

BALLOON TAMPONADE FOR REFRACTORY MANAGEMENT OF POSTPARTUM HAEMMORRHAGE AT LADY READING HOSPITAL PESHAWAR

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Abstract: *This study aimed to determine the effectiveness of balloon tamponade in managing postpartum hemorrhage in women who were delivered at Lady Reading Hospital in Peshawar. A descriptive study was conducted from September 2022 to September 2023 in the gynecology ward of Lady Reading Hospital. The study included females aged 18 to 40 years who experienced PPH after delivery and were either primigravida or multigravida. The effectiveness of balloon tamponade was evaluated. The mean age of the participants was 28.75±6.30 years, and the mean gestation age was 37.40±3.06 weeks. The most common cause of PPH was an atonic uterus. The study found that balloon tamponade was effective in 89.8% of cases. The study concludes that balloon tamponade is effective in managing postpartum hemorrhage in 89.8% of cases.*

Keywords: Postpartum hemorrhage, Balloon Tamponade, Efficacy, Pregnancy

Introduction

Postpartum hemorrhage (PPH) is the term used to describe severe bleeding that occurs within the first 24 hours after giving birth (Bienstock et al., 2021). This condition continues to be a severe problem in maternal healthcare and is a significant contributor to maternal illness and death worldwide. Although several therapies have been used to tackle PPH, situations where traditional management tactics fail require creative and novel solutions (Gyamfi-Bannerman et al., 2018; Reale et al., 2020). Within this particular framework, the utilization of balloon tamponade has surfaced as an innovative method, providing a less invasive but remarkably efficient approach to halt life-threatening postpartum hemorrhage (Khan and Basharat, 2018; Mishra et al., 2019).

Postpartum hemorrhage constitutes the primary contributor to maternal death and is responsible for a significant number of fatalities during childbirth, especially in settings with limited resources (Nigussie et al., 2022). Although there have been improvements in obstetric care, PPH remains a substantial risk to the health of mothers. Traditional approaches to controlling PPH involve techniques such as uterine massage, the use of pharmaceutical agents such as oxytocin, and, in severe instances, surgical treatments such as uterine artery ligation or hysterectomy (Drew and Carvalho, 2021; Muñoz et al., 2019).

Balloon tamponade entails the placement of a balloon apparatus into the uterine cavity, which is subsequently inflated to apply pressure on the uterine walls, effectively managing hemorrhaging (Purandare et al., 2022). An essential benefit of balloon tamponade is its non-surgical nature, which makes it a desirable choice when surgical procedures carry higher risks or are less practical (Yu et al., 2020). This method is especially beneficial in places with low resources, where access to complete obstetric care might be restricted. The straightforwardness and user-friendliness render it an appealing choice for healthcare

providers of varying proficiency levels (Joshi et al., 2021). Anderson et al. demonstrated a reduction in the occurrence of hysterectomy following the implementation of the Barki balloon. The incidence of postpartum hemorrhage decreased from 7.8 per 10,000 deliveries before the trial to 2.3 per 10,000 deliveries (Lo et al., 2017). Additionally, the study indicated that all 23 patients responded entirely to the use of a condom catheter within 15 minutes (Sayeba Akhter et al., 2003).

Although balloon tamponade has demonstrated significant potential, it is crucial to recognize its limitations and the ongoing areas of investigation. As we explore the use of balloon tamponade to treat postpartum hemorrhage that does not respond to other treatments, it becomes clear that this approach is a significant step toward improving the health outcomes of mothers. By collaboratively improving and broadening its usage, balloon tamponade can save numerous lives and revolutionize the field of postpartum hemorrhage therapy globally. The rationale of my study is to use balloon tamponade in controlling severe hemorrhage, which is refractory to the initial first line of treatment, and reduce surgical interventions and maternal morbidity and mortality.

Methodology

This descriptive study was conducted with the consent of the hospital's ethical and research council from September 2022 to September 2023 at the gynecology ward of Lady Reading Hospital, Peshawar. The study encompassed all female individuals who sought medical care at the outpatient department of the Lady Reading facility in Peshawar and subsequently gave birth at the same facility. Following the delivery, they encountered primary postpartum hemorrhage and exhibited resistance to the aggressive management of the third stage of labor, which involved the administration of uterotonics. The inclusion

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criteria for the study were females aged 18 to 40 years primigravidas and multigravidas with PPH. Patients with a previous history of placenta abruption, uterine anomalies, and preterm birth were excluded. Patients were diagnosed with postpartum hemorrhage (PPH) by assessing the amount of blood loss using a pre-weighed pad. If the bleeding exceeded 500ml, they were classified as having PPH.

To improve patient management and avoid the need for surgery, balloon tamponade was administered to them. The object (condom catheter) was filled with water ranging from 250ml to 300ml, and their behavior was monitored for 24 hours. After this period, the balloon tamponade was deflated to determine if the patients showed a positive response to the intervention or if bleeding continued, requiring additional surgical procedures. The participants were provided with an explanation of the study's objectives and advantages, and a questionnaire was administered at the end of the study. The sample was calculated using openepi, taking the previous proportion of efficacy of 80%, margin of error of 5%, confidence interval of 95%, and sample size of 246.

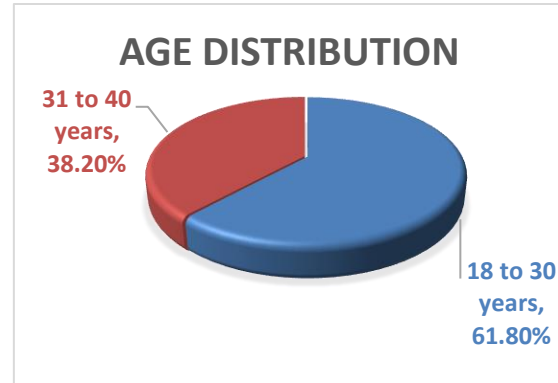
The data on the patients was documented on a predetermined proforma.

All the data was analyzed using SPSS 20. The chi-Square test was applied, keeping a P value < 0.05 as significant.

Results

Two hundred and sixty-four patients were included in this study. The mean age recorded was 28.75±6.30 years. The mean gestational age was 37.40±3.06 weeks, while the mean parity was 3.52±1.34. Figure 1 displays the age distribution of the patients. The frequency of patients having parity 1 to 3 was 42.7%, while 57.3% had parity > 3. Regarding the etiology of PPH, the atonic uterus accounted for 68.3%, and genital tract trauma accounted for 31.7%. In

our study, 8.5% of patients had previous history of PPH. The balloon tamponade was effective in 89.8% of patients and failed in 10.2% of patients. When stratified with age, gestational age, and parity, the efficacy of balloon



tamponade did not yield any notable association.

Figure 1 Age distribution

Table 1: Etiology of PPH

Etiology of PPH	Frequency	Percent
Atonic uterus	168	68.3
Genital tract trauma	78	31.7
Total	246	100.0

Table 2: Efficacy of balloon tamponade

Efficacy	Frequency	Percent
Yes	221	89.8
No	25	10.2
Total	246	100.0

Table 3: Stratification of efficacy with various parameters

Parameters		Efficacy				P value
		Yes		No		
		N	%	N	%	
Age distribution	18 to 30 years	138	62.4%	14	56.0%	0.53
	31 to 40 years	83	37.6%	11	44.0%	
Gestational age (Weeks)	31 to 37 weeks	85	38.5%	11	44.0%	0.59
	> 37 weeks	136	61.5%	14	56.0%	
Parity distribution	1 to 3	96	43.4%	9	36.0%	0.47
	> 3	125	56.6%	16	64.0%	

Discussion

Postpartum hemorrhage (PPH) is a leading cause of maternal death in low-income countries, responsible for almost 25% of all maternal fatalities worldwide. Every year, PPH causes 140,000 deaths, indicating that a woman dies from this ailment every four minutes (Landy et al., 2011). Based on the Pakistan Demographic and Health Survey (PDHS 2006-07), postpartum hemorrhage (PPH) accounts for 27.2% of maternal fatalities in Pakistan. The leading causes of postpartum hemorrhage are uterine atony, retained placenta, and vaginal lacerations. The significant ramifications of major postpartum hemorrhage include hypovolemic shock, disseminated intravascular coagulation

(DIC), hepatic dysfunction, acute respiratory distress syndrome, and renal failure. PPH survivors encounter profound anemia, with around 12% enduring its eight correlated outcomes (Sheikh et al., 2011). PPH, being an opportunistic menace, appears unpredictably, affecting every patient negatively without exception. Due to the swift and rapid development of PPH, it is crucial to provide high-quality healthcare services to prevent the related risks of death and illness. The therapy of primary postpartum hemorrhage (PPH) depends on the identification of risk factors and the likely etiology. Uterine atony, which accounts for 90% of cases, is the leading cause of severe postpartum hemorrhage (Bibi et al., 2007). When uterotonic medicines fail to manage sizeable postpartum hemorrhage

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(PPH) effectively, different approaches have been investigated to avoid the need for a hysterectomy. Uterine tamponade is an effective method for reducing bleeding caused by uterine atony. Procedures like uterine artery ligation or B-Lynch suture are used to avoid the necessity for a hysterectomy. The use of intrauterine tamponade, specifically with a Sengstaken Blakmore tube, is being more frequently documented as a straightforward, cost-efficient, and easily accessible method for treating life-threatening postpartum hemorrhage (PPH). The success rates of tamponade procedures in controlling postpartum hemorrhage (PPH) vary between 70% and 100% based on various reports (Munir et al., 2015).

We conducted our study on 246 patients. The mean age of our patients was 28.75 years, with a standard deviation of 6.30. Most of the patients fell in the age group of 18 to 30 years. Atonic uterus was the most common etiology of PPH in our investigation, followed by genital tract trauma. A study¹⁹ showed that the atonic uterus was the most common etiology of PPH, accounting for 65.67%, while our results demonstrated the atonic uterus in 61% of patients. Another study reported genital tract trauma as the second leading cause of PPH in their study (Begam et al., 2021), which was also similar to our findings of 25.2%.

Balloon tamponade was successful in 89.8% of patients in our study, while the procedure failed in 10.2%. We noticed that the efficacy of balloon tamponade was not notably associated with age, parity, and gestational age. A study conducted in Pakistan reported that balloon tamponade was effective in 88.8% of patients with PPH (Akhtar et al., 2020). The aforementioned study (Begam et al., 2021), also conducted in Pakistan, reported the efficacy of balloon tamponade at 95.83% in PPH patients.

Our study has a couple of limitations: first, it was conducted in a single setup, which may not represent the entire population, and secondly, we assume the sample size was small. More studies should be conducted across different setups with larger populations to identify further options for the management of PPH.

Conclusion

In conclusion, balloon tamponade was effective in 89.8% of patients with PPH in our study; it is a low-cost and effective technique for controlling primary postpartum hemorrhage. We recommend using balloon tamponade before any surgical management of PPH.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

Consent for publication

Approved

Funding

Not applicable

Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

SHAHIDA SULTAN

Coordination of collaborative efforts.

Data entry and Data analysis, drafting article

Data acquisition, analysis.

Coordination of collaborative efforts

SAMINA ALIYA SABIR

Conception of Study, Development of Research Methodology Design, Study Design,, Review of manuscript, final approval of manuscript

Manuscript revisions, critical input.

Coordination of collaborative efforts.

Data acquisition, analysis.

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