ORIGINAL ARTICLE

A Study on Clinical Presentation, Predisposing Factors and Outcome of Retained Placenta

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ABSTRACT

Background: Retained placenta is a significant obstetric complication associated with increased maternal morbidity and mortality. Objective: This study aimed to assess the clinical presentation, predisposing factors, and outcomes of retained placenta among women delivering in a tertiary care setting. Methods & Materials: This case control study was conducted in the Department of Obstetrics & Gynaecology, Dhaka Medical College and Hospital, Dhaka, Bangladesh, from January 2012 to June 2012. A total of 100 patients were enrolled, comprising 50 patients with retained placenta were taken as cases and 50 patients without retained placenta were taken as controls. Results: This study shows that age and parity differed significantly between groups, with higher parity more common among cases. Retained placenta was strongly associated with mismanagement of the third stage of labor (30% vs. 4%), previous uterine surgery (20% vs. 4%), preterm labor (22% vs. 8%), and grand multiparity (16% vs. 2%). Clinically, cases had higher rates of primary postpartum hemorrhage (50%), anemia (80%), and shock (30%). Although adverse maternal outcomes were more frequent among cases, differences were not statistically significant. Multivariate analysis identified mismanagement of the third stage of labor (AOR 2.80), previous uterine surgery (AOR 9.20), preterm labor (AOR 3.79), and grand multiparity (AOR 4.67) as independent predictors. Conclusion: Retained placenta is strongly associated with preventable obstetric factors and presents with significant clinical complications. Early identification of high-risk women and improved management of the third stage of labor are essential for reducing adverse outcomes.

Keywords: Retained Placenta, Postpartum Hemorrhage, Risk Factors, Maternal Outcome

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INTRODUCTION

Retained placenta remains one of the most important causes of postpartum hemorrhage (PPH) and maternal mortality in Bangladesh. It is a frequent and challenging obstetric problem worldwide. The placenta is defined as retained when it fails to be expelled within 30 minutes after delivery of the baby, although some authors have recommended a time range of 30–60 minutes for this diagnosis [1]. Retained placenta poses a life-threatening risk not only due to the retention itself but also because of complications associated with its removal. These risks are further amplified in women from disadvantaged socioeconomic backgrounds, where pre-existing malnutrition, anemia, and unsupervised home deliveries are common. The cumulative consequences of these factors contribute significantly to maternal morbidity and mortality. Therefore, it is essential to identify the predisposing factors associated with retained placenta.

The third stage of labor begins with the delivery of the fetus and ends with the complete expulsion of the placenta and membranes. Retained placenta occurs when any part of the placenta or membranes remains inside the uterus following childbirth. The incidence and clinical importance of retained placenta vary globally, affecting approximately 0.53% of women during delivery [2,3]. In one American series, retained placenta accounted for 18% of severe obstetric hemorrhage [4]. It remains a major contributor to maternal mortality due to PPH and puerperal sepsis. Approximately 25% of maternal deaths in African and Asian countries result from hemorrhage during pregnancy, childbirth, and the postpartum period, with almost 30% attributed to PPH. Of these PPH-related deaths, 15–20% are due to retained placenta. After uterine atony, retained placenta is recognized as the second leading indication for blood transfusion during the third stage of labor [5,6].

Although several predisposing factors have been identified, their significance and relative contribution remain inconsistent across studies. Some authors have demonstrated associations with preterm labor, grand multiparity, and induction of labor, while others have not found these relationships [7,8]. A controlled study identified past history of

retained placenta, previous uterine surgery, preterm delivery, maternal age above 35 years, placental weight <601 g, pethidine uses in labor, labor induction, and parity ≥5 as significant risk factors [1]. However, another study reported that only previous retained placenta and history of preterm delivery were significantly associated with recurrence, with age and parity showing no influence [9-11].

Retained placenta continues to occur at a notable frequency in many clinical settings. Early recognition of women who possess identifiable risk factors is essential for preventing retained placenta and for reducing the burden of maternal morbidity and mortality associated with postpartum hemorrhage.

Therefore, this study was undertaken to evaluate the clinical presentation, predisposing factors, and outcomes of retained placenta among women delivering in our study institution.

METHODS & MATERIALS

This case control study was conducted in the Department of Obstetrics & Gynaecology, Dhaka Medical College and Hospital, Dhaka, Bangladesh, from January 2012 to June 2012. A total of 100 patients were enrolled, comprising 50 patients with retained placenta were taken as cases and 50 patients without retained placenta were taken as controls who attended the department during the study period.

These were the following criteria for eligibility as study participants:

Inclusion Criteria
- All patients undergoing normal vaginal delivery without any exclusion criteria.
- Cases of retained placenta referred from other healthcare facilities or those delivered at home fulfilling the above criteria.

Exclusion Criteria
- Pregnancies complicated by obstetric conditions (e.g., severe preeclampsia, eclampsia) or serious medical diseases (e.g., severe heart disease, uncontrolled diabetes mellitus).
- Patients with retained placenta at a gestational age of less than 28 weeks.
- Patients admitted for puerperal sepsis due to retained placental tissue or membranes.

Data Collection Procedure: A total of 100 participants were enrolled, including 50 cases with retained placenta and 50 controls without retained placenta. Informed written consent was obtained from all participants after explaining the study procedure. Data were collected using a pretested, structured questionnaire designed to capture sociodemographic characteristics, clinical presentation, predisposing factors, management, and maternal outcomes. Information was obtained through patient interviews and review of medical records in the Department of Obstetrics & Gynaecology. All data were carefully organized and maintained to ensure accuracy and completeness.

Data Analysis: All data were recorded systematically in a pre-formatted data collection form. Qualitative data were expressed as frequency distribution and percentage. Data were processed and analyzed using SPSS (Statistical Package for Social Sciences) version 16. Categorical variables were compared using the Chi-square (χ^2) test or Fisher's exact test, as appropriate. The level of significance was set at 0.05, and a p-value <0.05 was considered statistically significant. This study was ethically approved by the Institutional Review Committee of Dhaka Medical College and Hospital.

RESULTS

Table – I: Sociodemographic characteristics of the study patients (*n*=100)

Characteristics	Case (n=50)		Control (n=50)		P-value
	n	%	n	%	
Age (in years)					
≤ 24	10	20.0	22	44.0	0.005
25-34	35	70.0	19	38.0	
≥ 35	5	10.0	9	18.0	
Education					
Primary	20	40.0	22	44.0	0.975
Secondary	18	36.0	16	32.0	
Higher Secondary	10	20.0	10	20.0	
Graduate	2	4.0	2	4.0	
Employment Status					
Employed	10	20.0	15	30.0	0.248
Unemployed	40	80.0	35	70.0	
Parity					
1-3	34	68.0	45	90.0	0.006
≥4	16	32.0	5	10.0	

Table I presents the distribution of key sociodemographic characteristics among the case (n = 50) and control (n = 50) groups. Age distribution differed significantly between the groups (p = 0.005), with a higher proportion of younger participants (≤24 years) in the control group, whereas participants aged 25–34 years were more common in the case group. Educational status was comparable between cases and controls (p = 0.975), with similar proportions across primary, secondary, higher secondary, and graduate levels. Employment status also did not differ significantly (p = 0.248), with the majority in both groups being unemployed. Parity showed a statistically significant difference (p = 0.006), as most controls had parity 1–3, while higher parity (≥4) was more frequently observed among cases.

Table – II: Frequency distribution of predisposing factors of retained placenta (*n*=100)

Predisposing factors	Case (n=50)		Control (n=50)		P-value
	n	%	n	%	
Mismanagement of 3rd stage of labor	15	30.0	2	4.0	0.001
Previous uterine surgery (C/S, Myomectomy)	10	20.0	2	4.0	0.013
Preterm labor (<37 wks)	11	22.0	4	8.0	0.049
Grand multi parity (≥4)	8	16.0	1	2.0	0.015
Past H/O retained placenta	7	14.0	1	2.0	0.029
Previous MR or D&C	8	16.0	2	4.0	0.045
Placenta previa	5	10.0	0	0.0	0.028
No predisposing factors	5	10.0	36	72.0	0.001

Table II shows that mismanagement of the third stage of labor was reported in 30% of cases versus 4% of controls (p = 0.001). Previous uterine surgeries such as cesarean section or myomectomy were also more frequent among cases (20% vs. 4%, p = 0.013). Preterm labor (<37 weeks) occurred more often in cases (22%) than controls (8%) with a significant difference (p = 0.049). Grand multiparity (≥4) was observed in 16% of cases compared to 2% of controls (p = 0.015). A history of retained placenta (14% vs. 2%, p = 0.029) and previous menstrual regulation (MR) or dilation and curettage (D&C) (16% vs. 4%, p = 0.045) were also significantly higher among cases. Placenta previa was reported in 10% of cases but absent in controls (p = 0.028). Notably, 72% of controls had no identifiable predisposing factors, compared to only 10% of cases (p = 0.001).

Table – III: Distribution of Clinical presentation and associated condition among study patients (*n*=100)

Clinical presentation	Case (n=50)		Control (n=50)		P-value
	n	%	n	%	
Primary PPH (≥500ml)	25	50.0	5	10.0	0.001
Anaemia	40	80.0	2	4.0	0.001
Shock	15	30.0	0	0.0	0.001
Associated condition					
Uterine inversion	6	12.0	0	0.0	0.013
Genital tract trauma	5	10.0	4	8.0	0.500

Table III shows that primary postpartum hemorrhage (PPH ≥500 ml) was significantly more common among cases (50%) compared to controls (10%) (p = 0.001). Anaemia was also markedly higher in the case group (80%) relative to the control group (4%) (p = 0.001). Additionally, 30% of cases presented with shock, whereas no such presentations occurred among controls (p = 0.001). Regarding associated conditions, uterine inversion was identified in 12% of cases but was not observed in any control participants (p = 0.013). Genital tract trauma was reported in both groups, with similar frequencies (10% in cases vs. 8% in controls), showing no statistically significant difference (p = 0.500).

Table – IV: Frequency distribution of mode of management among case and control groups (*n*=100)

Characteristics	Case (n=50)		Control (n=50)		P-value
	n	%	n	%	
Controlled Cord Traction	10	20.0	0	0.0	0.001
Manual removal of placenta	38	76.0	0	0.0	0.001
Hysterectomy	5	10.0	0	0.0	0.028

Table IV presents the different management strategies employed for cases (n = 50) compared with controls (n = 50). Controlled cord traction was performed in 20% of cases, while none of the controls required this intervention (p = 0.001). Manual removal of the placenta was the most common management method among cases (76%), yet it was not performed in any of the control participants (p = 0.001). Hysterectomy was required in 10% of cases but was not needed in the control group (p = 0.028).

Table – V: Frequency distribution of maternal outcomes (*n*=100)

Outcome	Case (n=50)		Control (n=50)		P-value
	n	%	n	%	
Complete recovery	40	80.0	47	94.0	0.373
PPH	5	10.0	2	4.0	0.218
Puerperal sepsis	3	6.0	1	2.0	0.386
Renal failure	1	2.0	0	0.0	0.500
Maternal death	1	2.0	0	0.0	0.500

Table V outlines the maternal outcomes observed in cases and controls. Complete recovery was achieved in the majority of both groups, 80% of cases and 94% of controls, with no statistically significant difference (p = 0.373). Adverse outcomes such as postpartum hemorrhage (10% vs. 4%, p = 0.218), puerperal sepsis (6% vs. 2%, p = 0.386), and renal failure (2% vs. 0%, p = 0.500) were more frequently reported among cases, although none reached statistical significance.

Maternal death occurred in 2% of cases, with no deaths recorded in the control group (p = 0.500). Overall, unfavorable maternal outcomes were more common in the case group, though differences were not statistically significant.

Table – VI: Logistic regression analysis of predisposing/risk factors for retained placenta (*n*=100)

Predisposing/Risk factor	Adjusted OR	95%CI (Lower - Upper)	P-value
Mismanagement of 3rd stage of labor	2.80	2.91 - 35.26	0.001
Previous uterine surgery	9.20	1.86 - 65.31	0.006
Preterm labor	3.79	4.49 - 48.48	0.001
Grand multi parity	4.67	5.77 - 57.86	0.001
Past H/O retained placenta	1.21	0.00 - 0.00	0.996
Previous MR or D & C	1.10	0.00 - 0.00	0.998
Placenta Previae	1.07	0.00 - 0.00	0.999
Age ≥35 yrs	5.72	0.00 - 0.00	0.995
Constant	0.38	-	0.001

Table VI presents the results of the multivariate logistic regression analysis assessing independent risk factors for retained placenta. After adjustment, several factors remained significantly associated with increased odds of developing retained placenta. Mismanagement of the third stage of labor was associated with a 2.80-fold increase in odds (95% CI: 2.91–35.26; p = 0.001). Previous uterine surgery showed the strongest association, with women having 9.20 times higher odds of retained placenta (95% CI: 1.86–65.31; p = 0.006). Preterm labor was also a significant predictor, conferring 3.79 times higher odds (95% CI: 4.49–48.48; p = 0.001). Grand multiparity (≥4) independently increased the risk by 4.67 times (95% CI: 5.77–57.86; p = 0.001). In contrast, past history of retained placenta, previous MR or D&C, placenta previa, and maternal age ≥35 years did not show statistically significant associations with retained placenta in the adjusted model (p > 0.05). The model constant was statistically significant (p = 0.001), indicating overall model stability.

DISCUSSION

This case–control study was conducted to identify the predisposing factors, clinical presentation, management strategies, and outcomes associated with retained placenta. A total of 100 postpartum women were enrolled, comprising 50 cases with retained placenta and 50 controls without retained placenta. The findings of this study were compared with previously published literature to contextualize the results.

In the present study, the majority of cases (70%) were between 25–34 years of age, whereas most controls (44%) belonged to the ≤24-year age group. The proportion of women aged 25–34 years was significantly higher among cases (p < 0.05). Similar age distribution patterns have been reported by Salihu et al. and Al-Zirqi et al., who observed that nearly two-thirds of women with retained placenta fell within this age range [4,12]. Usta et al. also documented comparable findings, reporting that women <35 years comprised 50% of the case group and 78.5% of the control group [13].

Educational status and employment patterns revealed no major distinctions between groups, with most women having primary or secondary education and being unemployed. Parity, however, showed a significant association with retained placenta. In this study, higher parity (≥4) was significantly more common among cases (32%) compared with controls (10%) (p < 0.05). This finding aligns with those of Adelusi et al., who reported significantly higher parity (≥5) among cases (25.4%) compared with controls (9.5%) [11]. Comparable observations were also documented by Salihu et al., Usta et al., and Al-Zirqi et al., supporting the current study results [4,12,13].

Clinical presentation differed markedly between the groups. Primary PPH (≥500 ml) occurred in 50% of cases compared with 10% of controls, while anemia was reported in 80% of cases versus only 4% of controls. Shock occurred in 30% of case patients but in none of the controls. Uterine inversion was noted in 12% of cases. These findings were statistically significant and consistent with previous reports. Etuk and Asuquo recorded postpartum hemorrhage rates of 25.8% in cases and 0.8% in controls [3], while Al-Zirqi et al. similarly reported increased risk of severe PPH among women with retained placenta [4].

A range of predisposing factors was found to be significantly associated with retained placenta in this study. Mismanagement of the third stage of labor (30% vs. 4%), previous uterine surgery (20% vs. 4%), preterm labor (22% vs. 8%), grand multiparity (16% vs. 2%), prior retained placenta (14% vs. 2%), previous MR/D&C (16% vs. 4%), and placenta previa (10% vs. 0%) all occurred more frequently among cases. These findings are consistent with those of Adelusi et al., who reported significantly higher rates of previous D&C and prior retained placenta among cases [11]. Tandberg et al. also demonstrated that retained placental fragments were significantly more common in cases (3%) compared with controls (0.4%) [14]. Similar associations were reported by Al-Zirqi et al., Silver et al., MacLeod and Rhode, and Kamani et al., further supporting the present results [2,4,15,16].

Management practices in this study showed that controlled cord traction was performed in 20% of cases, manual removal of the placenta in 76%, and hysterectomy in 10%. None of these interventions were required in the control group. These differences were statistically significant. Carroli et al. reported manual removal in 11% of women with retained placenta [17], while Silver et al. documented hysterectomy in 8.9% of their cases, which is comparable to the current findings [15].

Maternal outcomes in this study showed that although complete recovery was achieved in most cases (80%), adverse outcomes such as PPH, puerperal sepsis, renal failure, and maternal death occurred more frequently in cases than controls, though not statistically significant. Similar complication rates were reported by MacLeod and Rhode, who observed a puerperal sepsis rate of 9.2%, and by Silver et al., who noted a maternal mortality rate of 0.19% in women with retained placenta [2,15]. Carroli et al. also recorded PPH in 5% of their study patients, supporting the current study findings [17].

Multivariate logistic regression in this study identified several significant predictors of retained placenta: mismanagement of the third stage of labor (AOR 2.80), previous uterine surgery (AOR 9.20), preterm labor (AOR 3.79), and grand multiparity (AOR 4.67). Similar associations were documented by Owolabi et al., who reported strong associations for previous retained placenta, previous cesarean section, grand multiparity, and preterm delivery [6]. Salihu et al. also found placenta previa and multiparity to be significant predictors, consistent with the present findings [15].

Overall, this study demonstrates that retained placenta is strongly associated with identifiable and often preventable obstetric risk factors. Enhancing antenatal care, ensuring skilled management of the third stage of labor, and early recognition of high-risk women can play a crucial role in reducing the incidence and complications associated with retained placenta.

Limitations of the Study
This study was a single-center study. The study took a small sample size due to the short study period. Long-term follow-up of the patients was not conducted, and potential long-term complications or other interfering factors could not be assessed.

CONCLUSION
This study identified several important clinical and obstetric predictors of retained placenta. Mismanagement of the third stage of labor, previous uterine surgery, preterm labor, and grand multiparity emerged as significant independent risk factors. Clinical presentations such as primary PPH, anemia, shock, and uterine inversion were more commonly observed among affected women, highlighting the acute nature of this obstetric emergency. Although adverse maternal outcomes, including postpartum hemorrhage, puerperal sepsis, renal failure, and maternal death were more frequent in the case group, these differences were not statistically significant. Overall, the findings underscore the importance of early recognition and timely intervention to minimize the burden of morbidity associated with retained placenta.

RECOMMENDATIONS
Further multicenter studies are recommended to validate these findings and explore additional biological or clinical factors contributing to retained placenta. Early recognition of risk factors and proper management of the third stage of labor are crucial to reducing its incidence and associated maternal mortality. Active Management of the Third Stage of Labor (AMTSL) should be implemented routinely unless contraindicated. Moreover, traditional birth attendants (TBAs) should receive structured training in AMTSL, and national programs should prioritize expanding and strengthening such initiatives to ensure safer deliveries.

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