ORIGINAL ARTICLE

EFFICACY AND SAFETY OF FOLEYS CATHETER FOR UTERINE TAMPONADE IN THE MANAGEMENT OF POSTPARTUM HEMORRHAGE AT A TERTIARY CARE CENTRE IN PESHAWAR

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ABSTRACT

Objective: To determine the efficacy and safety of Foley's catheter for uterine tamponade in the management of postpartum hemorrhage due to uterine atony.

Material and methods: This observational study was conducted in the tertiary care hospital i.e. Department of Obstetrics and Gynecology Khyber Teaching Hospital Peshawar. A hundred patients with non-traumatic post-partum hemorrhage were enrolled from January 2021 to 31st July 2022. After the failure of medical therapy, Foleys catheter was placed in the intrauterine cavity for twenty-four hours to achieve uterine tamponade to stop bleeding in patients with postpartum hemorrhage. All the variables including vital signs and the amount of blood collected in the bag attached to the Foley's catheter were noted and entered into a proforma. The main outcome measures were success rate in controlling hemorrhage, the time required to stop bleeding, and subsequent morbidity and technical difficulties. The average time taken to control bleeding was four minutes. Data were analyzed by SPSS 23.

Results: The age of the patients ranged from 20-36 years while gestational age and parity were noted to be 37-39 weeks and 1-6 respectively. Foleys catheter for uterine tamponade was found successful in 98% of our patients who had uterine atony. Bleeding was stopped in 98 patients with this procedure. The Foleys catheter used was of 16 Fr size which is commonly available in our labor room setup. The total amount of fluid filled in the Foleys catheter was 240ml. The mean duration in which the catheter was in situ was 12.5 hours. Three patients had infective morbidity.

Conclusion: The use of Foley's catheter for uterine tamponade in the management of postpartum hemorrhage is a highly successful procedure.

Key Words: Postpartum hemorrhage. Foleys catheter, uterine balloon tamponade.

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INTRODUCTION

According to the world health organization, in 2017 approximately 29500 maternal deaths occurred during the antenatal and postnatal period. [1] Mostly low and middle-income countries were affected where about 810 deaths occurred on a daily basis from preventable perinatal complications. Post-partum hemorrhage (PPH) remains the leading cause of direct maternal deaths.[2] Risk factors include prolonged labor, injudicious use of oxytocin, multiple pregnancies, fetal macrosomia, grand multiparty, chorioamnionitis, retained products of conception, etc that cause uterine atony and result in PPH. [3, 4] Most cases are managed medically while few cases need surgical interventions. When medical therapy fails then uterine balloon tamponade, a non-surgical option has been reported as a successful and cost-effective intervention. It works by exerting pressure on the bleeding venous sinuses in the placental bed and physically blocks these sinuses/orifices. It secures clot formation and results in the cessation of bleeding.

While in the past decades, uterine packing has been used for uterine tamponade, currently WHO recommends balloon tamponade using a condom catheter. [5] Bakri Balloon Tamponade (BBT) has been found an effective tool in Turkey in recent studies. [6] The newer techniques are less invasive but underutilized. [7] Although it is not an established protocol as yet, the use of Foleys catheter for uterine atony has been in practice in our tertiary care hospitals and has been found successful. The Foleys catheter is commonly available and easy to insert with no probability of fluid leakage which is commonly seen in condom catheters due to damage. Once uterine tamponade is achieved using an intrauterine Foleys catheter, it has the additional benefit that the amount of blood loss is visible in the drainage bag attached to the Foleys catheter

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so if further intervention is required that will be detected earlier. This study was designed to highlight the effectiveness of Foleys catheter in the management of post-partum hemorrhage. It is hoped that the results of this study will draw the attention of our obstetrician to include the use of Foleys catheter in the standards of care for post-partum hemorrhage.

MATERIAL AND METHODS

This observational study was conducted from 1st Jan 2021 to 31st July 2022 in the Obstetrics and Gynecology Department at Khyber teaching hospital Peshawar. All admitted patients with normal vaginal delivery who presented with post-partum hemorrhage due to uterine atony were selected. A hundred patients were enrolled in this study. All those patients who had undergone cesarean section and those who presented with post-partum hemorrhage due to other causes than uterine atony were excluded. After obtaining informed consent, detailed history was asked and a complete clinical examination was performed. The vital signs like pulse and blood pressure were noted and monitored closely. Medical therapy was started promptly and when it failed then balloon tamponade was started.

Each patient was briefed about the procedure of Foleys catheter insertion and informed written consent was obtained. The trained doctor on duty assisted by her colleagues and nursing staff introduced the catheter to the uterine cavity. Four such catheters tied together are introduced into the uterine cavity and each bulb is inflated with 60ml of normal saline so a total of 240ml of fluid is used. The amount of blood collected in the bag was noted. During the procedure, complete aseptic techniques were observed. Before, during, and after the procedure, the patient's clinical condition was observed closely. After 24 hours 500 ml of dextrose water with 40 unit's Oxytocin was started and each bulb of the Foleys catheter was deflated one by one, at the end of the procedure 4 tabs of misoprostol 200 micrograms were kept per rectal. All the data was recorded in proforma designed for this study. The results were analyzed according to SPSS 23.

RESULT

The demographic profile is shown in Table 1. Seventy patients (70%) had hospital deliveries while 25 patients (25%) had a history of normal vaginal delivery at home. Only 2 patients had a normal vaginal delivery at private centers. The mean systolic blood pressure (SBP) was found to be 105 ± 5 mm Hg and the mean diastolic blood pressure (DBP) was 60 ± 4 mm Hg. Most of the patients were found with tachycardia which is a mean pulse of 110 ± 6 beats/ minute. Clinically all the patients were found with anemia (pale conjunctiva).

The Success rate to stop bleeding in patients with Post Partum Hemorrhage with uterine atony using Intra uterine Foleys catheter is shown in Figure 3. The failure of Foley's catheter procedure to stop post-partum hemorrhage was found in two patients both of which ended up in Laparotomy followed by B-Lynch suture application and internal iliac artery ligation in one patient and the other ended up in subtotal abdominal hysterectomy. The average time noted to stop the bleeding was 4 minutes and the tamponade was placed in the uterus for 24 hours to stop bleeding. Results regarding technical issues and post-procedure infective morbidity are shown in Figure 4.

Table 1: Demographic profile of patients enrolled in the study

Parameters	Range
Age	20-36 years
Gestational age in weeks	37-39 weeks
Parity	1-6
Booked patients	40%
Unbooked Patients	60

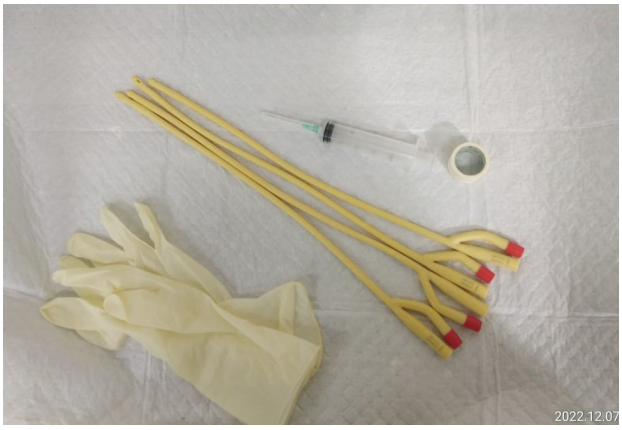

Fig 1: Instruments required for uterine tamponade

Fig 2: Four Foleys catheters tied together ready for insertion

Fig 3: After inflation of each Foleys catheter with 60ml of fluid tied together

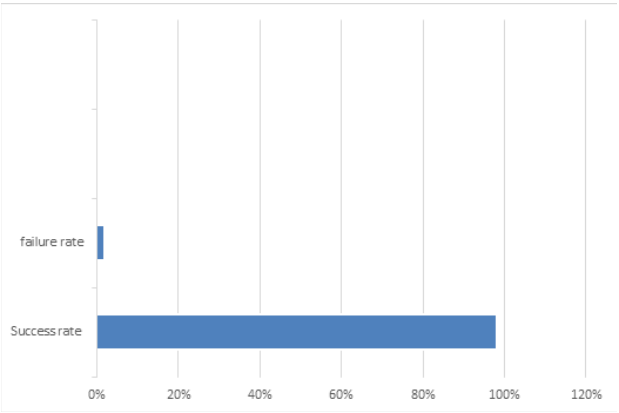

Fig 4: Success rate to stop bleeding in patients with Post Partum Hemorrhage with uterine atony using intra uterine Foleys catheter

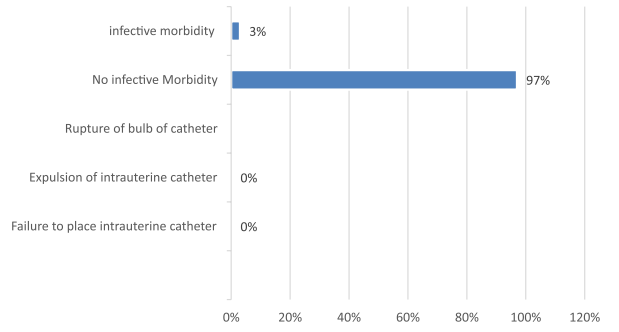

Fig 5: Outcome of intrauterine Foleys catheter in terms of Subsequent morbidity and technical difficulties

DISCUSSION

World over the leading cause of maternal death is post-partum hemorrhage. The developing countries suffer 99% of the burden while in Pakistan the prevalence of post-partum hemorrhage is 34%[8]. Different guidelines and protocols have been developed by the WHO and the American College of Obstetricians and Gynecologists (ACOG) to manage post-partum hemorrhage. The method of uterine tamponade has been recently added to the armamentarium for the management of post-partum hemorrhage. Various methods like Bakri, Sengstaken-Blackmore, Rush Balloon, and condom catheters are used worldwide[9]. In our setup, we are using the Foleys catheter for this purpose. Majumdar et. Al. found the Rush balloon to be successful in 51.1% of while it failed in 31.85% of cases where a hysterectomy was required to stop PPH[10]. Pingravey V et al found the Bakri Intrauterine catheter to be successful in 79% of the cases[11]. Recently Gluten Ozgen reported the success rate for Bakri Balloon Tamponade (BBT) to be 91.3%[6]. Thus, all these studies showed that uterine Tamponade can be lifesaving. In our setup, we need a less expensive and readily available method. Foley's catheter met our needs. It is simple to use, less expensive, less invasive, and widely available. Also, our staff and even trained birth attendants are experienced in its general use. It does not require anesthesia but pethidine can be used as analgesia. We found it successful in 98 patients (98%) and 2 of our patients (2%) required surgical intervention to stop bleeding. RajniLohano et al found balloon tamponade with a condom catheter to be effective in 90.4% of cases[12]. Another study reported a 94% success rate. [13] The higher rate of success in our study can be due to the use of different catheters i-e Foleys catheter which has several advantages as mentioned before.

CONCLUSION

The use of a Foley catheter for uterine tamponade in the management of postpartum hemorrhage is a highly successful procedure. The successful use of Foleys catheter for uterine tamponade is worth noticing so that more research should be planned to focus on its use in new protocols. Thus, it should be included in the new guidelines for the management of PPH.

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Following authors have made substantial contributions to the manuscript as under

Bukhari N: Main Idea, Research proposal

Mazhar T: Data Collection and writing

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.