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Original Research Article

"Maternal and Perinatal Outcome of Ultrasonographically Diagnosed Cases of Major Types of Placenta Praevia with History of Previous Caesarean Section"

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Abstract

Background: Placenta praevia is one of the leading causes of antepartum haemorrhage usually responsible for significant maternal & fetal morbidity & mortality. Now a day, there is rising trend of caesarean section with parallel rise in placenta praevia specially the major variety where placenta lies in the lower uterine segment partially or completely covering the cervical os. ***Objective:*** To see the maternal and perinatal outcome of ultrasonographically diagnosed cases of major variety of placenta praevia with previous caesarean section. ***Methods:*** It was a cross sectional descriptive type of observational study conducted in the Obs & Gynae Department of Mymensingh Medical College, Mymensingh over the period of six months from July, 2017 to December, 2017. Total 50 patients were selected for this study after fulfilling the inclusion criteria and diagnosed as major types of placenta praevia by ultrasonography. A purposive sampling technique was applied for selecting the patient with previous caesarean section. Data analysis was implemented using SPSS version 22. ***Results:*** The study result shows that 36% cases were Type III placenta praevia and 52% were central placenta praevia. Among 50 patients 54% patients were presented with history of previous one caesarean section & 32% had previous two caesarean section. 50.0% cases of type III & 80.8% cases of central placenta praevia with previous caesarean section needed peripartum hysterectomy. Out of 50 patients, 11 patients were complicated with urinary bladder injury, PPH occurred in 4 patients & 2 patients needed ICU support. That patient who needed hysterectomy massive blood transfusion was required. In this study no maternal mortality was observed. Regarding fetal outcome, 88% babies were alive & 12% were stillborn. Almost two third (66%) neonates were deliverd before term & 08 neonates were transferred to NICU. ***Conclusion*:** Placenta praevia is a matter of concern for the obstetrician due to devastating haemorrhage & adverse maternal & fetal outcome. Patients with major variety of placenta praevia with history of caesarean section are regarded as high risk pregnancy & these patients should be managed in the tertiary level hospital by multidisciplinary approach in presence of skilled obstetrician, expert anaesthesiologist, neonatologist, urologist along with all logistical support.

Keywords: Placenta praevia, Perinatal Outcome, Ultrasonographically Diagnosed, Previous Caesarean Section.

INTRODUCTION

Placenta Praevia is defined as a placenta that lies wholly or partly within the lower uterine segment [1]. Placenta praevia is regarded as one of the leading causes of APH may cause serious maternal & perinatal morbidity and mortality [2]. The incidence of Placenta Praevia ranges from 0.5 to 1% among hospital deliveries and usually high in developing countries [3].

Any patient who reports a significant amount of painless, apparently causeless & usually recurrent per vaginal bleeding during the later months of pregnancy must be considered to have placenta praevia until proved otherwise [4]. No Specific etiology can be found for most cases of low placental localization but there are some predisposing factors like advanced maternal age, grand multiparity, multiple pregnancy [5]. However, the history of prior caesarean section and uterine curettage following spontaneous or induced abortion or due to diagnostic purpose, myomectomy, polypectomy are potential risk factors for developing placenta praevia [6]. The classification of placenta praevia describes the degree to which the placenta encroaches upon the cervix and is divided into Type-1 (low lying). Type-2 (marginal). Type-3 (partial or incomplete) and Type-+ (central or complete placenta praevia) [7]. For clinical purpose, the types are graded into mild degree (type 1 and 2 anterior) and major degree (type-2 posterior, type-3 and type-4) [3] Women with placenta praevia specially if they have a placenta praevia with previous history of caesarean section are at increased risk of morbid adherence of placenta like Placenta accreta, placenta increta, placenta perereta and these conditions can be confirmed by Ultrasound or MRI [8]. Damage to the endometrium or surgical disruption of endometrial cavity is a potential risk factor of placenta praevia [9]. Caesarean delivery is the most common operative procedures in practice of Obstetrics and Gynaecology, which is known to cause damage to the endometrium or myometrium [10]. A defective decidual vascularization exists, possibly secondary to inflammatory or atrophic changes and the number of caesarean deliveries are increasing the number of scarred uterus is also increasing exposing gravid women to increase morbidity from uterine rupture, placenta praevia specially the major variety and morbid adherence of placenta thus increasing the incidence of emergency obstetric hysterectomy [11]. It has been studied that due to scarring of lower uterine segment the placenta shows a greater predilection for its location in the lower uterine segment and greater degree of penetration, as trophoblasts invade deeper tissues for search of maternal blood supply resulting in major degree of placenta praevia and placenta accreta. Bender first suggested that a uterine scar could predispose to the development of placenta praevia in subsequent pregnancies [13]. Placenta praevia has been recognized as an determinant of maternal complications like antepartum haemorrhage followed by intratpartum haemorrhage, postpartum haemorrhage, puerperal sepsis, morbid adherence of placenta as well as caesarean hysterectomy, massive blood transfusion, septicaemia, thrombophlebitis." Pregnancies complicated by placenta praevia have resulted in high rate of preterm delivery, low birth weight, Intrauterine growth retardation, still birth, respiratory distress syndrome, anaemia, perinatal and neonatal deaths." In spite of advancement of ultrasonography to diagnose placenta praevia and in order to improve perinatal outcome, placenta praevia still continue to pose a challenge as the incidence of caesarean section continue to rise worldwide. In our country the number of caesarean section performed in the tertiary referral centre has also shown a rising trend. Nevertheless, the extent to which history of prior caesarean section predispose our woman to the development of placenta praevia is still unclear as relevant studies are not available. The present study aims to determine the maternal and perinatal outcome of ultrasonographically diagnosed cases of major variety of placenta praevia with history of previous caesarean section.

MATERIALS AND METHODS

Study design: The study was a cross sectional descriptive type of observational study.

Place of study: This study was carried out at the Department of Obstetrics and Gynecology, Mymensingh Medical College Hospital, Mymensingh.

Study period: Six months-from July, 2017 to December, 2017.

Sample size: 50 cases were taken for this study.

Study population: The study population was ultrasonographically diagnosed cases of major variety of placenta praevia with previous history of caesarean section during the study period admitted in the Department of obst & Gynae in MMCH, Bangladesh.

Sampling technique: After meeting the inclusion criteria a purposive sampling technique was applied for selecting the study population.

Inclusion criteria

- The patients with major types of placenta praevia confirmed by ultrasonography with or without pervaginal bleeding having history of previous caesarean section.
- Gestational age of the patient between 28 weeks to 40 weeks.

Exclusion criteria

- Antepartum haemorrhage other than placenta praevia.
- Minor variety of placenta praevia.
- Gestational age less than 28 weeks.

Operational definitions:

APH: (Ante partum haemorrhage): Bleeding from or into the genital tract after the 28th weeks of pregnancy but before the birth of the baby. Here, quantity of bleeding was assessed by observing the general wellbeing and status of anaemia of the patients and features of shock.

Mild bleeding- slight bleeding occurred which usually does not affect the general wellbeing of the patient.

Moderate bleeding- patient is moderately anaemic, ill looking but features of shock are absent.

Severe bleeding- patient is in shock with severe aneaemia due to excessive pervaginal bleeding.

Placenta Praevia: The term placenta praevia refers to a placenta that overlies or is proximate to the internal os of the cervix. The placenta normally implants in the upper uterine segment. In placenta praevia, the placenta either totally or partially lies within the lower uterine segment. Traditionally, placenta praevia has been categorized into 4 types:

- Low-lying placenta praevia (type I), which extends into the lower uterine segment but does not reach the internal os.
- Marginal placenta praevia (type II), which just reaches the internal os, but does not cover it.
- Partial placenta praevia (type III), where the placenta partially covers the internal os. Thus, this scenario occurs only when the internal os is dilated to some degree.
- Complete placenta praevia (type IV), where the placenta completely covers the internal os.

Type-11 posterior, type-III and type IV grades placenta praevia are regarded ad major type of placenta praevia.

ANC: Systemic supervision (examination and advice) of a women during pregnancy is called antenata care. It screen high risk groups, prevent, detect and treat any curable complication and educate the mother about pregnancy and its outcome, birth planning and also motivate the needs of family planning etc. In developing country like Bangladesh. As per WHO recommendation, at least 4 ANC visit in recommended. (1st around 16 weeks. 2.1d 24-28 weeks, 3rd at 32 weeks and 36 weeks). In this study antenatal visit in considered as irregular 1-4, regular 5 and none. Gestational age defined as the number of completed weeks of gestation from the date of last menstrual period. Over the study period some are also estimates the gestational age incorporated ultrasound measurements taken in the later half of pregnancy [21].

PPH: Any amount of bleeding from on into the genital tract that following birth of the baby upto the end of the puerperium which adversely affect the general condition of the patient evidenced by rise in pulse, falling blood pressure is called post-partum hemorrhage (PPH) [22].

Primary PPH: Within 24 hrs.

Secondary PPH: beyond 24 hrs to the end of puerperium.

Puerperal Sepsis: Any infection of the genital tract which occurs as a complication of delivery is termed as puerperal sepsis.

Preterm baby: When infant born prior to the 37th completed weeks of gestation.

Low Birth Weight (LBW): Any live born infant weighing 2500 gm or less at birth irrespective of gestational age. It may be due to prematurity or due to SGA.

Procedure of data collection: After taking informed written consent from the patient, data were collected using a structured questionnaire containing all the variables of interest.

Procedure of data analysis: After collection of each day, the data were checked; followed by editing and cleaning to detect errors or omissions and to maintain consistency and validity of the data. Then the data were entered into the computer using Statistical Package for Social Sciences (SPSS-22 version) software (SPSS Inc, Chicago, IL, USA). The results were presented in tables and figures. The statistical terms include in the study was mean, standard deviation, frequency and percentage. The relationships between different variables were analyzed using t-test. p value of less than 0.05 was considered as significant.

RESULTS

A total of 50 patients were selected for this study after fulfilling the inclusion criteria and diagnosis was confirmed by ultrasonography.

Table-1: Patients criteria of study population (N=50)

Age(years)	Frequency	Percentage (%)
≤20	5	10.0
21-30	14	28.0
31-40	31	62.0
Mean± SD 33.2±4.96,	Range (min-max) 18-40	
Gestational age		
<37weeks(preterm)	33	66.0
≥37weeks (term)	17	34.0
Mean± SD,34.1±2.1	Range (min-max) (30-37)	

Age(years)	Frequency	Percentage (%)
Birth weight		
Low birth weight	26	59.0
Healthy with average birth weight	18	41.0
APGAR score		
<3-7	08	18.2
>7	36	81.8

Maternal age in this study ranged 18-40 years. The commonest age group was 31-40 Years, which included 62.0% followed by 28.0% with 21-30 years. The mean age was 33.2±4.96 years. 88.0% respondents were from rural area and 12.0% from urban area. Here, 66% babies were delivered before term & 34% were delivered at term. LBW babies were 59% & 41% were healthy with average body weight. APGAR score<3-7 was found in 18.4% population & APGAR score >7 Observed in 81 babies.

Table-2: Clinical-socio-economic condition of Study population (n=50)

socio-economic condition	Frequency	Percentage (%)
Low	21	42.0
Middle	24	48.0
High	05	10.0
Pervaginal bleeding		
Present	47	94.0
absent	03	6.0
Birth weight		
Low birth weight	26	59.0
Healthy with average birth weight	18	41.0
History of antenatal care		
Regular	15	30.0
Irregular	21	42.0
None	14	28.0
Gravida		
2^{nd}	21	42.0
3^{rd}	13	26.0
4^{th} and above	16	32.0

48.0% respondents came from middle socio-economic group, 42% from low socio- economic group& 10% from high socio-economic group. This table shows 47 (94%) patients presented with pervaginal bleeding & 3 (6%). Presented without history of pervaginal bleeding.

Table-3: Distribution of population by quantity of per vaginal bleeding (n=47)

Quantity of bleeding	Frequency	Percentage (%)
Mild	07	14.9
Moderate	28	59.6
severe	12	25.5

Mild bleeding was seen in 14.9% patients, moderate bleeding occurred in 59.6% and 25.5% patients presented with heavy bleeding. 42% patients were 2^{nd}grravida, 26% were 3^{rd}gravida& 32%were 4^{th}& above. Here, 42% patients were in irregular ANC, 30% received regular ANC & 28% had no ANC.

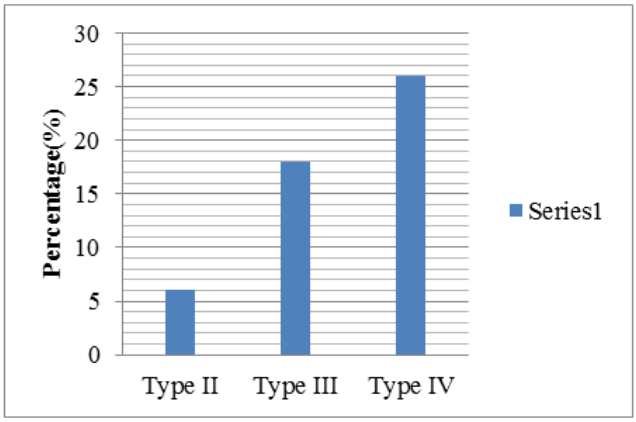

Fig-1: Ultrasonographic type of placenta praevia of the study population (n=50)

This table shows the type of placenta praevia among the study population that Presents 36% were type III and 52% were type IV or central placenta praevia and 12% were type II posterior placenta praevia.

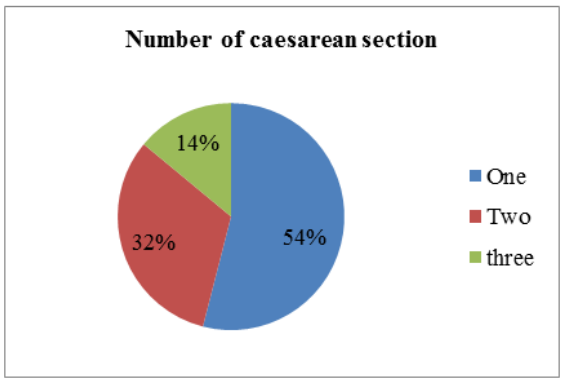

Fig-2: Number of caesarean section of the study population (n=50).

This diagram shows 54% patients were presented with history of one caesarean section, 32% with history of two caesarean section and 14% had history of previous three caesarean section.

Table-4: Hysterectomy based on number of previous caesarean section & untrasonographic variety of placenta praevia.

Number of caesarean section	Number of patients	No of hysterectomy	Percentage (%)
One	16	02	12.5
Two	27	21	77.8
Three	07	07	100.0
Type of placenta praevia			
Type 2 (posterior)	06	0	0.0
Type 3	18	09	50.0
Type 4 or central	26	21	80.0

77.8% patients having history of previous 2 caesarean section and all patients with History of previous 3 caesarean section needed hysterectomy.50.0% of the type 3 and 80.8% of type 4 placenta praevia needed hysterectomy.

Table-5: Distribution of the study population according to the nature of complication (n=19)

Type of complication	Frequency	Percentage (%)
Urinary bladder injury	11	57.9
Delayed reversal & ICU Support	02	10.5
Postpartum haemorrhage	04	21.1
Secondary wound infection	02	10.5

Here, 57.9% patients were complicated with urinary bladder injury, 10.5% patients Required ICU support due to delayed reversal, postpartum haemorrage occurred in 21.1% patients that was corrected conservatively and secondary wound infection Occurred in 10.5% patients.

Table-6: Distribution of the study population according to need of blood transfusion (n=50)

Unit of blood	Frequency	Percentage (%)
1-3	22	44.0
4-6	19	38.0
>6	09	18.0
Total	50	100.0

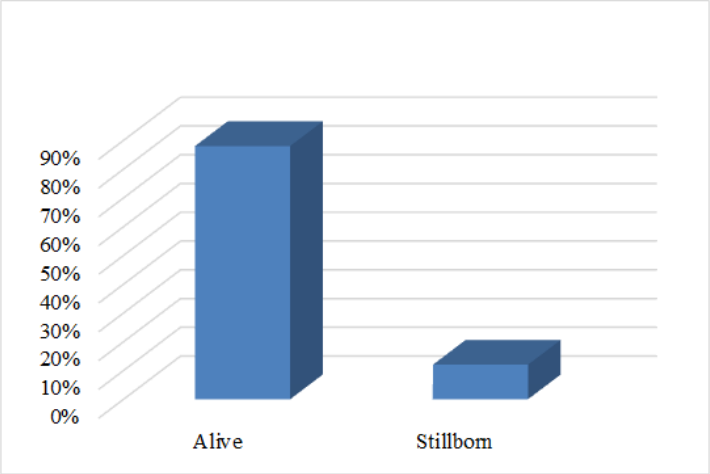

Fig-3: Fetal outcome of the study population (n-50)

Table-7: Distribution of neonate according to NICU support (n=26)

NICU support	Frequency	Percentage (%)
Not required	18	69.2
Required	08	30.8

Among 50 patients, 44.0% patients needed blood transfusion about 3 unit, 38.0% patients needed 4-6 units and 18.0% patients needed more than 6 unit of blood. Most of the patients who needed hysterectomy also required massive blood Transfusion. This diagram shows 88% babies were alive and 12% were stillborn. 30.8% babies were transferred to NICU for better management.

DISCUSSION

The frequency of caesarean section is increasing worldwide with a parallel rise in maternal morbidity and mortality. WHO found that the risk of placenta praevia increases with increasing number of caesarean section? The incidence of morbid adherent placenta has increased dramatically over the last three decades with the increased in caesarean delivery rate. This association of placenta praevia and previous caesarean section is due to inhibition in placental migration and in such case there is more chance of morbid adhesion. Sometimes it invades upto urinary bladder causing injury during operation. Repeated caesarean section also causes more chance of bladder injury [11]. In this study it is evident that increased age, multipaparity & previous caesarean section are important risk factors for placenta praevia. In present study maternal age ranged 18-40 years and all patients were multigravida, The commonest age group was 31-40 years, which included 62.0% followed by 28.0% with 21-30 years. The mean age was 33.2:+4.96 years. Risk of placenta praevia increased dramatically with advancing maternal age. Risk of placenta praevia occurred 2-3 times more commonly above the age of 35 years as compared to those at age 20 years or less. These findings were consistent with Zhang *et al*. which had shown that advanced maternal age had adverse effect on the development of placenta praevia, regardless of other known risk factors. Increased maternal age & high parity- appeared to be equally important to raise the incidence of placenta praevia [12]. A similar study was done by Ikechebelu *et al.* showed during the five years study period, there were 3565 deliveries and 59 cases of placenta praevia were observed and 77.3% occurred in women aged 35 years and above. [13]. In this study 94.0% patients were presented with pervaginal bleeding & severe bleeding occured in 25.5% patients. Resting activity was seen among 76.6% patients. This study findings were consistent with the study of Shabnum *et al.* who conducted a cross sectional study among 100 patients of placenta praevia with previous caesarean section where

74.0% patients presented as painless vaginal bleeding & 11% were in shock. 52% patients required blood transfusion [14]. The present study showed that 54.0% patients had history of previous one caesarean section and 32.0% patients had two caesarean section. In accordance with the study Zeba *et al.* outline the frequency of placenta praevia with the number of previous caesarean section delivery which showed 33.3% patient had history of one caesarean section, 55.6% had history of two caesarean section and 11.12% with history of three caesarean section." Another study of Ayesha S. *et al.* showed the frequency of placenta praevia was 74.5% with previous one, 20.4% with previous two and 5% with previous three caesarean section. Bender first suggested an association between previous caesarean section and placenta praevia. The higher incidence of placenta praevia in previous caesarean section has been reported by Singh who reported a 3.9 fold increase Clark found a 2.5 fold increased (0.3% vs 0.7%) risk of placenta praevia in previous caesarean section [15]. Dashe *et al.* have shown a threefold increase risk of placenta praevia in a woman with history of previous caesarean section [16]. All cases with history of previous three caesarean section needed hysterectomy. 50.0% of the type III and 80.8% of central placenta praevia needed hysterectomy. This study also showed that prognosis of posterior placenta praevia is relatively better than other major variety. Among 50 patients 30(60.0%) patients needed caesarean hysterectomy which was also very significant for peroperative and postoperative deterioration of patients condition. None of the patient died among the study group. Zeba *et al*. reported among 18 patients 11 (61.16%) patients needed caesarean hysterectomy which was correlated with our study [17]. In our study complications occurred in 19 (38%) patients. Among these patient urinary bladder injury occurred in 57.9% patients, delayed reversal & ICU support needed in 10.5% patients & post-partum haemorrhage occurred in 21.1% patients. Here, 44% patients needed blood transfusion of 3 unit, 38% needed 4-6 unit & 18% patients required > 6 unit of blood transfusion. These findings are consistent with the study of Zeba *et al*. [17]. In this study it was observed that 88.0% were alive baby & 12.0% were stillborn. Almost two third (66.0%) were delivered before term. Among alive baby 30.8% were transferred to NICU for further management. Study of Shabnum *et al.* showed that 84% babies born alive out of which 79% were preterm and 21% were termed. Mean APGAR scores at one and 5 minutes were 5/10 and 6/10 respectively. Majority of the babies were low birth weight, with mean of 2.2 kg [14]. In series of Cotton *et al*. Reported 12.6% babies died during perinatal period [18]. In series of Hibberd *et al*. perinatal death in developed countries is now much lower than developing countries [19]. Although maternal morbidity has been significantly reduced with the advancement of blood transfusion, safe anesthesia, surgery and post-operative care, but is still higher in developing countries. Maternal death is very unfortunate outcome of pregnancies. No maternal death was reported in this series due to multidisciplinary approach along with all logistical support. This finding is consisted with Brenner study [20]. The scope for specific prevention of placenta praevia is limited. But regular antenatal checkup reduces the risk of complication by prior determination of blood group, prevention of anaemia, in suspected cases confirmation of diagnosis by USG, booking the patient for hospital confinement & avoidance of trauma by vaginal examination. In case of morbid adherence of placenta, preoperative bleeding should be minimized by performing in situ hysterectomy without any forceful attempt to separate placenta.

CONCLUSION

The prevalence of placenta praevia is low but it is a matter of concern for the obstetricians due to devastating haemorrhage which adversely affect maternal & fetal outcome. Now days, there is a rising trend of caesarean section which predispose to develop major variety of placenta praevia which usually morbidly adhered to the previous uterine scar. During management of these patient multidisciplinary approach including experienced & skilled obstetrician, anaestesiolist & neonatologist are essential. On the other hand, prompt resuscitation of haemorrhagic shock by blood transfusion, facility of peripartum hysterectomy & a wise decision to do peripartum hysterectomy by keeping placenta in situ can minimize further blood loss. All these approaches make maternal mortality nil in this study & reduce neonatal mortality also.

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