



# Use of Condom to Control Intractable PPH

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## Abstract

To evaluate the success of condom as a tamponade to arrest intractable Postpartum Hemorrhage (PPH) in patients not responding to medical management. The prospective study was done in LD Hospital, Government Medical College Srinagar over one year period. All but one (96.2%) patients successfully responded the tamponade therapy by the use of condom catheter. One (3.8%) patient required hysterectomy. Condom catheter effectively controls the PPH. It is a simple inexpensive and safe method of conserving the reproductive capacity along with saving the life of women with intractable PPH.

## Key Words

PPH (Postpartum hemorrhage), Tamponade, Condom Catheter

## Introduction

Postpartum hemorrhage (PPH) contributes significantly to the maternal morbidity and mortality all over the world. It can transform normal woman in labor to a critically ill patient within minutes. Even in the developed nation like USA the incidence of maternal deaths due to PPH is as high as 13% (1), with rates as high as 40% from other parts of the world (2). Worldwide it is estimated that at least 150,000 women per year bleed to death during or immediately after labor (3). Conventionally PPH has been defined as blood loss of more than 500ml following vaginal delivery and 1000 ml following a caesarean section (4). Another definition labels PPH as any blood loss which causes a 10% drop in hematocrit (5) or which threatens the hemodynamic stability of the patient and necessitates blood transfusion (6). Blood loss during first 24 hours after delivery is known as primary PPH (placental / extra-placental, depending upon the site of bleed), whereas blood loss from after 24 hours up to six weeks is termed as late or secondary PPH (3). Uterine atony is the major cause responsible for primary PPH in around 70 - 90% cases. Trauma to the genital tract in the form of tears, lacerations, hematomas or uterine rupture account for rest of the cases. Traditionally uterine atony has been managed by bimanual compression and massage along with use of Oxytocin either alone or in combination with ergometrine. Prostaglandins like carboprost and more recently

misoprostol are also helpful in controlling atonic PPH. When medical management fails to restore the tone of uterus internal compression of the uterus can be applied using traditional packing of the uterus by 8 -10m sterilized gauze or by using a distended condom tied to the simple catheter by silk thread. The condom is then inflated by connecting the catheter to a drip set. This causes uterine tamponade and arrests bleeding.

Intractable PPH despite compression needs surgical intervention ideally conservative in the form of uterine and ovarian arteries ligation, B-Lynch sutures and internal iliac arteries ligation or Embolization and hysterectomy as last resort.

## Material and Methods

A prospective study was done at the Government Lalla Ded Hospital, (associated hospital of Government Medical College Srinagar) over a period of one year. 26 consecutive patients who developed intractable PPH in the hospital and did not respond to the conventional medical management and in whom traumatic PPH was ruled out were selected.

A sterile simple red-rubber catheter (14Fr) fitted with a condom at its tip was introduced into the uterus. A tight vaginal pack was then applied followed by introduction of normal saline by an infusion-set into the condom via catheter. Around 250 to 500ml was required to adequately inflate the condom and arrest bleeding. Uterine

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contractility was maintained by Oxytocin drip for 24 hours. Prophylactic antibiotics were administered intravenously as long as the condom catheter was in situ. The condom catheter was kept in situ for 24 - 72 hours depending on the severity of initial blood loss. Bleeding did not resume in any patient when the condom catheter was gently deflated over 10 - 15 minutes.

### Results

Patients were in the age group of 21 to 38 years with a mean age of 28.8 years. Parity ranged from 1 to 4 with median of 2. Of the 26 patients 23 (88.5%) were of primary PPH and 3 (11.5%) of secondary PPH. Six patients were in shock at the time of intervention. Majority of cases 24(92.3%) had spontaneous vaginal delivery and 2 (7.7%) cases were following a caesarean section (Table-1).

In 23 (88.5%) cases, condom catheter was introduced within 6 hours while in 3 (11.5%) cases of secondary PPH on day 2. In all but one (96.2%) cases the bleeding stopped within 10 minutes of creation of tamponade. On an average 342.8ml of normal saline was required to create adequate tamponade to stop the bleeding. The patients required 2 to 5 units of whole blood (median 3 units) apart from the crystalloids to achieve hemodynamic stability. No patient went into irreversible shock and no patient developed any signs of sepsis. Patients were monitored in the hospital for one week. Of the 25 patients (96.2%) with successful tamponade none required any further intervention and did not develop any further complication (Table-2). In one patient, who was Para 4, having secondary PPH the bleeding continued over the vaginal pack for 2 hours after creation of tamponade. She was taken up for emergency hysterectomy as her condition was not getting stabilized despite adequate simultaneous resuscitation.

### Discussion

PPH is one of the leading problems faced by the obstetricians all over the world. Since the window of time to save life is short in PPH, prophylactic measures are very important. Prophylactic uterotonics reduce the risk of PPH by about 60% (3). Patients with intractable bleeding can quickly become hemodynamically unstable and develop a cascade of complications which can lead to the death of the patient. For these surgical hemostasis is to be initiated sooner rather than later. Options like ligation of uterine or internal iliac arteries, though successfully tried, require complex pelvic dissection and may not be always feasible in all situations. Embolization requires multidisciplinary approach and expensive infrastructure and is not an option available in peripheral hospitals. Conventionally, hysterectomy was the ultimate

**Table 1. Characteristics of Patients Included in the Study**

<b>Total number of patients with intractable PPH</b>	26 (23 primary + 3 secondary)
<b>Age group</b>	21 – 38 yrs (Mean: 28.8 yrs)
<b>Parity</b>	1 – 4 (Median: 2)
<b>Mode of delivery</b>	24 vaginal + 2 LSCS
<b>Average Saline required for uterine tamponade in the patients</b>	342.8 ml

**Table 2. Response Rate to Use of Condom Catheter in Management of PPH**

<b>Response rate</b>	<b>96.2%</b>
<b>Failure rate</b>	<b>3.8%</b>

cure which could be provided, however the pressures to preserve fertility and avoid hysterectomy have led to the evolution of several techniques in recent times (7). B-Lynch technique (8) for control of PPH is also a good option but again is an invasive method. In contrast the balloon tamponade is simpler and handy alternative for arresting the bleeding. It is a well recognized therapy in patients of intractable PPH especially due to atony, coagulopathy and placenta accreta and most of the patients with intractable PPH do respond to tamponade by various balloon devices like Sengstaken-Blakemore tube (9, 10), Foley catheter (11) and the less expensive 'Bakri tube' (12) and condom catheter (13, 14). They are used as a means to compress the uterine sinuses and thereby arrest PPH. Tamponade has been historically tried with packing of the uterine cavity with ribbon gauze. A 20m long ribbon is tightly inserted inside the uterus starting from the fundus, otherwise bleeding will continue above the packing. This, however, fell into disrepute due to fear of continued concealed bleeding and infection of the uterine cavity. Other forms of tamponade like Sengstaken-Blakemore tube and Foley catheter have been successfully and effectively used. These are expensive, complex and not always readily available. Condom catheter, on the contrary, is a simple economical and definitely effective alternative. It conforms naturally to the contour of the uterine cavity, does not require any complex packing and is easy to remove. It is not associated with any infection as there is no direct intra-uterine manipulation and does not require extensive surgical expertise.

The use of condom was first described by authors from India (13) and Bangladesh (14) almost simultaneously, who demonstrated the potential life-saving



utility of their technique. Our experience with condom catheter, as means to cause tamponade and control PPH, has been excellent in saving both time and money with positive results in more than 95% cases. This technique can be important especially in many obstetric settings in the developing world where uterotonics, safe blood, anesthesia and experienced obstetricians / surgeons are not readily available round the clock. Adoption of this technique and dissemination of knowledge about this option may save lives in many settings worldwide. As the procedure is very simple and safe, even the trained birth attendants can apply it before referring patients to a higher centre.

### Conclusion

Present study encourages a simple, low cost and easily available yet effective alternative to manage a dreaded obstetric complication like PPH encountered frequently in under developed and developing countries where meager resources do not allow delivery of ideal care to the grass-root level patients. Use of condom catheter can effectively help in reducing both maternal morbidity and mortality associated with PPH.

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## Book Review

There was lack of any book which shows proper guidance to the students and provides knowledge of both animal experiments and clinical experiments at the optimum level. Scientifically and logically speaking, now we have come across book entitled "**Practical Manual of Experimental and Clinical Pharmacology**" published by the **JayPee Brothers Pvt. Ltd.** and written by **Dr. Bikash Medhi and Ajay Prakash** PGIMER, Chandigarh, India is found to be more expressive, point specific, properly arranged and explanatory to provide experimental (animal) and clinical experiments. This book will be beneficial for MBBS, MD (Pharmacology), DM (Pharmacology), PhD, M.Pharm and B. pharm students. This book, by Medhi and Prakash explains the points about the practical pharmacology, including the proper handling of animals, blood withdrawal and ethics with their regulatory bodies. In vitro Bioassay is explained logically with the several examples to make clear the every points. More importantly, human bioassay and cytokine bioassay are an added point in the book. Several other important topic like principles of commonly and sophisticated instruments used in pharmacology laboratory, pyrogen test; involves conventional in vivo rabbit experiment and In vitro modern technique. Book also briefly explained, practical aspect of cell line culture, preclinical to clinical drug dose calculation and Protocol & thesis writing for postgraduate student, Toxicity study. Biostatistics in pharmacology and Biomedical waste disposal. Thereafter, book covers the daily use practical for undergraduates, postgraduates and DM (Pharmacology) students. They have made a separate section as per systems for the in vivo animal experiments and classified in vitro bioassays; explained beautifully with tables and figures to make the subject easy to understand. Then, clinical pharmacology part which is found to be very useful for MD and DM (pharmacology) residents. Lastly, they have also touched the hot topic like impact factor, computational pharmacology, pharmacokinetic and pharmacodynamic (PK/PD) modeling, evaluation of pharmaceuticals product literature and analytical toxicology. Moreover, new concept in pharmacology like translational medicine, reverse pharmacology and micro dosing is well explained. So, finally it is a meticulous book for the undergraduates and postgraduates of medical and pharmacy students. DM (pharmacology) will be benefited as well with the explained clinical pharmacology practical. Moreover, it gives an excellent outflow of pharmacology experiments to teacher as well.

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