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Frequency of Retained Placenta and Common Factors Leading to it Among Patients Presenting with Post-Partum Hemorrhage

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ABSTRACT

Background: Retained placenta refers to a situation where placenta takes longer than normal to be delivered from the uterus, thereby posing risks of complications like bleeding. This condition has been considered a major cause of severe bleeding in mothers. There are various factors that contribute to this condition, including being a preterm delivery, unbooked, and a grand multipara. **Objective:** To determine the frequency of retained placenta and identify common factors leading to its occurrence among patients presenting with postpartum hemorrhage. **Study Design:** Cross-sectional study. **Duration and Place of Study:** This study was conducted from January 1, 2023, to July 1, 2023 at the Obstetrics and Gynecology Department of Khyber Teaching Hospital, Peshawar. **Methodology:** A total of 246 female patients, aged 25-50 years, presenting with postpartum hemorrhage were included in the study. Data on demographic details, antenatal care, prior pregnancies, mode of delivery, and potential risk factors for retained placenta were collected. The frequency of retained placenta and factors such as preterm delivery, unbooked status, grand multiparity, previous dilation and curettage, and previous cesarean section were assessed. Statistical analysis was performed using SPSS version 25, and chi-square tests were applied for association analysis ($p \leq 0.05$). **Results:** Out of 246 patients, 37 (15.00%) had retained placenta. The most common risk factors were preterm delivery (78.40%), unbooked status (62.20%), and grand multiparity (56.80%). Statistically significant associations were observed between retained placenta and maternal age ≤30 years ($p = 0.005$) and parity >2 ($p = 0.006$). **Conclusion:** Retained placenta is a significant contributor to postpartum hemorrhage in the studied population. Preterm delivery, unbooked status, and grand multiparity were identified as the most common factors leading to retained placenta.

INTRODUCTION

Retained placenta refers to a situation where the placenta takes longer to be expelled from the uterus.[1] This usually takes place when the mother has given birth, and this should immediately follow.[1] However, when it stays in the uterus, it results in complications such as infection, bleeding, and even death if immediate action is not taken.[2] A retained placenta can also be diagnosed when it has not been expelled from the uterus 30 minutes after giving birth, though this can take a longer period.[3] The common cause of a retained placenta occurs when there is no separation of the placenta from the side of the uterus.[4] This takes longer, resulting in the placenta being stuck. This can be removed through manual processes, while in other cases, surgery has to be done.[5]

There are a number of conditions that can contribute to retained placenta, with lack of booking being among the most common.[6] This takes place in women who are not involved in antenatal care. Being in antenatal care ensures that the placenta has been monitored, hence a reduced chance of retention.[7] Also, placental weight plays a part in retained placenta. Placental insufficiency, which can result from a placental weight of < 500g, can lead to placental retention.[8] Also, women with a history of a previous dilatation and curettage are prone to placental retention.[9] This medical operation takes place in women, where their uterine lining has to be scraped. This usually results in a patient developing scars, which cause difficulty in detachment of the placenta. Also, placental retention can take place due to delivery of a baby prematurely.[10] This usually results in a placenta that has insufficient development, hence a difficulty in detachment from the uterus.[11]

Other risk factors include grand multiparity which refers to women who have had many previous pregnancies.[12] These women may experience changes in the structure and function of their uterus, making it more difficult for the placenta to detach.[13] Additionally, a history of previous retained placenta increases the risk of recurrence in subsequent pregnancies, as the body may

not properly expel the placenta.[14] Previous cesarean section is another contributing factor, as it can lead to scarring on the uterine wall, making placental separation more challenging.[15]

In previous study frequency of retained placenta in PPH was 20%. Common risk factors of retained placenta in PPH were un-booked in 25%, low placental weight in 30%, grand multiparity in 30%, preterm delivery in 35%, previous dilatation and curettage in 22% and 13% had previous caesarean section.[16]

This study has particular significance in being carried out in Peshawar, as many women in this area experience complications in childbirth, including placenta retention. The absence of appropriate antenatal care and hospital infrastructure in certain areas further complicates conditions, making such complications common. Having knowledge of certain factors that lead to placenta retention will help us better prepare for and provide support to pregnant women. Furthermore, this study will also increase awareness among the population in this area about complications associated with childbirth and antenatal care, which in many cases can be avoided. This study needs to be carried out in Peshawar to know certain factors that impact women in this area.

METHODOLOGY

This was cross-sectional study carried out from January 1, 2023, to July 1, 2023, at the Obstetrics and Gynecology Department of Khyber Teaching Hospital Peshawar. The study involved a sample size of 246, calculated using the WHO calculator, with a 95% confidence interval, a 5% margin of error, and a 20% frequency of retained placenta based on a previous study.[16] Non-probability consecutive sampling method was used to select patients. Inclusion criteria included females aged between 25 and 50 years, who had postpartum hemorrhage as per the operational definition. Exclusion criteria included cases of retained placenta due to congenital uterine anomalies detected on ultrasound, cervical or vaginal tears found during clinical examination, bleeding disorders in the patient's medical history, and a history of anticoagulant use such as Disprin or Clopidogrel.

After obtaining approval from the hospital's ethical committee, female patients presenting with postpartum hemorrhage who met the inclusion and exclusion criteria were recruited from the labor room at Khyber Teaching Hospital. Written informed consent was obtained from all participants. Demographic details such as age and gestational age were recorded, and a detailed history was taken, including information on prenatal visits, previous pregnancies, and any prior dilation and curettage procedures. The mode of delivery in the current and past pregnancies was also noted. Clinical and vaginal examinations were performed. The patients were treated according to the hospital's protocols, with blood transfusions provided for those in hypovolemic shock. The frequency of retained placenta was observed in all participants. The study also recorded the common factors leading to retained placenta, based on the operational definitions. These factors were unbooked status (lack of antenatal visits), grand multiparity (having five or more pregnancies), preterm delivery (birth before 37 weeks), previous history of dilation and curettage and previous caesarian section.

Data was entered and analyzed using SPSS version 25. The mean and standard deviation were calculated for quantitative variables like age and gestational age. For categorical variables such as retained placenta and the common factors (unbooked status, placental weight less than 500g, previous dilation and curettage, preterm delivery, grand multiparity, previous retained placenta, and previous caesarian section) frequency and percentages were calculated. Data was also stratified by age, gravity, and parity to assess potential effect modifications. Post-stratification chi-square tests were performed and a p-value of ≤0.05 was considered statistically significant.

RESULTS

The patient demographics revealed that the mean age of participants was 33.94 ± 7.87 years, with mean gravida of 4.22 ± 2.32 and mean parity of 3.74 ± 2.39 (as shown in Table-I).

Table I

Patient Demographics

Demographics	Mean ± SD
Age (years)	33.94 ± 7.87
Gravida	4.22 ± 2.32
Parity	3.74 ± 2.39

When analyzing the frequency of retained placenta among patients who was presenting with post-partum hemorrhage, it was found that 37 patients (15.00%) had retained placenta while 209 patients (85.00%) did not have this condition out of total 246 patients (as shown in Table-II).

Table II

Frequency of Retained Placenta Among Patients Presenting with Post-Partum Hemorrhage

Retained Placenta	Frequency	% age
Yes	37	15.00%
No	209	85.00%
Total	246	100%

Regarding the common factors which was leading to retained placenta among patients presenting with post-partum hemorrhage, preterm delivery was the most frequent factor, affecting 29 patients (78.40%), followed by unbooked status in 23 patients (62.20%). Grand multiparity was observed in 21 patients (56.80%), while previous dilatation and curettage was present in 17 patients (45.90%). Previous caesarian section was the least common factor, occurring in 9 patients (24.30%) (as shown in Table-III).

Table III

Frequency of Common Factors Leading to Retained Placenta Among Patients Presenting with Post-Partum Hemorrhage

Factors	Frequency	% age
Unbooked Status	23	62.20%
Grand Multiparity	21	56.80%
Preterm Delivery	29	78.40%
Previous Dilatation and Curettage	17	45.90%
Previous Caesarian Section	9	24.30%

The association of retained placenta with demographic factors demonstrated that among patients aged ≤30 years,

27 (21.3%) had retained placenta compared to 100 (78.7%) without retained placenta, whereas in patients aged >30 years, only 10 (8.4%) had retained placenta and 109 (91.6%) did not have it, which was statistically significant (p-value = 0.005). For gravida, patients with ≤3 gravida showed 13 (10.9%) with retained placenta and 106 (89.1%) without it, while those with >3 gravida had 24 (18.9%) with retained placenta and 103 (81.1%) without it, though this association was not statistically significant (p-value = 0.080). In terms of parity, patients with ≤2 parity demonstrated 7 (7.2%) with retained placenta and 90 (92.8%) without it, whereas patients with >2 parity showed 30 (20.1%) with retained placenta and 119 (79.9%) without it, which was statistically significant (p-value = 0.006) (as shown in Table-IV).

Table IV

Association of Retained Placenta with Demographic Factors

Demographic Factors		Retained Placenta		p-value
		Yes n(%)	No n(%)	
Age (years)	≤30	27 (21.3%)	100 (78.7%)	0.005
	>30	10 (8.4%)	109 (91.6%)	
Gravida	≤3	13 (10.9%)	106 (89.1%)	0.080
	>3	24 (18.9%)	103 (81.1%)	
Parity	≤2	7 (7.2%)	90 (92.8%)	0.006
	>2	30 (20.1%)	119 (79.9%)	

DISCUSSION

The frequency of retained placenta in current study was found to be 15.00% (n=37) among patients with post-partum hemorrhage. This frequency can be explained by the fact that retained placenta occurs when the placental tissue fails to separate completely from uterine wall within normal time period, which is often associated with abnormal placental attachment or uterine atony. The incomplete separation leads to continued bleeding and represents significant cause of maternal morbidity. Preterm delivery was identified as most common factor, affecting 78.40% (n=29) of patients with retained placenta. This high association is due to the fact that in preterm deliveries, the placental attachment is often more firm and the lower segment of uterus may not be fully developed, making placental separation difficult. Additionally, preterm labor may be associated with infection or inflammation which can affects the normal separation process. Unbooked status was present in 62.20% (n=23) of cases. Patients with unbooked status usually lacks proper antenatal care and screening, which means underlying risk factors remains undetected. These patients often presents late to hospital and may have complications that was not managed properly during pregnancy, increasing the risk of abnormal placental adherence.

The frequency of retained placenta in present study was 15.00% (n=37) among patients presenting with post-partum hemorrhage. This finding is comparable with Munir *et al.* [17] who reported 10% retained placenta among PPH cases in Lahore tertiary care hospital, though their overall PPH frequency was higher at 18.6%. However, the current frequency is lower than Abrar *et al.* [16] who found 20.0% retained placenta among 295 PPH cases in Peshawar and Shams *et al.* [18] who reported 20.1% in Karachi despite active management of third stage. The variation in frequencies may be attributed to differences in patient population, referral patterns and management protocols across different healthcare settings. In contrast, Obajimi *et al.* [19] documented much lower incidence of 2.13% in Ibadan over five years period, which represents general obstetric population rather than only PPH cases, explaining the lower rate.

Preterm delivery was most common factor affecting 78.40% (n=29) of retained placenta cases in current study. This is consistent with findings of Shams *et al.* [18] who reported highest rate of retained placenta at ≤37 weeks gestation (26.1% vs 5.5% at term, p=0.001) and Obajimi *et al.* [19] where mean gestational age was 34.3 ± 6.0 weeks with 56.7% preterm deliveries. Cohen *et al.*[20] also identified prematurity <37 weeks as independent factor (aOR 1.63, CI 1.13-2.35) in primigravidae. The systematic review by Favilli *et al.* [21] reported pre-term birth as strong predictor with OR ranging 3.8-20.8 across studies. These consistent findings across different populations confirms that preterm delivery significantly increases risk of retained placenta due to incomplete development of placental separation mechanism. Unbooked status was present in 62.20% (n=23) of retained placenta cases in present study. This is supported by Abrar *et al.* [16] who found 25% unbooked status among retained placenta cases and Munir *et al.* [17] who reported 74.8% un-booked patients in their PPH cohort. Similarly, Gani & Ali [22] documented that 82.7% delivered at home with 58.7% by traditional birth attendants in Khyber Agency, reflecting poor access to skilled care. The high proportion of unbooked patients suggests that lack of antenatal care and late presentation to hospital are important contributing factors, as these patients lacks proper screening and timely intervention.

Grand multiparity was observed in 56.80% (n=21) of retained placenta cases in current study. This finding is in agreement with Abrar *et al.* [16] who reported 30% grand-multipara among retained placenta cases and Shams *et al.* [18] who found higher rate in grand-multipara (31.6% vs 15.4% in multipara, p=0.035). Habib *et al.* [23] also identified grand-multiparity as principal driver with 30.2% grand-multipara in their cohort. However, these frequencies are lower than current study, possibly due to different definitions of grand multiparity or variations in population characteristics. Previous dilatation and curettage was present in 45.90% (n=17) of cases in present study, which is considerably higher than Obajimi *et al.* [19] who reported 31% prior D&C, Abrar *et al.* [16] with 22%, and Habib *et al.* [23] with 23.9%. The systematic review by Favilli *et al.* [21] identified previous D&C as strongest predictor with OR 12.8 (CI 10.6-15.5), confirming its significant role. Gul *et al.* [24] found 21.3% history of curettage among placenta praevia patients. The higher frequency in present study may reflects increased number of previous pregnancy terminations or miscarriages in study population, which causes endometrial damage and abnormal placental attachment. Previous caesarian section was found in

24.30% (n=9) of retained placenta cases in present study. This is comparable with Obajimi *et al.* [19] who reported 15.5% prior Caesarean and Abrar *et al.* [16] with 13%. However, Shams *et al.* [18] documented higher rate with previous Caesarean showing 28% retained placenta versus 14% without scar (p=0.005). Favilli *et al.* [21] reported previous Caesarean section as strong independent predictor (OR 8.8, CI 8.35-9.31) in their systematic review. The association is explained by uterine scarring which disrupts normal placental implantation and separation process.

The present study found statistically significant association between younger age ≤30 years and retained placenta (21.3%, n=27, p=0.005), which contradicts with Cohen *et al.* [20] who identified maternal age >30 years as independent risk factor (aOR 1.55, CI 1.27-1.90) in primigravidae and Favilli *et al.* [21] who reported maternal age ≥35 years as strong predictor. This difference may be due to different age cut-offs used, population characteristics or parity distribution, as current study included multipara while Cohen *et al.* studied only primigravidae. The mean age in present study was 33.94 ± 7.87 years, which is comparable with Abrar *et al.* [16] (32 ± 1.2 years), Habib *et al.* [23] (32.2 ± 1.2 years) and Gul *et al.* [24] (34 ± 8.9 years). The present study has several limitations that should be acknowledged. First, this was single center study conducted at one tertiary care hospital, which may limits the generalizability of findings to other healthcare settings or populations. The sample size was relatively small with only 246 patients, which may affects the statistical power to detect all significant associations. Additionally, being cross-sectional study, it cannot establishes causal relationships between risk factors and retained placenta. The study also relied on hospital records which may have incomplete documentation of some variables.

CONCLUSION

Our study has concluded that retained placenta is significant contributor to post-partum hemorrhage in our setting. Preterm delivery, unbooked status, and grand multiparity was identified as most common factors leading to retained placenta. Younger maternal age and higher parity showed statistically significant associations with retained placenta. These findings highlights the importance of proper antenatal care and booking status in preventing retained placenta and its complications.

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