion in the presence of known risk factors and proper radiological studies, allowing for planned attempts to avoid life threatening hemorrhage by caesarean hysterectomy. Management in tertiary health care with multidisciplinary approach could accelerate prenatal diagnosis and optimal surgical management with reduced maternal and fetal morbidity. Prenatal diagnosis seems to be the most promising key and Caesarean hysterectomy is the probably the preferable treatment.

KEYWORDS

I. INTRODUCTION

Placenta accreta is an abnormal invasion and adherence of the trophoblastic cells of the placenta deep into the myometrium¹. The incidence of placenta accreta spectrum (PAS) is increasing due to extensive caesarean deliveries. PAS results in massive obstetric hemorrhage leading to hysterectomy with the blood loss more than 1500ml requiring multiple transfusions.² Hence, Elective caesarean hysterectomy (CH) at the time of delivery is the treatment of choice for morbid placenta accreta.³ PAS results in increased maternal complications like blood transfusions, ICU admissions, perinatal mortality¹. This article describes the outcome of antenatal mother with PAS disorders managed in our tertiary care hospital.

II. MATERIALS AND METHODS

All women who were diagnosed with PAS from January 2022 to December 2022 in the Department of Obstetrics and Gynecology at Madurai Medical college were studied. The data were obtained retrospectively from the hospital.

Antenatal mother with a singleton pregnancy from 30 weeks of gestation diagnosed as PAS were studied. The maternal age, parity, mode of antenatal screening, intraoperative and postoperative complications, maternal and fetal outcome were analysed and included in the study.

All the antenatal mothers with placenta previa referred from peripheral center underwent transabdominal ultrasonography with doppler study in which placenta accreta spectrum disorder was diagnosed. MRI abdomen and pelvis was done to confirm the diagnosis of placenta accreta and to assess the depth of invasion

.Preoperative placental marking was done and marked on the abdomen. The abdominal incision was vertical for wider operative area and the uterine incision, which was either classical or transverse to prevent iatrogenic incision towards placental site. All of them were

proceeded to hysterectomy to prevent massive hemorrhage except for one patient who underwent uterine artery embolization and later proceeded to relaparotomy and hysterectomy. However, many of the patients require multiple transfusion intraoperatively and postoperatively. Most of the babies require NICU admission.

Table 1: Antenatal details of the present study

Age	6	54.5%
25-30 years	2	18.2%
31-35 years	3	27.3%
>35 years		
Parity	5	45.4%
1-2	6	54.5%
3-4		
Gestational age	2	18.2%
<28 weeks	2	18.2%
28-32 week	0	0%
32-34 weeks	5	45.4%
34-37 weeks	2	18.2%
>37 weeks		
Previous CS	9	82%
1	2	18%
2		
History of placenta previa in present pregnancy	0	0%
No	11	100%
Yes		
History of previous abortions	7	62.7%
No	4	36.3%
Yes		
Placenta accreta	4	36.3%
Placenta increta	3	27.3%
Placenta percreta	4	36.3%

Table 2: Operative procedures, blood loss, intensive care, complications of the present study

VARIABLES	NUMBER
Procedure	
Elective hysterectomy	8
Emergency hysterectomy	2
Uterine artery embolization	1
Estimated Blood loss	
<1499 L	3
1500 L-2499 L	7
2500- 3499 L	1
>3500 L	0
Intraoperative transfusions (units)	4.2±2.2
Complications (%)	
Bladder injury	3(27.3%)
Paralytic ileus	2(18.2%)
UTI	2(18.2%)
Hemorrhage	6(54.5%)
Wound site infection	3(27.3%)
Relapratpmy	1(9.1)
MICU admission	11
Mortality	0
Duration of hospital stay	
<2 weeks	2
>2weeks	9

Table 3: Fetal outcome of the present study

VARIABLES	NUMBER	PERCENTAGE
NICU admission	10	90.9%
NICU stay		
<2days	0	0%
2-4 days	2	18.2%
4-7 days	3	27.2%
>7 days	6	54.5%
Birth weight		
<1kg	3	27.2%
1-1.5kg	4	36.3%
1.5-2.5kg	2	18.2%
>2.5kg	2	18.2%
Gestational age		
<28 weeks	2	18.2%
28-32 weeks	2	18.2%
32-34 weeks	0	0%
34-37 weeks	5	45.4%
>37 weeks	2	18.2%
Sex		
Male	6	54.5%
Female	5	45.5%
Mortality	3	27.2%



III. Statistical Analysis

The data were documented in a semi structured proforma with the standard case proforma. The variables are described as numbers and percentage in the tables and continuous range of values are described in mean $\pm$ SD and median. The statistical analysis was prepared using SPS software.

IV. RESULTS

The total number of deliveries in our hospital in 2022 is 15500. Among the total deliveries, 11 cases of placenta accreta spectrum were studied showing an incidence of 0.7% per 1000 live births. Most of the patients were multiparous women with the previous history of one previous caesarean section. None of them had previous history of placenta previa.

The antenatal women were diagnosed as PAS at a median age of gestation around 30 weeks. Among the 11 patients the placenta accreta were 4(36.3%), placenta increta were 3(27.2%) and placenta percreta were 4 (36.3%). Out of 11 patients, 8 of them underwent elective hysterectomy and 2 were proceeded with emergency hysterectomy. And 1 patient underwent uterine artery embolization and later proceeded to relaprotomy and hysterectomy. The estimated amount of blood loss was around 1770ml requiring multiple transfusions of a median range of 4.2 $\pm$ 2.2U. The mean duration of MICU stay was 2-3 days in all patients and the duration of hospital stay was more than 2 weeks in 9 patients (81.8%). There was no maternal mortality. The intraoperative complications were bladder injury in 3 patients (27.3%), paralytic ileus in 2 patients (18.3%), hemorrhage in 6 patients (54.5%) and wound site infection in 3 patients (27.3%).

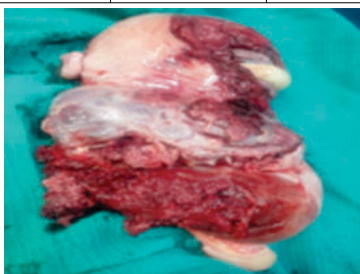
Among the 11 delivered babies, 10 of them required NICU admission. The perinatal mortality was 27.2% (3 new born) around day 3-day 6 of life. The duration of NICU stay was 2-4 days in 2 new born (18.2%), 4-7 days in 3 new born (27.2%) and more than 7 days in 6 new born (54.5%). Out of 11 delivered babies, extreme low birth weight were 3 babies (27.2%), low birth weight were 4 babies (36.3%) and low birth weight were 2 babies (18.2%). There were no still births. According to the sex of the baby, there were 6 male new-borns (54.5%) and 5 females new born (27.2%).

V. DISCUSSION

In our study, 11 patients were eligible for analysis and incidence was 0.7% per 1000 live births in the year 2022. Placenta accreta spectrum disorder in pregnancy is a devastating maternal complication leading to wider range of perioperative complications³. The important risk factors leading to PAS were advanced maternal age (>35 years), increased order of parity (>3), previous history of caesarean section and previous history of abortions.

In our study, the average age group were 31-32 years, 6 of the mothers (54.5%) were multiparous women, all the patients (100%) were associated with previous history of caesarean section and placenta previa and 4 of them (36.3%) had previous history of abortions. All of them were diagnosed antenatally.

Antenatal diagnosis plays an important role in early decision and management for PAS electively. Most of the antenatal women were diagnosed around 24-30 weeks of gestation by Transabdominal Ultrasonography (USG) and delivered at an average of 32-35 weeks. All placenta previa mothers diagnosed with ultrasonography



were subjected to MRI abdomen and pelvis to confirm the diagnosis. MRI seems the most promising diagnostic tool for the depth and invasion of the placenta trophoblastic tissue⁴.

In 2017 a study conducted in tertiary care centre in Maharashtra by Pentela G. et al which included 18 cases shows a proportion 1.48 per 1000 live births of placenta accreta spectrum disorder in comparison to our study with lesser incidence of 0.7 per 1000 live births. Our study center is a main referral center with reduced primary caesarean section, increasing rate of normal vaginal delivery and vaginal birth after caesarean section (VBAC). 141 cases of VBAC were delivered in our institution in 2022. The same study had reported delivery at a median age of 33 weeks which was similar to our study with the median age of delivery 32-35 weeks. In our study, indication for preterm delivery associated with PAS was PPRM, APH and imminent eclampsia.

In 3 year study conducted by Veludandi U et al in a tertiary care centre in Hyderabad with 166 patients showed results of mean blood transfusion 3.7 units and that of our study showed blood transfusion mean of 4.2 units. This may be due to the difference in the number of case reports studied.

All of the study implied that appropriate time of diagnosis, early decision and multidisciplinary approach has reduced maternal morbidity and resulted in better fetal outcome.

In our analysis, hysterectomy was done in 100% of cases. Overall, our study show that, early decision and elective surgical management had better prognosis. There were no maternal mortality. However perinatal mortality was 27.2%, who were extremely low birth weight. Among the perinatal mortality 10% (2 new-born) were delivered by emergency hysterectomy where in the antenatal mothers presented with bleeding per vaginum. All of the mothers required MICU admission.

The findings of ultrasonography in the Placenta accreta spectrum disorders were placental localization, loss of the normal retroplacental clear space, bulge in the bladder, disruption of the hyperechogenic uterine serosa/bladder wall interface, number of intraplacental lacunae with and without a hyperechogenic halo, irregular bladder posterior wall and calcification of the placenta. Doppler study showed increased vascularization at the maternal bed of the placenta, increased vascularization at the uterine serosa-bladder wall interface, vascularization perpendicular to the uterine wall and high speed vascularization into intraplacental lacunae. MRI reports show heterogeneous placenta, placental bulge in the bladder, dark intraplacental bands on T2-weighted images, intraplacental lacunae, perpendicular vessels at the maternal face of the placenta, placental ischemic infarction, hemorrhagic reshuffle, loss of retroplacental dark zone, myometrial thinning, bladder wall interruption, focal exophytic mass and abnormal vascularization of the placental bed.

Incising through the placenta and separating the placenta from uterus results in torrential bleeding which was hard to manage. To prevent this, PPP procedure was followed.

The decision on conservative and non conservative management should be a balance between fertility and associated risks with uterine preservation, such as infection, hemorrhage, potential need for hysterectomy, recurrence or hemorrhage in future pregnancies, and even death.

Our study had no postoperative complications inspite being non conservative and our approach would be the most safest modality for future life.

Tertiary care centre where in the facilities like 24/7 blood transfusions, NICU care, laboratory services, anaesthetic services and urological, IRCU are available are the preferred places for management of placenta accreta spectrum disorder.

VI. Limitations

There were several limitations to our study.

1. This analysis has restricted statistical power as the number of cases is low since it is a very rare disorder.
2. Since it was a retrospective study, the blood loss estimate is individual estimate rather than actual volume.

3. Different approaches to hemostasis and blood loss control can be influenced in individual cases.
4. Limitations in alternative surgical procedures like segmental uterine resection and reconstructive surgery, pelvic devascularization, myometrial excision and uterine repair were not attempted for one case of uterine embolization

CONCLUSION

The increased incidence of placenta accreta spectrum disorder (PAS) is associated with increase in trend of caesarean section. Hence, with an early antenatal diagnosis and elective management with the multidisciplinary team in a tertiary care center is the prompt measure to be taken. Caesarean hysterectomy is the treatment of choice for PAS for better maternal and fetal outcome.

Source of support: Nil

Conflict of interest: None

REFERENCES

1. Cahill AG, Beigi R, Heine RP, et al. Placenta accreta spectrum. *Am J Obstet Gynecol* 2018;219(6):B2-B16. DOI: 10.1016/j.ajog.2018.09.042.
2. Trikha A, Singh PM. Management of major obstetric haemorrhage. *Indian J Anaesth* 2018;62(9):698. DOI: 10.4103/ija.IJA_448_18.
3. Silver RM, Branch DW. Placenta accreta spectrum. *N Engl J Med* 2018;378(16):1529-1536. DOI: 10.1056/NEJMc1709324.
4. Carusi DA. The placenta accreta spectrum: epidemiology and risk factors. *Clin Obstet Gynecol* 2018;61(4):733-742. DOI: 10.1097/GRF.0000000000000391.
5. Thurn L, Wikman A, Westgren M, Lindqvist PG. Massive blood transfusion in relation to delivery: incidence, trends and risk factors: a population-based cohort study. *BJOG*. 2019 Dec;126(13):1577-1586. doi: 10.1111/1471-0528.15927 [Crossref][PubMed] [Google Scholar]
6. Mulla BM, Weatherford R, Redhunt AM, Modest AM, Hacker MR, Hecht JL, et al. Hemorrhagic morbidity in placenta accreta spectrum with and without placenta previa. *Arch Gynecol Obstet*. 2019 Dec;300(6):1601-1606. doi: 10.1007/s00404-019-05338-y [Crossref][PubMed][Google Scholar]
7. Belfort MA, Shamsirsz AA, Fox KA. The diagnosis and management of morbidly adherent placenta. *Semin Perinatol*. 2018;42:49-58.
8. Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA et al. Maternal morbidity associated with multiple repeat caesarean deliveries. *Obstet Gynecol*. 2006;107:1226-32.
9. Farquhar CM, Li Z, Lensen S, McLintock C, Pollock W, Peek MJ. Incidence, risk factors and perinatal outcomes for placenta accreta in Australia and New Zealand: a case-control study. *BMJ Open*. 2017;7(10):e017713.
10. Singh R, Pradeep Y. Maternal and neonatal outcomes in morbidly adherent placenta: a developing country experience. *Trop Doct*. 2015;45(3):183-7.
11. R. M. Silver, M. B. Landon, D. J. Rouse et al., "Maternal morbidity associated with multiple repeat caesarean deliveries," *Obstetrics and Gynecology*, vol. 107, no. 6, pp. 1226-1232, 2006. View at: Publisher Site | Google Scholar
12. E. Jauniaux, D. Ayres-de-Campos, and for the FIGO Placenta Accreta Diagnosis and Management Expert Consensus Panel, "FIGO consensus guidelines on placenta accreta spectrum disorders: Introduction," *International Journal of Gynecology & Obstetrics*, vol. 140, no. 3, pp. 261-264, 2018. View at: Publisher Site | Google Scholar