



## Role of Uterine Packing in Control of Postpartum Haemorrhage in Modern Obstetrics

Author

**Dr Renu Jain<sup>1\*</sup>**

<sup>1</sup>Assistant Professor, Dept of Obstetrics and Gynaecology, Gajra Raja Medical College, Gwalior, M.P, India

\*Corresponding Author

**Dr Renu Jain**

Email: [renujain\\_1979@rediffmail.com](mailto:renujain_1979@rediffmail.com)

### Abstract

**Background:** Postpartum haemorrhage is the leading cause of maternal mortality in most low income countries. One of the earliest methods of achieving a tamponade effect on uterus to control PPH was by uterine packing. The objective of present study was to evaluate the safety and effectiveness of uterine packing in treatment of postpartum hemorrhage, refractory to medical treatment.

**Material and Methods:** The retrospective analysis of 50 cases of PPH, treated with uterine packing as a conservative therapeutic option, was done in department of Obstetrics and Gynaecology, Gajra Raja Medical College, Gwalior (M.P.).

**Results:** The uterine packing was successful in controlling PPH in 94% cases. It was effective in 96.96% (32 out of 33) women with uterine atony, who did not respond to uterotonic drugs. It was also effective in 11 cases of placental implantation site bleeding, and 3 cases of deranged coagulation function. In 3 cases it failed to control PPH and peripartum hysterectomy was done. The uterine pack was removed in 24-48 hours. 3 cases of febrile morbidity and 3 cases of caesarean section wound infection were noted. There was no maternal death.

**Conclusion:** Uterine packing is a safe, quick and effective, conservative procedure for the control of postpartum haemorrhage, which shortens the hospital stay and avoids the need for more aggressive procedures.

**Keywords:** Maternal mortality, postpartum hemorrhage (PPH), peripartum hysterectomy.

### Introduction

Postpartum hemorrhage (PPH) is commonly defined as a blood loss of 500 ml or more within 24 hours after birth. It affects approximately 2% of all women who give birth.<sup>[1]</sup>

In WHO systematic analysis of causes of maternal death, hemorrhage was the leading direct cause of maternal death worldwide, representing 27.1% (19.9–36.2) of maternal deaths. More than two

thirds of reported hemorrhage deaths were classified as postpartum hemorrhage.<sup>[2]</sup>

PPH is a significant contributor to severe maternal morbidity and long term disability as well as to a number of other severe maternal conditions generally associated with more substantial blood loss, including shock and organ dysfunction.<sup>[1]</sup>

Common causes of postpartum haemorrhage include uterine atony, bleeding from the placental

implantation site and trauma to the genital tract and adjacent structures.<sup>[3]</sup> Unusual causes include placenta accreta, uterine inversion, and abnormalities of the haemostatic system.<sup>[4]</sup>

The most common cause of early PPH is uterine atony in 80-85% cases. First step in the management of uterine atony is the administration of uterotonic agents (oxytocin, methylergonovine, carboprost tromethamine and misoprostol). If uterine atony is unresponsive to fundal massage and the available oxytocic drugs, surgical techniques including uterine tamponade, uterine compression sutures, major vessel ligation and embolisation, and even hysterectomy will have to be considered.<sup>[3]</sup>

Uterine tamponade requires developing intrauterine pressure to stop bleeding. This can be accomplished by insertion of a balloon that distends in the uterine cavity or by insertion of a uterine pack consisting of a gauze roll.<sup>[4]</sup>

The possibilities of trauma, infection and ineffective packing resulting in concealed bleeding together with the increasing effective pharmacological agents to treat uterine atony such as ergometrine and syntocinon resulted in a gradual reluctance in use.<sup>[5]</sup> Despite the declining popularity, there are reports in the literature describing success with uterine packing in cases of intractable hemorrhage.<sup>[6]</sup>

Commercially available catheters like Bakri balloon has a prohibitory high cost. Condom catheter is a cheap and easily available alternative in low resource settings, but it is an improvised device that relies on the availability of the various components at the time of the PPH and the confidence of the health care provider in assembling and using the device. Uterine packing may be a reasonable alternative to further surgical intervention in patients with intractable obstetrical hemorrhage. So, the aim of this study was to evaluate the effectiveness of the uterine tamponade by uterine packing in treatment of postpartum hemorrhage.

## Material and Methods

This retrospective study was carried out at Department of Obstetrics and Gynaecology, Kamla Raja Hospital, Gwalior (M.P.), during a period of 2 years from July 2015 to June 2017. The study investigated the effectiveness of uterine tamponade by intrauterine packing, in 50 cases of postpartum hemorrhage refractory to medical treatment. All women with traumatic PPH and women with secondary PPH were excluded. Case records were reviewed and parameters were collected and analysed with regard to maternal socio-demographic characteristics, Obstetric history, gestational age, laboratory test parameters, presence of risk factors, mode of delivery, indication of caesarean section and causes of PPH. Time for which intrauterine pack was kept was noted. Main outcomes including the success rate, need for additional procedures, maternal mortality, and morbidity in terms of postpartum pyrexia and concealed haemorrhage were also analyzed.

Each of the delivery was conducted with active management of third stage of labor. A step wise approach in the management of PPH was followed according to the hospital protocol and as soon as atonic PPH was diagnosed, uterine massage started and uterotonic agents, namely injection oxytocin, injection carboprost and tab misoprost per rectally were used in recommended doses for management of PPH. Maternal resuscitation was started while these procedures are being administered. In cases refractory to uterotonic drugs, intrauterine packing was done by using 8-10 meters gauze roll soaked in povidone iodine solution, with the help of uterine packing forceps, starting from the fundus up to the cervix. It was done vaginally in cases of vaginal delivery (using ring forceps to hold the cervix) or through the caesarean incision in cases of caesarean section. Blood and blood products were transfused as per the individual requirements. After the procedure all patients were managed in intensive care unit, with hourly monitoring of vital signs, fluid input/output, fundal height and vaginal blood loss.

Oxytocin infusion was continued to keep the uterus contracted over 12-24 hours. Antibiotic coverage was given for 7 days.

Clinical success was defined as control of bleeding without further intervention. Analysis was done with the excel computer software and results were reported as percentage.

**Results**

A total of 50 cases were identified in which intrauterine packing was done for uterine tamponade to control PPH.

**Table No 1:** Demographic characteristics

S.No.	Characteristic	Number	Percentage
1	Maternal age in years		
	<19	1	2
	20-24	18	36
	25-29	26	52
	30-35	5	10
>35	0	0	
2	Parity		
	Primigravidae	16	32
	Multigravidae	34	68
3	Locality		
	Rural	32	64
	Urban	18	36
4	Referral status		
	Direct	14	28
	Referred	36	72
5	Booking status		
	Booked	12	24
	Unbooked	38	76

Table 1 demonstrates demographic characteristics of the patients. Majority of women were in age group 25-29 years (52%), multigravidae (68%) and from rural areas (64%). Majority (72%) of women were referred from different hospitals. 76% patients had no antenatal visits.

**Table No 2:** Mode of delivery

Mode of delivery	Number of cases	Percentage
Vaginal delivery	08	16
Lower segment caesarean section	42	84
Total	50	100.0

Intrauterine packing was used to control bleeding, in 8 (16%) cases delivered vaginally and in 42 (84 %) cases following Caesarean Section. (Table 2)

**Table No 3:** Indication of caesarean section

Indication	No of cases	Percentage
Placenta previa	13	30.95
Antepartum eclampsia with unfavourable cervix	4	9.52
Severe preeclampsia	2	4.76
Severe preeclampsia with abruption	2	4.76
Twins with first fetus in breech presentation or transverse lie	3	7.14
Twins with non progress of labor	2	4.76
Cephalopelvic disproportion	6	14.28
Nonprogress of labor	4	9.52
Obstructed labor	6	14.28
Total	42	100

The most common indication of caesarean section, when intrauterine packing was done to control PPH was placenta previa in 30.95% cases, followed by obstructed labor and cephalopelvic disproportion in 14.28 % cases each. (Table 3)

**Table No 4:** Causes of PPH

Cause	Number of cases	Percentage
Atonicity of uterus	33	66
Bleeding from placental implantation site in placenta previa	13	26
Uterine inversion	1	2
Deranged coagulation function	3	6
Total	50	100.0

Most common cause of PPH was atonic uterus in 66% cases, followed by bleeding from placental implantation site in placenta previa, in 26% cases. (Table 4)

**Table No 5:** Outcome of Procedure

Outcome	Number	Percentage
Success	47	94
Failure	3	6
Total	50	100

According to our definition of effectiveness, as control of PPH not requiring any further intervention, uterine packing was effective in 47 (94 %) cases, whereas 3 (6%) patients underwent hysterectomy. (Table 5)

**Table No 6:** Maternal morbidity

Complication	Number of cases	Percentage
Febrile morbidity	3	6
Caesarean section wound sepsis	3	6
Difficulty in pack removal	4	8

The length of the time for which the uterine pack was kept, varied from 24-48 hours. Antibiotics were administered for 7 days. In present study there were no maternal deaths.

### Discussion

Postpartum haemorrhage is an obstetric emergency. It is associated not only with nearly one quarter of all maternal deaths globally, but is also the leading cause of maternal mortality in most low income countries.<sup>[1]</sup>

In present study, the intrauterine packing was successful in controlling PPH in (94%) women, refractory to treatment by uterotonic drugs. The success rate is directly related to the technique. The efficacy of uterine packing depends upon its proper application and its employment early in the course of postpartum haemorrhage. Success rates reported in other studies were comparable to our study, 89.14% by Khairunnisa Nizam, 91.8 % by Malay et al and 90.09% by Javed et al.<sup>[7,8,9]</sup>

Rashmi Bagga et al, reported two cases of, a primary and a secondary PPH, successfully managed with uterovaginal packing.<sup>[10]</sup>

In present study, intrauterine packing was done to control bleeding, in 8 (16%) cases delivered vaginally and in 42 (84 %) cases following Caesarean Section. As reported in other studies, it is an effective method in controlling hemorrhage in women delivered either vaginally or by caesarean section.<sup>[7,9]</sup>

Most common indication of uterine packing was PPH due to atonic uterus in 66% cases. In study by Hsu et al, uterine atony unresponsive to oxytocics was the common indication for uterine packing.<sup>[11]</sup> PPH may be aggravated by preexisting anemia and in such instances, the loss of a smaller volume of blood may still result in adverse clinical sequelae. In many women, uterine atony can at least be anticipated in advance of

delivery. Although risk factors are well known, the ability to identify which individual woman will experience atony is limited.<sup>[2]</sup>

In present study, it was also effective in controlling placental implantation site bleeding, in 11 cases of placenta previa. In other studies also, uterine packing was successful in controlling hemorrhage patients with placenta previa.<sup>[7,9]</sup> Its effect on bleeding from the placental bed, in cases of placenta previa, is the direct pressure over the lower uterine segment.

Three cases of failure were observed. First was the case of atonic PPH, following caesarean section, done for obstructed labor, not managed by uterotonic drugs, so intrauterine packing was done. But bleeding was not controlled, so subtotal hysterectomy was done.

In other 2 cases of previous section with placenta previa, placenta found adhered to the lower uterine segment. On manual removal of placenta, placental bed started bleeding profusely. Firstly, intrauterine packing was done, but bleeding was not controlled and patient's vitals were started deteriorating, so total hysterectomy was performed to save the life of the mother. In both the cases, patients' post recovery period was uneventful and both were discharged healthy.

Interval for removal of pack has to be individualized according to clinical findings. In present study, the length of time for which the intrauterine pack was kept varied from 24 -48 hours. Pack removal was done under very close observation preferably in the day time. Oxytocin infusion was started and tab misoprost 800 microgram was kept per rectally, about 1 hour before removal of uterine pack in all cases. There were no cases noted of re-bleeding after pack removal. In study by Rashmi Bagga et al and by Sarkar et al the pack was removed uneventfully 36 hours later.<sup>[10,12]</sup>

In present study, post insertion morbidity included fever more than 100 degree F were reported in 3 patients and caesarean section wound infection in 3 patients, comparable to the study by Javed et al.<sup>[9]</sup> Use of broad spectrum antibiotics and

removal of pack within 24-36 hours are important measures to minimize infection.<sup>[10]</sup> No serious complication was reported. It has been suggested that intrauterine packing is helpful in managing PPH in resource poor settings. This technique fell out of favor in the 1950s, as it was thought to cause infection and conceal hemorrhage. Its use re-emerged in the 1980s and 1990s, after these concerns were not verified.<sup>[6]</sup> The invasive procedures involve laparotomy, require specialist expertise, may be associated with significant morbidity and may compromise future fertility. Interventional radiology offers a minimally invasive, fertility preserving alternative but requires special equipment, trained interventional radiologists and is not readily available in most obstetric units.

Uterine tamponade by intrauterine packing is a less invasive procedure which is simple, does not require major surgery, can be done within minutes, and will often immediately reduce or stop the bleeding. Thus it may avoid the need for laparotomy and hysterectomy and associated morbidities.

In present study, there were no maternal deaths. Most deaths resulting from PPH occur during the first 24 hours after birth: the majority of these could be avoided through the use of prophylactic uterotonics during the third stage of labor and by timely and appropriate management.<sup>[11]</sup>

An important factor in the maternal mortality resulting from PPH is late recognition of the severity of the bleeding with a resulting delay in blood replacement. Unfortunately, when the woman with PPH decompensates, the opportunity for therapeutic intervention is limited and coagulopathy, renal failure, and death are difficult to avoid.<sup>[4]</sup>

### Conclusion

Uterine packing is a useful, conservative and minimally invasive technique in controlling PPH due to uterine atony and placental implantation site bleeding. It is a simple, fast and cost effective procedure and a reasonable alternative to further

surgical interventions, in the treatment of postpartum hemorrhage, especially when other options are unavailable.

### Declaration

Funding: None

Conflict of interest: None declared

### References

1. WHO. WHO recommendations for the prevention and treatment of post partum haemorrhage. Geneva: WHO; 2012.
2. Say L, Chou D, Gemmill A, Tunçalp O, Moller AB, et al. Global causes of maternal death: a WHO systematic analysis. *Lancet Glob Health* 2014; 2: e323–33.
3. Cunningham FG, Leveno KJ, Bloom SL, Hauth JC, Rouse DJ, Spong CY. *Williams Obstetrics*. 23<sup>rd</sup> edition. New York: McGraw Hill Medical; 2010.757-798p.
4. Bhide A, Arulkumaran S, Damania KR, Daftary SN. *Arias' Practical guide to high risk pregnancy and delivery*. 3<sup>th</sup> edition. New Delhi : Elsevier; 2008. 348- 351p.
5. Georgiou C. Balloon tamponade in the management of postpartum haemorrhage: a review. *BJOG* 2009; 116: 748–757.
6. Maier RC. Control of postpartum haemorrhage with uterine packing. *Am J Obstet Gynecol*. 1993; 169: 317-23.
7. Nizam K, Haider G. Role of uterovaginal packing in postpartum hemorrhage. *JLUMHS*. 2010 Jan- April; 9 (1) : 27-29.
8. Sarkar M, Jana SK, Bhar D, Mandal SK, Halder PS et al. Uterovaginal packing with rolled gauze in postpartum haemorrhage : A prospective study of an Indian Medical college. *Journal of Medicine and Medical Science*. 2011 July; 2 (7): 985-989.
9. Javed L, Munir SI, Eusaph AZ. Effectiveness of uterovaginal packing in management of postpartum haemorrhage. *ANNALS*. 2017 Jan-Mar; 23 (1): 58-62.

10. Bagga R, Jain V, Chopra S, Kalra J, Gopalan S. Uterovaginal packing with rolled gauze in postpartum haemorrhage. *MedGenMed*. 2004; 6 (1): 50.
11. Hsu S, Rodgers B, Lele A, Yeh J. Use of packing in obstetric hemorrhage of uterine origin. *J Reprod Med*. 2003;48:69–71.
12. Sarkar M, Jana SK, Bhar D, Mandal SK, Halder PS et al. Uterovaginal packing with rolled gauze in postpartum haemorrhage : A prospective study of an Indian Medical college. *Journal of Medicine and Medical Science*. 2011 July; 2 (7): 985-989.