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A PROSPECTIVE STUDY OF MATERNAL AND FETAL OUTCOMES IN PATIENTS WITH MORBIDLY ADHERENT PLACENTA AT TERTIARY CARE CENTER

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Conflicts of Interest: Nil

ABSTRACT:

Background: Placenta accreta also known as Morbidly Adherent Placenta (MAP) is a complex obstetric complication and is a relatively new disorder of placentation.

Methods: It was a prospective, non-invasive, observational study of 80 pregnant females presenting at or above 28 weeks of gestation with placenta previa and history of one or more prior caesarean in department of Obstetrics and Gynecology, SMS Medical College, Jaipur. Written informed consent was taken. After thorough history and examination, they underwent both ultrasonography/MRI to find out factors in favor of MAP. They were followed till pregnancy was terminated and their feto-maternal outcomes were analyzed.

Result: On comparing intraoperative findings, cases with placenta accreta had more operative time, blood loss, bladder injury and requirement of hysterectomy. Maternal drop in hemoglobin after surgery, postoperative hospital stay and blood product requirement were more. Mortality rates were higher. Fetal and neonatal outcomes were not significantly affected by placenta accreta.

Conclusion: On comparing the feto-maternal outcomes in patients with placenta accreta, we conclude that this condition adversely affect and associated with maternal morbidity and mortality while fetal outcomes are not affected by this condition directly.

Key words: MAP; Placenta Accreta; Fetomaternal outcomes

Introduction

Placenta accreta is a clinical condition when part of the placenta or the entire placenta, invades and is inseparable from the uterine wall[1] and accounts for a large percentage of maternal morbidity and mortality due to hemorrhage as a major complication. There is a strong association between placenta previa, placenta accreta and prior caesarean section.

MATERIALS AND METHODS:

It was a hospital-based descriptive type of observational study conducted prospectively in the Department of Obstetrics and Gynecology in collaboration with the Department of Radiology and Department of Pathology, SMS Medical College, Jaipur from April 2017 to November 2018 in which 80 pregnant females with period of gestation ≥28 weeks arriving at the antenatal clinic or presenting with bleeding PV, underwent ultrasonography / MRI to find factors in favour of placenta accreta. Pregnant women with multifetal gestation, known coagulation disorders and fetal distress requiring immediate emergency caesarean were excluded from the study. Thorough history, general, physical and obstetric examination was performed. Follow-up was done till 37 weeks of gestation (asymptomatic) or till termination (symptomatic). Basis of confirmation of placenta accreta cases was histopathological report (HPR accreta). Maternal and fetal outcomes of cases with placenta accreta were analysed.

RESULTS:

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Table 1: ***Distribution of Cases According to Intraoperative Findings***

Intraoperative Findings	HPR Accreta		Total	p-value
	Absent (n = 38)	Present (n = 42)		
A) Operative Time (minutes)				
Mean ± SD	59.21 ± 6.93	113.93 ± 22.73	**87.94 ± 32.35**	<.0001
Median (IQR)	60 (60 - 60)	120 (90 - 120)	**82.5 (60-120)**	
B) Approximate Blood Loss (ml)				
<2000	38 (74.51%)	13 (25.49%)	**51 (100.00%)**	<.0001
2000 - 2999	0 (0.00%)	14 (100.00%)	**14 (100.00%)**	
3000 - 3499	0 (0.00%)	5 (100.00%)	**5 (100.00%)**	
>3500	0 (0.00%)	10 (100.00%)	**10 (100.00%)**	
Mean ± SD	1210.53 ± 172.09	2459.52 ± 925.53		<.0001
Median (IQR)	1200 (1100-1300)	2300 (1800-3300)		
C) Bladder Injury Involvement				
No	37 (56.06%)	29 (43.94%)	**66 (100.00%)**	0.0008
Yes	1 (7.14%)	13 (92.86%)	**14 (100.00%)**	
D) Initial Conservative Management (Uterine Artery Ligation, Uterine Temponade, Haemostatic Suture)				
No	38 (100.00%)	0 (0.00%)	**38 (100.00%)**	<.0001
Yes	0 (0.00%)	42 (100.00%)	**42 (100.00%)**	
E) Hysterectomy				
No	38 (63.33%)	22 (36.67%)	**60 (100.00%)**	<.0001
Yes	0 (0.00%)	20 (100.00%)	**20 (100.00%)**	

Mean operative time (in minutes) in cases with placenta accreta was 113.93 ± 22.73 (approx. 2 hours) while in cases without placenta accreta, it was 59.21 ± 6.93 (approx. 1 hour). Findings suggest that more operative time is required in cases with placenta accreta as there is need for measures to control bleeding through placental bed, hysterectomy and repair of injuries to adjacent organs like bladder and bowel.

Mean value of blood loss in case with placenta accreta was found to be 2459.52 ± 925 mL while in those without placenta accreta was 1210.53 ± 172.09 mL. This concluded that intraoperative blood loss was found more in cases with placenta accreta because of increased operative time along with non-retraction of lower uterine segment and more tissue injury in cases of placenta accreta.

Of all 14 cases with bladder injury/involvement, only one (7.14%) was a case of placenta previa without invasion, where bladder was badly adherent to the lower uterine segment due to history of previous 2 caesarean. Of 42 patients with placenta accreta, 13 (30.95%) had bladder injury / involvement including 12 cases of placenta percreta with bladder invasion and only one with bladder injury during caesarean.

No case without placenta accreta (38) required initial conservative measures like bilateral uterine artery ligation, application of hemostatic suture at placental bed and uterine tamponade to control intraoperative bleeding. These conservative measures were required in all 42 cases (100.00%) of placenta accreta as an initial measure. Out of these 42 cases, 20 (47.62%) underwent hysterectomy later and 22 (52.38%) were managed conservatively. Also none of the cases without placenta accreta underwent hysterectomy and conservative management can preserve fertility by avoiding hysterectomy.

Table 2: ***Distribution of Cases According to Maternal Outcomes***

Maternal Outcomes	HPR Accreta		Total	p-value
	Absent (n = 38)	Present (n = 42)		
A1) Preoperative Haemoglobin				
Mean ± SD	9.9 ± 0.75	10.02 ± 0.9	**9.96 ± 0.83**	0.507
Median (IQR)	9.9 (9.600 - 10)	9.9 (9.800 - 10)	**9.9 (9.650-10)**	
A2) Postoperative Haemoglobin				
Mean ± SD	8.98 ± 0.8	7.51 ± 1.33	**8.21 ± 1.33**	<.0001
Median (IQR)	9 (8.800 - 9.500)	8 (7 - 8.200)	**8.2 (7.200-9.050)**	
B) Packed Red Cell (PRC)				
Mean ± SD	0.24 ± 0.59	3.43 ± 1.5	**1.91 ± 1.98**	<.0001
Median (IQR)	0 (0 - 0)	4 (2 - 4)	**2 (0 - 4)**	
C) Post-operative Hospital Stay (in days)				
Mean ± SD	6.1 ± 3.98	9.02 ± 4.53	**7.6 ± 4.49**	0.003
Median (IQR)	5 (5 - 5)	7 (5 - 11)	**5 (5 - 8)**	
D) Maternal Deaths				
Yes	0 (0.00%)	2 (100.00%)	**2 (100.00%)**	
No	38 (48.72%)	40 (51.28%)	**78 (100.00%)**	

In this study, mean preoperative hemoglobin (Hb in g/dL) in cases of placenta accreta was 10.02 ± 0.9 and in cases without accreta 9.9 ± 0.75. Mean postoperative Hb (in g/dL) in cases of placenta accreta was 7.51 ± 1.33 and in cases without accreta was 8.98 ± 0.8. Owing to the excessive blood loss and antepartum haemorrhage in patients with placenta accreta, significant fall in haemoglobin is seen after the operation, mandating the need for blood transfusion.

In our study, mean units of packed red cell transfused in cases of placenta accreta was 3.43 ± 1.5 while in cases without placenta accreta was 0.24 ± 0.59. This concluded that requirement of packed red cell and other blood products increase in proportion to amount of blood loss which is excessive in cases of placenta accreta.

In our study, in cases of placenta accreta, mean post-operative hospital stay (in days) was 9.02 ± 4.53 and in cases without accreta was 6.1 ± 3.98. Prolonged hospital stay in these cases was due to maternal sepsis, bladder involvement, surgical site infections and admission of baby in NICU.

Out of 42 cases of placenta accreta, 2 cases could not be survived. Mortality among cases of placenta accreta was found to be 4.76%. The cause of death was catastrophic haemorrhage leading to shock. None of the patients died in cases without placenta accreta.

Table 3: ***Distribution of Cases According to Neonatal Outcomes***

Neonatal Outcomes	HPR Accreta		Total	p-value
	Absent (n = 38)	Present (n = 42)		
A) Presentation				
Cephalic	30 (78.95%)	35 (83.33%)	**65 (81.25%)**	0.849

Breech	4 (10.53%)	4 (9.52%)	**8 (10.00%)**	
Transverse	4 (10.53%)	3 (7.14%)	**7 (8.75%)**	
B) Preterm / Term				
Preterm	34 (89.47%)	36 (85.71%)	**70 (87.50%)**	0.741
Term	4 (10.53%)	6 (14.29%)	**10 (12.50%)**	
C) Live Birth / IUFD				
Live Birth	37 (97.37%)	41 (97.62%)	**78 (97.50%)**	1.000
IUFD	1 (2.63%)	1 (2.38%)	**2 (2.50%)**	
D) APGAR Score				
<7	15 (39.47%)	9 (21.43%)	**24 (30.00%)**	0.079
≥7	23 (60.53%)	33 (78.57%)	**56 (70.00%)**	
Mean ± SD	6.13 ± 1.46	6.33 ± 1.66	**6.24 ± 1.56**	0.123
Median (IQR)	7 (6 - 7)	7 (7 - 7)	**7 (6 - 7)**	
E) Weight (in kg)				
Mean ± SD	2.23 ± 0.56	2.34 ± 0.55	**2.29 ± 0.55**	0.359
Median (IQR)	2.4 (1.700-2.700)	2.3 (2-2.750)	**2.35 (1.800-2.725)**	
F) Gender of Baby				
Female	15 (39.47%)	17 (40.48%)	**32 (40.00%)**	0.927
Male	23 (60.35%)	25 (59.52%)	**48 (60.00%)**	
G) FGR (Fetal Growth Restriction)				
No	34 (89.47%)	41 (97.62%)	**75 (93.75%)**	0.185
Yes	4 (10.53%)	1 (2.38%)	**5 (6.25%)**	
H) NICU Admission				
No	29 (76.32%)	31 (73.81%)	**60 (75.00%)**	0.796
Yes	9 (23.68%)	11 (26.19%)	**20 (25.00%)**	
I) Early Neonatal Death				
No	37 (97.37%)	39 (92.86%)	**76 (95.00%)**	0.617
Yes	1 (2.63%)	3 (7.14%)	**4 (5.00%)**	

In cases with placenta accreta, most common fetal presentation was cephalic (83.33%) followed by breech and transverse. In cases without placenta accreta, most common fetal presentation was cephalic (78.95%) followed by breech and transverse.

Number of preterm birth (<37 weeks) in cases with placenta accreta were 85.71% and rest were full-term births. Number of preterm births in cases without placenta accreta was 89.47%. Most of the patients underwent caesarean electively or due to antepartum hemorrhage at less than 37 weeks of gestation.

Live birth rate in cases with and without placenta accreta was found to be 97.62% and 97.37% respectively. Out of total 80 cases, 1 case presented with IUFD in each group. Both the cases were unbooked and came with complaint of excessive bleeding at admission. Live birth rate was found to be 97.50% of all cases.

In most of the cases (78.57%) with placenta accreta, APGAR score was ≥7 and rest had score <7. Mean APGAR score was 6.24 ± 1.56. In cases without placenta accreta, in majority of the cases (60.53%) APGAR score was ≥7 and rest had score <7. Mean APGAR score was 6.13 ± 1.46.

In our study, in cases with placenta accreta mean weight of baby (in kg) was 2.34 ± 0.55 whereas in cases without placenta accreta, mean weight of baby was 2.23 ± 0.56.

In cases with placenta accreta, maximum number of babies born was male (59.52%). In cases without placenta accreta, 60.53% were born with male child.

In cases with placenta accreta, FGR (Fetal growth Restriction) was seen in 2.38% of cases. In cases without placenta accreta, FGR was seen in 10.53% of cases. Frequent episodes of bleeding and uteroplacental insufficiency were found to be the most probable cause.

In our study, in cases with placenta accreta, NICU admission was required in 26.19% whereas in cases without placenta accreta it was required in 23.68% patients. Most common reasons for NICU admission were found to be respiratory distress followed by sepsis, early neonatal complications and complications of prematurity.

Out of total 80 babies, 4 (5%) died in early neonatal period. Two died due to respiratory distress babies, one due to neonatal sepsis and other due to congenital cardiovascular abnormality.

Findings suggest that neonatal outcome is not influenced by presence of placenta accreta and neonatal morbidity and mortality is mainly due to iatrogenic prematurity and frequent episodes of bleeding.

Discussion:

On comparing the intraoperative findings with other studies, the mean operative time in cases with placenta accreta was 2 hours in study by Paneerselvam A et al[2] and 2.91 ± 0.37 hours according to Angstmann T et al[3]. Intraoperative blood loss in cases with placenta accreta in studies conducted by Samosir SM et al[4], Paneerselvam A et al[2] and Chou et al[5] were found to be 2622mL, 1800 mL and 4446 mL respectively. In a study by Paneerselvam A et al[2], Samosir SM et al[4], Chou et al[5], Chaudhari et al[6] and Dwivedi S et al[7] bladder injury occurred in 27.77%, 10%,14.28%,10% and 16% cases of placenta accreta respectively. In study conducted by Elshekh WA et al[8], Senthiles L et al[9] and Provansal M et al[10], 95%, 78.4% and 86.95% cases with placenta accreta were managed conservatively respectively.

On comparing the maternal outcome with study by Samosir SM et al[4], average total bleeding during surgery was 2622 mL with lowest postoperative haemoglobin being 8.36 g/dL. Paneerselvam A et al[2], concluded that all of the women with placenta accreta were managed in intensive care unit postoperatively. The mean pre-operative hospital stay was of 6.15 days and postoperative stay was of 14.31 days. In a study by Chaudhari HK et al[6], the average hospital stay for a woman diagnosed with morbidly adherent placenta was 27 days while in study by Samosir SM et al[4], it was 5 days. In the study conducted by Finberg HJ et al[11], mortality among cases of placenta accreta was found to be 5.88%.

On comparing the neonatal outcomes, Paneerselvam A et al[2] mentioned 61% of neonates were preterm while 27.74% were term among cases of placenta accreta. In study conducted by Chaudhari et al[6], live birth rate was 79%, 50% were preterm and maximum number of babies had birth weight of 2.3 to 2.6 kg. 27% was NICU admission rate.
All babies were born appropriate for gestation with a mean APGAR of 7.

CONCLUSION:

On comparing the feto-maternal outcomes in patients with placenta accreta, we conclude that this condition adversely affect and associated with maternal morbidity and mortality. Fetal and neonatal adverse outcomes are not directly due to MAP but due to iatrogenic prematurity and frequent episodes of bleeding. Thus diagnosis of placenta accreta at earlier gestation will allow multidisciplinary planning and reduce overall morbidity and mortality associated with MAP.

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