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EFFECTIVENESS OF UTERINE BALLOON TAMPONADE IN MANAGEMENT OF PRIMARY POSTPARTUM HEMORRHAGE

Nadia Rani[1], Nilofar[1], Arifa[1], Sarwat Irfan[2], Samra[1], Umaiyma farhad[3], Muhammad Izhar[4]

[1]Department of Gynecology and Obstetrics, Gajju Khan Medical College Swabi
[2]Government Maternity Hospital Peshawar
[3]Hayat Abad Medical Complex Peshawar
[4]Institute of Kidney Diseases Peshawar

ABSTRACT

Objectives: *To determine the effectiveness of uterine balloon tamponade in the management of primary post partum hemorrhage.*

Materials and Methods: *This cross sectional descriptive study was conducted in Tehsil Headquarter Hospital Swabi from 1st May 2023 to 31st October 2023. A total of 177 women presenting with primary PPH regardless of parity were included in the study. All were treated with standard protocols for PPH treatment .The balloon was removed 12 hours after its insertion to determine the effectiveness in terms of less than 100 ml loss of blood .Slow deflation of balloon tamponade with simultaneous monitoring for resumption of bleeding.*

Results: *Mean age of the patients were 28.497±2.43 years, gravidity 2.638±1.19, parity 1.638±1.19, gestational age 38.689±1.12 and mean BMI was 26.1±1.35 Kg/m2. Uterine atony was the cause of PPH in 78.6%. Those who underwent normal vaginal delivery were 66.1% while 33.9% underwent C-section. Out of the total 177 cases, uterine balloon tamponade was effective in 129 cases (72.9%) with a statistically significant difference of 0.001 in combine spontaneous or induced labor.*

Conclusion: *The intended study concludes that balloon tamponade is a successful and reliable approach in addressing PPH. This method effectively aids in controlling excessive bleeding following delivery, highlighting its significance as aeffective treatment option in managing PPH.*

Key words: *Pregnancy, post partum hemorrhage, Uterine balloon tamponade, Effectiveness*

INTRODUCTION

Postpartum hemorrhage (PPH) is a significant contributor to maternal mortality and morbidity on a global scale. Annually, approximately 600,000 to 800,000 women lose their lives due to PPH, with 99% of these tragedies occurring in developing countries[1]. In these regions, PPH accounts for 25% of maternal deaths, rising to 34% in countries like Pakistan[2]. Primary PPH is characterized by excessive bleeding from the genital tract, surpassing 500 ml after vaginal delivery or 1000 ml after a cesarean section (CS) within 24 hours. The primary cause, responsible for 80% of cases, is uterine atony, although other factors such as retained placental tissues, uterine rupture, genital tract trauma, uterine inversion, and coagulopathy can also contribute[3]. Early identification and prevention of PPH necessitate the recognition of pre-delivery risk factors, including antepartum and intrapartum conditions such as previous PPH history, multiple pregnancies, fetal macrosomia, primigravida, grand multiparity, advanced maternal age, preterm births, genital tract injuries, lack of oxytocin use for PPH prevention, labor induction, cesarean delivery, and intrauterine fetal demise[4]. However, 20% of cases occur without identifiable risk factors, underscoring the need for readiness to manage PPH in all deliveries[5]. Initial

Correspondence:
Nilofar
Demonstrator,
Gajju Khan Medical College Swabi
Email: drnilofar1992@gmail.com

management involves medical interventions such as uterotonic drugs (e.g., oxytocin, prostaglandin) and uterine massage. In cases where first-line treatments fail, recommendations typically involve intrauterine balloon placement and/or invasive therapies. Intrauterine tamponade is increasingly favored as a second-line therapy, often obviating the need for further surgical intervention[6,7]. Surgical options, including uterine compressive sutures, vascular ligation, and arterial embolization, aim to avert hysterectomy and exhibit comparable effectiveness rates of approximately 60-80%[8]. Uterine balloon tamponade (UBT) emerges as a minimally invasive and swift option in the therapeutic arsenal for PPH, with success rates similar to embolization, B-Lynch suture, or stepwise uterine devascularization, as suggested by recent reviews[9]. The tamponade test serves as the primary surgical management, where a positive outcome effectively controls PPH post-inflation, while a negative result indicates potential bleeding from cervix laceration. Failure to stop bleeding via intrauterine balloon tamponade in uterine atony needs immediate surgical exploration. Primary postpartum hemorrhage: it well be defined as blood loss > 500 ml within the first 24 hours after delivery. Effectiveness: The effectiveness was determined by less than 100ml of blood loss within 12 hours of uterine balloon insertion. To determine the effectiveness of uterine balloon tamponade in the managing primary post partum hemorrhage.

MATERIALS AND METHODS

This cross sectional descriptive study was conducted in Tehsil Headquarter hospital Swabi from 1st May 2023 to 31st october 2023. A total of 177 women presenting with primary PPH after NVD or C-Section regardless of parity were included in the study. All the women were managed with other standard protocols for PPH treatment like monitoring of blood pressure, pulse and fluid replacements. The balloon was removed 12 hours after its insertion to determine the effectiveness in terms less than 100 ml loss of blood .Slow deflation of balloon tamponade with simultaneous monitoring for resumption of bleeding.

RESULT

Mean age of the patients were 28.497±2.43 years, gravidity 2.638±1.19, parity 1.638±1.19, gestational age 38.689±1.12 and mean BMI was 26.1±1.35 Kg/m2. Uterine atony was the cause of PPH in 78.6% (Table 02). 66.1% underwent normal vaginal delivery while 33.9% underwent C-section (Table 03). Out of the total 177 cases, uterine balloon tamponade was effective in 129 cases (72.9%) with a statistically significant difference of 0.001 in combine spontaneous or induced labor.

DISCUSSION

Uncontrolled postpartum hemorrhage stands as the leading cause of maternal deaths and health issues globally. The World Health Organization (WHO)

Table 2: Mode. of Delivery

Mode of Delivery	Frequency	%age	p-value
NVD	117	66.1%	0.650
C-section	60	33.9%	
Total	177	100%	

Table 1: Causes of PPH

Causes of PPH		Effectiveness		p-value
		Yes	No	
Uterine Atony	18	22 (78.6%)	6 (21.4%)	0.683
Prolonged Labour	49	34 (69.4%)	15 (30.6%)	
Others	100	73 (73%)	27 (27%)	
Total	177	129 (72.9%)	48 (27.1%)	

Table 3: Gestational age (weeks)

Gestational age (weeks)	Effectiveness		p-value
	Yes	No	
37-39	102(72.3%)	39(27.7%)	0.749
>39	27(75%)	9(25%)	
Total	129(72.9%)	48(27.1%)	

Table 4: Effectiveness of balloon tamponade

Induced or spontaneous labour	Effectiveness		p-value
	Yes	No	
Induced	45(75%)	15(25%)	0.001
Spontaneous	84(71.8%)	33(28.2%)	
Total	129(72.9%)	48(27.1%)	

supports the use of uterine balloon tamponade as a non-surgical approach to address PPH cases unresponsive to standard treatments. Most of women experiencing PPH are effectively treated solely with uterotonic medications and uterine balloon tamponade. As per findings from the UK Obstetric Surveillance System (UKOSS) study, about a quarter of women underwent uterine balloon tamponade before resorting to additional second-line interventions[10]. In the current study 139 (78%) patients fell within the gestational age range of 37-39 weeks, while 48 (27%) belonged to the age group greater than 39 weeks (Table 02). Similarly, Georgiou C's 2009 study indicated a prevalent occurrence of PPH among individuals aged 21-25 years (40.54%). Another research documented that among their 58 subjects who underwent uterine balloon tamponade, 27 (46.5%) delivered vaginally and 31 (53.5%) underwent cesarean section. In contrast, in this particular series, 66.1% of women delivered vaginally, while 33.9% underwent instrumental delivery[11]. In this study effectiveness using balloon tamponade is seen in 72.9% patients, while Zafar S A et al reported the use of the balloon tamponade was successful in 73 patients among 80 patients. The tamponade not only limits the necessity of laparotomy but also provides an opportunity to address any coagulopathy,acting as a therapeutic measure, potentially eliminating the need for any surgical intervention[12]. Nizam K et al showed 98.13% effectiveness of uterovaginal packing which is very high[13]. Some studies reported 92.1% success rate of tamponade with less morbidity while some found similar findings regarding use of balloon as tamponade but with high morbidity[14,15]. Further, a study reported over all incidence of complications due to balloon tamponade was low (<6.5%)[16].Nowdays , Balloon catheters have become the preferred option over uterine packing for several reasons. One reason is the potential for uterine injury associated with packing the uterus, which can cause damage to the uterine tissues. There is an increased risk of infection when using uterine packing and may result in concealed hemorrhage, where bleeding is not immediately apparent but continues internally, leading to potential complications[17] .Although there is awareness of risk factors, there hasn't been concrete documentation of specific predisposing factors, with many findings remaining speculative assertions. Nevertheless, it is universally acknowledged that any factor impacting uterine contraction can lead to postpartum hemorrhage[18]. Recently Bakri balloon tamponade demonstrated effectiveness in controlling bleeding and were noted to observed blood loss less than 1000 mL[19]. Predicting cases likely to result in atonic postpartum hemorrhage (PPH) is challenging due to bleeding after delivery. Primigravid mothers are particularly at risk as they have a higher incidence of PPH with unknown etiology. Utilizing uterine balloon tamponade causes immediate reduction in bleeding and hence this procedure is easily accessible and can be carried out by postgraduate individuals under supervision. It offers economic benefits, reduces morbidity, and provides immediate results.

CONCLUSION

The intended study *concludes* that balloon tamponade is a successful and reliable approach in addressing PPH. This method effectively aids in controlling excessive bleeding following delivery , highlighting its significance as aeffective treatment option in managing PPH.

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