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Research Article

JOURNAL OF WOMENS HEALTH AND DEVELOPMENT

ISSN: 2644-2884

Fetomaternal Outcome of Placenta Accreta Spectrum (PAS) Disorder Managed by Planned Vs. Emergency Management Modality Among Cases Admitted in A Selective Tertiary Level Hospital of Bangladesh

Shohana Askary[1*], Salma Rouf[2], Khorshed Minhajul Alam[3], Sadia Mahfiza Khanom[4], Sharmeen Sultana[5], Tahmina Sultana Nila[6], Salma Khatun[7], Mahbubur Rahman Razeeb[8]

Abstract

Background: Placenta Accreta Spectrum (PAS) disorder is a complex and potentially life-threatening condition where the placenta attaches too deeply into the uterine wall. This condition can lead to severe complications during delivery, including massive hemorrhage, the need for hysterectomy, and maternal or neonatal morbidity and mortality.

Objectives: The aim of the study was to evaluate the fetomaternal outcome of placenta accreta spectrum (PAS) disorder managed by planned vs. emergency management modality among cases admitted in a selective tertiary level hospital of Bangladesh.

Methods: This cross-sectional comparative study was carried out in the Department of Obstetrics & Gynaecology, Dhaka Medical College Hospital, Dhaka, during 18th January 2020 to 17th July 2020. A total of 74 patients were participated in the study. Among them Group-A comprised of patients who undergone planned management of PAS disorder and Group-B dealt with patients who undergone emergency management of PAS disorder). Statistical analyses of the results were be obtained by using window-based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-24).

Results: The age distribution throughout the categories. The mean ± SD of age was computed as 25.4 ± 5.7 years for Group A and 25.2 ± 5.4 years for Group B. According to the operational definition, patients are divided into three socioeconomic classes. The impoverished class accounted for the majority of patients (44%), followed by the middle class (38%), and the upper class (18%). In addition, the majority of the women (56.0%) had multiple children. Parity 4+ or grand multipara was 14.0% in Group B patients.

Conclusion: Planned management with a multidisciplinary team approach has better outcomes without mortality as compared to emergency management of PASD patients. Scheduled or planned management with avoiding attempt to placental removal are associated with reduced maternal morbidity in women with suspected placenta accreta.

Keywords: Placenta Accreta Spectrum (PAS); Hemorrhage; Hysterectomy; Neonatal

Affiliation:

[1]Resident Surgen, Department of Obstetrics and Gynecology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh

[2]Ex. Professor & Head, Department of Obstetrics and Gynecology, Dhaka Medical College Hospital, Dhaka, Bangladesh

[3]Indoor Medical Officer, Department of Obstetrics and Gynecology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh

[4]Consultant, Department of Obstetrics and Gynecology, Dhaka Medical College Hospital

[5]Medical Officer, Department of Obstetrics and Gynecology, Sir Salimullah Medical College & Mitford Hospital

[6]Medical Officer, 250 Bed General Hospital, Pabna, Bangladesh

[7]Assistant Registrar, Department of Obstetrics and Gynecology, Colonel Maleque Medical College, Manikganj, Bangladesh

[8]Resident Surgen, Department of Obstetrics and Gynecology, Dhaka Medical College Hospital, Dhaka, Bangladesh

***Corresponding Author**
Shohana Askary, Resident Surgeon, Department of Obstetrics and Gynecology, Sir Salimullah Medical College Mitford Hospital, Dhaka, Bangladesh.

Citation: Shohana Askary, Salma Rouf, Khorshed Minhajul Alam, Sadia Mahfiza Khanom, Sharmeen Sultana, Tahmina Sultana Nila, Salma Khatun, Mahbubur Rahman Razeeb. Fetomaternal Outcome of Placenta Accreta Spectrum (PAS) Disorder Managed by Planned Vs. Emergency Management Modality Among Cases Admitted in A Selective Tertiary Level Hospital of Bangladesh. Journal of Women's Health and Development. 7 (2024): 83-88

Received: September 10, 2024
Accepted: September 17, 2024
Published: September 27, 2024

Askary S, et al., J Women's Health Dev 2024
DOI:10.26502/fjwhd.2644-288400124

Introduction

PAS disorders are a growing obstetric issue with the continuous increase in cesarean deliveries all over the world. Over the last 40 years, cesarean delivery rates around the world have risen from less than 10% to over 30%, and almost simultaneously a 10-fold increase in the incidence of placenta accreta spectrum (PAS) disorders has been reported in most medium- and high-income countries. PAS disorders were first defined by Luke et al. to include both abnormally adherent and invasive placentas. [1] Three categories are now considered: (1) adherent placenta accreta, also described by pathologists as "placenta creta, vera or adherenta" when the villi simply adhere to the myometrium; (2) placenta increta, when the villi invade the myometrium; and (3) placenta percreta, when villi invade the full thickness of the myometrium including the uterine serosa and sometimes adjacent pelvic organs. [1] The most favored hypothesis regarding the etiology of placenta accreta spectrum is that a defect of the endometrial-myometrial interface leads to a failure of normal decidualization in the area of a uterine scar, which allows abnormally deep placental anchoring villi and trophoblast infiltration. The diagnoses are confirmed either by clinical assessment of abnormal adherence of the placenta, or evidence of gross placental invasion at the time of surgery, histopathological diagnosis of placental invasion into the myometrium. PAS disorders can be identified antenatally by gray scale ultrasonography (TVS/TAS) with or without color doppler sonography and MRI. Ultrasound signs of PAS vary with gestational age and depend on the thickness and composition of the placental bed, number of prior uterine scars, depth of invasion, and the lateral extension of the villous tissue. At least 2 times USG should do prenatally during anomaly scan at 20 weeks for predictive sign. - & if predictive sign presents then repeat scan around 30 -32 weeks of gestation to assess PAS. Ultrasound changes seen in PAS as loss of the clear zone, myometrial thinning, placental lacunae, bladder wall interruption, placental bulge, exophytic mass, sub placental and/or uterovesical hypervascularity, placental lacunae. MRI is not essential for making a prenatal diagnosis but may be useful in evaluating the posterior placenta previa & pelvic extension.

Peripartum hysterectomy is a "near-miss" maternal event - an intervention performed in life threatening obstetric situations like massive hemorrhage with placenta accreta spectrum Disorder to prevent death. [2] It results in the loss of fertility and is associated with significant maternal morbidity and mortality. [3] Elective planned peripartum hysterectomy is usually performed in case of diagnosed as PAS disorder either on Grayscale USG or on Doppler sonography in antenatal check up to prevent maternal mortality. The maternal outcome greatly depends on timely decision and good clinical judgment because unnecessary delay can cost life and haste can cause morbidity. [4, 5] Scheduled caesarean hysterectomy/peripartum hysterectomy with avoiding attempt to placental removal are associated with reduced maternal morbidity in women with suspected placenta accreta. Primary elective cesarean hysterectomy is the safest and most practical option for most low- and middle-income countries where other diagnostic and therapeutic options like (UAE), and additional treatments are not available.

Methodology

This cross-sectional comparative study was carried out in the Department of Obstetrics & Gynaecology, Dhaka Medical College Hospital, Dhaka, during 18th January 2020 to 17th July 2020. A total of 74 patients were participated in the study. Among them Group-A comprised of patients who undergone planned management of PAS disorder and Group-B dealt with patients who undergone emergency management of PAS disorder). After taking consent and matching eligibility criteria, data were collected from patients on variables of interest using the predesigned structured questionnaire by interview, observation. Statistical analyses of the results were be obtained by using window-based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-24).

Results

This comparative study was conducted in the Department of Obstetrics and Gynecology, Dhaka Medical College Hospital, Dhaka, over a period of six months. Total 74 subjects were selected and allocated into two groups, Group A, n=50 & B group, n=24 no case. Group-A comprised of patients who undergone planned management of PAS disorder and Group-B dealt with patients who undergone emergency management of PAS disorder). Fetomaternal outcome between groups were compared. Following observation was described below- Table shows, the age distribution among the groups. Mean ± SD of age was calculated 25.4 ± 5.7 years for Group – A and 25.2 ± 5.4 years for Group – B. (p-value = 0.886,) which explains that there was no significant statistical difference between the groups was observed.

Table 1: Age distribution of the patients (n=74).

Age (years)	Frequency & Percentage		p-value
	Group-A (n=50)	Group-B (n=24)	
20-25	13 (26.0)	7 (29.1)	
26-30	18 (36.0)	10 (41.7)	
31-35	11 (22.0)	4 (16.7)	
≥35	8 (16.0)	3 (12.5)	
Total	50 (100.0)	24 (100.0)	
Mean ± SD	25.4 ± 5.7	25.2 ± 5.4	0.886

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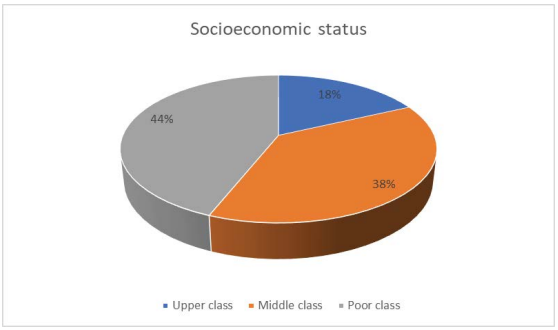
Askary S, et al., J Women's Health Dev 2024
DOI:10.26502/fjwhd.2644-288400124

Table 2: Distribution of the patients according to occupation category (n=74).

Occupation	Frequency & Percentage		Total
	Group-A (n=50)	Group-B (n=24)	
Service holder	4 (8.0)	1 (8.3)	5
Housewife	26 (52.0)	12 (50.0)	38
Day Laborer	12 (24.0)	7 (29.1)	19
Unemployed	8 (16.0)	4 (16.7)	12
Total	50 (100.0)	24 (100.0)	14

Table shows occupation status of the patients. Large number of respondents were housewife in both groups.

Figure 1: Socioeconomic status of the study population (n=74).



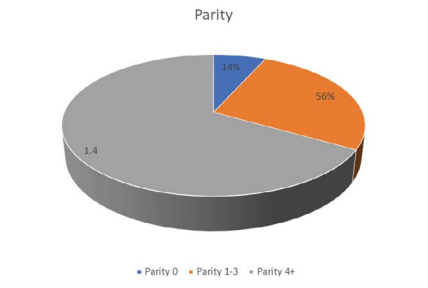
According to operational definition, socioeconomically patients are grouped into three classes. Among the patients, the poor class 44% comprised the major percentage of the patients, which is followed by middle class 38% and remaining are upper class 18%.

Table 3: Trend of antenatal care received by patients (n=74)

ANC	Frequency & Percentage		Total	p-value
	Group-A (n=50)	Group-B (n=24)		
Regular	32 (64.0)	8 (33.3)	40	
Irregular	18 (36.0)	16 (66.7)	34	
Total	50 (100.0)	24 (100.0)		0.013

Table illustrates that, more participants in Group-A [32 (64.0%)] received ANC regularly than Group B [8 (33.3%)].

Figure 2: Obstetrics history of women (n=74).



Most of the women were multiparous (56.0%). Parity 4+ or grand multipara was 14.0% among Group -B patients.

Table 4: Pattern of presentation of PAS disorder (n=74).

Presentation	Frequency & Percentage		p-value
	Group-A (n=50)	Group-B (n=24)	
A) Diagnosed antenatallay with USG with or without APH:			
i) Only USG findings of PAS disorder	13 (26.0)	0	0.006
ii) Mild APH with USG findings of PAS disorder	12 (24.0)	0	0.009
iii) Moderate APH with haemodynamic status stable with USG findings of PAS disorder	10 (20.0)	8 (33.3)	0.215
B) Diagnosed peroperatively:			
i) Severe APH with haemodynamically unstable with peroperative findings of PAS disorder	3 (6.0)	8 (33.3)	0.002
ii) Scar tenderness (peroperative findings of PAS disorder)	10 (20.0)	4 (16.7)	0.736
iii) Only PROM with peroperative findings of PAS disorder	10 (20.0)	1 (4.1)	0.983
C) primary c-section outside DMCH:			
i) PPH	0	2 (8.3)	0.041
ii) Internal haemorrhage	0	2 (8.3)	0.041

Table shows the pattern of presentation of PAS disorder. In group-A maximum patients presented with only USG findings of PAS disorders and with APH or without APH (35%) Result was significant. In group-B, PPH and internal haemorrhage (primary c-section outside DMCH) and was noted predominantly. Result was significant.

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Table 5: Evaluation of risk factors (n=74).

Risk factors	Frequency & Percentage		p-value
	Group-A (n=50)	Group-B (n=24)	
Previous LUCS			
One C/S	22 (44.0)	14 (58.3)	0.252
Two C/S	10 (20.0)	5 (20.8)	0.936
Three C/S	8 (16.0)	1 (4.1)	0.145
Presence of placenta praevia	39 (78.0)	11 (45.8)	0.005
Manual removal of placenta in previous SVD	6 (12.0)	4 (16.7)	0.582
Previous D & C	14 (28.0)	10 (41.7)	0.241
Previous MR	8 (16.0)	6 (25.0)	0.358
Short interval of pregnancy from previous C/S (<2 yr)	9 (18.0)	4 (16.7)	0.891
GDM	2 (4.0)	0	0.323
DM	2 (4.0)	0	0.323
Chronic HTN	3 (6.0)	0	0.223
PE	1 (2.0)	1 (4.1)	0.603

In this study group, 78.0% patients in group-A and 45.8% in group-B had placenta praevia. In Group A patient's PAS disorder present with 1 C/S 44%,2 C/S 20%,3 C/S 16% and in Group B patients 1C/s 58.3%, 2 C/S 20.8%,3 C/S 4.1%, the result was significant.

Table 6: Peroperative findings (n=74).

Findings	Frequency & Percentage		p-value
	Group-A (n=50)	Group-B (n=24)	
Placenta acreta	12 (24.0)	3 (12.5)	0.252
Placenta increta	14 (28.0)	4 (16.7)	0.292
Placenta percreta without bladder invasion	16 (32.0)	7 (29.1)	0.802
Placenta percreta with bladder invasion	8 (16.0)	10 (41.7)	0.016
Peroperative bladder injury	8 (16.0)	10 (41.7)	0.016
Blood loss			
1-1.5 L	35 (70.0)	5 (20.8)	0.001
2-3 L	10 (20.0)	7 (29.1)	0.386
>3 L	5 (10.0)	12 (50.0)	0.001

Table shows peroperative findings. Placenta acreta was present 12 (24.0) patients in group A and 3 (12.5) patients in group B. Placenta percreta with bladder invasion and peroperative bladder injury was higher in group-B patients. More than 3 L blood was transfused 5 (10.0) patients in group A and 12 (50.0) patients in group B.

Table 7: Postoperative complications (n=74).

Postoperative complications	Frequency & Percentage		p-value
	Group-A (n=50)	Group-B (n=24)	
Uneventful	28 (56.0)	10 (41.7)	0.252
Primary PPH	15 (30.0)	20 (83.3)	0.001
Secondary PPH	0	2 (8.3)	0.039
ICU admission	5 (10.0)	12 (50.0)	0.001
Delayed hysterctomy	0	0	-
Sepsis	0	2 (8.3)	0.041
Re-exploration	0	4 (16.7)	0.003
Uterovaginal fistula	0	1 (4.1)	0.152
DIC	1 (2.0)	5 (20.8)	0.005
Pulmonary oedema	1 (2.0)	3 (12.5)	0.063
Shock	1 (2.0)	3 (12.5)	0.063
Mortality (due to irreversible shock &DIC)	0	2 (8.3)	0.2008

Table shows postoperative complications. PPH, Sepsis, Re-exploration, DIC and ICU admission were the significant complication in Group-B patients, reported 83.3%, 8.3%, 0.003, 20.8 & 50.0% of women and in less complication in Group A 30%,0%,0%,2%,10%. In this study mortality rate was 8.3% in group-B (due to irreversible shock &DIC). So planned or scheduled management had better outcome.

Table 8: Neonatal outcome (n=74).

Postoperative complications	Frequency & Percentage		p-value
	Group-A (n=50)	Group-B (n=24)	
NICU admission for prematurity	12(24.0%)	14(58.3%)	0.004
Birth asphyxia	6(12.0%)	8(33.3%)	0.029
IUGR	2(4.0%)	4(16.7%)	0.072
Neonatal death	1(2.0%)	6(25.0%)	0.001
No complication	29(58.0%)	3(12.5%)	0.003

Table shows the fetal outcome. Poor outcomes were significantly higher in group-B. Birth asphyxia was observed in 6(12.0%) of the babies in group-A and 8(33.3%) in Group-B. NICU admission for prematurity was required in 12(24.0%) of the babies in group-A and 14(58.3%) babies of group-B.

Discussion

A total of 74 cases of placental Accreta were recruited in this study and described the planned & emergency management and observed the fetomaternal outcomes of placenta accreta spectrum (PAS) disorders in a tertiary level hospital. Here, mean ± SD of age was calculated to be, 25.4 ± 5.7 year for Group – A and 25.2 ± 5.4 year for Group – B,

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there was no significant statistical difference was observed between the groups. Large numbers of respondents came from urban area, 35 (70.0) patients in group-A and 9 (37.5) patients in group-B came from urban & poor class 44% comprising the major percentage of patients. In this study most of the women were multiparous (56.0%). Parity 4+ or grand multipara was 14.0%. Findings were consistent with result of other studies. In one study overall mean maternal age was 31.6 (17–46) years and 29.3% (n¼96) were older than 35 years at time of delivery. 187 (57%) women were multiparas. [6] Another study, found that age is a risk factor for PAS, the majority of the patients (69.7%) were above the age of 30 years. [7] Williams MA, et al, (1993) found that age is considered a higher risk factor for placenta accreta which is associated with advanced maternal age. [8] Among older women, there may be compromised uteroplacental blood flow. This has been shown by microscopic studies of placentae from older women that have revealed uteroplacental under perfusion & large placental infarcts. Eniola AO, Bako AU, et al. (2002) also demonstrated the association between increasing maternal age & risk of development of PAS [9].

This study was consistent with the other studies, that the risk of PAS increases with previous caesarean deliveries with statistically significant p value of less than 0.0001. [10] All these studies agreed that patients who had previous delivery by C/S were associated with an increased risk of PAS. [11, 12] Most studies have reported a dose related response pattern of risk factors of placenta accreta was found with increasing number of C/S deliveries. Another study shows, factors associated with PAS were history of assisted conception and history of endometriosis. Nearly half (49.1%) of patients with a placenta praevia had prior uterine surgery. The most frequent surgical history was obviously caesarean section. [13] In general it seems important to avoid primary CS whenever possible, especially if there is wish to have future fertility. In our institution, caesarean deliveries are only performed when indicated. However, in other provincial hospitals, especially the private ones, a considerable number of caesarean deliveries may have been performed on maternal request, which obviously contributed to the increased number of this intervention [13]. The increased risk of placental pathologies in subsequent pregnancies should be emphasized during informed consent for caesarean section. Evidence suggests a correlation between the number of previous caesarean sections and the occurrence of a placenta praevia, uterine rupture and hysterectomy. Therefore, vaginal birth after caesarean delivery may be offered and consenting patients be transferred to institutions with adequate experience. A substantial number of women in our study population previously underwent curettage due to abortions. These patients may be benefited from less invasive approaches like medical treatment of missed abortions with misoprostol whenever this is in accordance with clinical and personal prerequisites [14-16]. Women with PAS disorder had a significant higher incidence of preterm delivery. Studies also showed that there was higher admission to neonatal intensive care unit, stillbirth and death. [17] Placenta accreta was associated with adverse maternal (34.15%) and neonatal (60.06%) outcome. [4] PAS disorder with placenta praevia had high maternal morbidity as antepartum bleeding (42.3%), maternal anemia (30%), hysterectomy (82%) needed and neonatal complications were frequent (preterm birth (54.9%), low birth weight below 2500 g (35.6%), low APGAR score after 5 min (5.8%) and fetal mortality (1.5). [18] Neonates of women with PAS disorders had a significant worse outcome in other study. Outcomes are improved when delivery is done through optimal management with a comprehensive multidisciplinary care team accustomed to management of placenta accreta spectrum. Timing of delivery decisions need to balance maternal risks and benefits with those of the fetus. The mortality rates can be as high as 7% owing to damage to pelvic organs (most commonly bladder) and vasculature. [19] Performing a cesarean delivery followed immediately by cesarean hysterectomy before the onset of labor improves maternal outcomes. [20] Earlier delivery may be required in cases of persistent bleeding, preeclampsia, labor, rupture of membranes, or fetal compromise, or developing maternal comorbidities. Therefore, detection and management of placenta Accreta Spectrum Disorder (PASD) should be planned and conducted a careful evaluation with timely delivery in order to reduce the associated maternal and perinatal complications.

Limitations of the study

The present study was conducted in a very short period due to time constraints and funding limitations. The small sample size was also a limitation of the present study.

Conclusion

Placenta accreta remains a risk factor for various maternal complications and worse neonatal outcome. There was higher incidence of postpartum haemorrhage (PPH) and shock. Elective management perform in case of diagnosed as placenta accreta either on magnetic resonance imaging or on Doppler sonography in antenatal check up to prevent maternal mortality. Acute danger of placenta accreta is massive haemorrhage, shock and this is a leading cause of morbidity and mortality. Emphasis should be given to early antenatal registration, awareness regarding early warning signs, early diagnosis with use of ultrasound, early correct management and planned management. Scheduled or planned management should be encouraged for reduction of feto-maternal mortality and morbidity.

Recommendation

This study can serve as a pilot to much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for

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future use and emphasize points to ensure better management and adherence.

Acknowledgements

The wide range of disciplines involved in fetomaternal outcome of placenta accreta spectrum (PAS) disorder managed by planned vs. emergency management modality among cases admitted in Dhaka Medical College Hospital, Bangladesh. I would also like to be grateful to my colleagues and family who supported me and offered deep insight into the study.

Conflict of Interest

The Author declares no conflict of interest.

Funding: None

Ethical Approval

Ethical Committee of Dhaka Medical College

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