

A Prerequisite for Atonic Post-Partum Hemorrhage - Uterovaginal Packing: A Clinical Study

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ABSTRACT

Aim: To study maternal outcome in terms of morbidity and mortality following intrauterine packing in postpartum atonic hemorrhage (PPH).

Methods: The study was conducted over a period of 24 months in our institution over post-partum patients with intractable PPH before resorting to invasive surgical management after vaginal delivery & caesarean section.

Results: 92% success rate was observed among the patients with uterovaginal packing.

Conclusion: Timely management of patients with intractable postpartum hemorrhage which is unresponsive to conventional medical treatment can be safely managed by uterine packing with minimal maternal mortality and morbidity. Maternal death rates and hysterectomies could be minimized using this conservative method.

Keywords: Postpartum, Hemorrhage, Intrauterine Packing.

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INTRODUCTION

Post-partum haemorrhage (PPH) is one of the most common causes for maternal mortality and morbidity accounting for one fourth of maternal deaths worldwide.¹ Its incidence is tremendously increasing both in developed & developing countries.^{2,3} In developed countries around 1.5 lakh women die each year from PPH.⁴ In India, the maternal mortality rate is 560/100,000 live births & PPH accounts for 35-56% of Maternal deaths.⁵

According to WHO, PPH is defined as blood loss of >500 ml in normal Delivery or > 1000 ml in LSCS from the genital tract post-delivery.⁶ According to American College of Obstetricians and Gynecologists, it is the excessive bleeding per vaginum that causes hematocrit drop >10% that require immediate blood transfusion.¹ Most cases (99%) of postpartum haemorrhage are primary that is within 24 hours⁷, uterine atony being the most common cause followed by trauma, tissue & thrombin deficiency. Hypovolemic-shock, disseminated intravascular coagulopathies (DIC), acute respiratory distress syndrome, renal & hepatic failure are the main complications associated with the haemorrhage. To prevent PPH, various invasive and non-invasive methods are

being used. Non-invasive methods includes various uterotonic, such as oxytocin, methargin, dinoprostone, misoprostol, etc. If uterotonic failed, various techniques for packing the uterine cavity include intrauterine roller gauze packing, Foley's intrauterine catheter, Sengstaken-Blakemore tube, and Bakri balloon can be used.⁸ Treatment of massive postpartum haemorrhage also involves invasive procedures like stepwise pelvic devascularisation, internal iliac artery ligation, arterial embolisation & eventually hysterectomy which are difficult and time taking procedures to perform.

Intrauterine packing is a simple, safe, quick and reasonable method in controlling postpartum hemorrhage.

PRINCIPLE OF INTRAUTERINE PACKING

"It works as a tamponade to provide compression against the uterine sinuses to arrest the haemorrhage, concurrent tight vaginal packing is also required as it works as a pelvic mass created by the packing that elevates the uterus up and out of the pelvis, placing the uterine arteries on stretch and decreasing their perfusion pressure".⁹

AIM OF STUDY

To study maternal outcome in terms of morbidity and mortality following intrauterine packing in postpartum atonic haemorrhage.

MATERIALS & METHODS

This is a prospective study carried over a period of 24 months in the Department of Obstetrics and Gynecology, Teerthanker Mahaveer Medical College & Research Centre, Moradabad, Uttar Pradesh, India.

During the study period, total 3752 deliveries were conducted out of which the frequency of major PPH encountered (> 1000 ml) was 158 (4.2%). 1238 (33%) were delivered by LSCS and 2514 (67%) were delivered vaginally. 50 (1.33%) patients didn't responded to medical treatment and bimanual compression.

Inclusion Criteria

Patient with atonic PPH not responding to medical treatment.

Exclusion Criteria

Rupture uterus, traumatic & Secondary PPH

Method

In all cases, the procedure was conducted by the qualified personnel under general anaesthesia. After vaginal delivery, patients were examined in lithotomy position following Foley's catheterization. Sims Speculum was inserted, anterior lip of cervix held with sponge holding forceps and the uterine cavity is filled firmly by using 8-10 meter betadine soaked sterile gauze starting from one cornu of uterus & then from fundus downward leaving no space in between in layers followed by firm vaginal packing for compression of uterine sinuses.

In cesarean section, the first step is to secure both the uterine angles with green armytage followed by firm intrauterine packing

with the help of betadine soaked sterile gauze (2m long and 10cm wide) from one cornua to the other with a sponge holding forceps or with the help of the index and middle finger, from the fundus into the lower uterine segment with its end passing through the cervix into the vagina with proper care not to include inadvertently the gauze into the sutures.

The uterovaginal packing was left in situ for 24 hr while monitoring the patient for vitals, fundal height, abdominal girth & bleeding per vaginum. Simultaneously oxytocin infusion was continued with antibiotic coverage.

When fundal height remains the same and the patient remains hemodynamically stable then the pack was removed after 24 hr.

Any fall in systolic blood pressure, fall in hematocrit > 10% or rise in fundal height > 2 cm were taken as signs of failure. In the conditions where the patient general condition deteriorates the pack has to be removed before 24 hr and surgical management is carried out. Post-insertion morbidity in terms of blood transfusion, ICU admission, ventilator care & multiorgan failure or DIC and mortality were recorded.

Criteria to Define Failure of Method

- Patient not maintaining vitals (maternal tachycardia, tachypnoea, hypotension)
- Patient showing continuous vaginal trickling of blood with soakage of gauze.
- Increasing fundal height.

Rescue Surgery

Patients who did not respond to packing were subjected to B-Lynch suture or step wise devascularisation or eventually hysterectomy.

Table 1: Relationship of age with success of uterovaginal packing and blood transfusion required

Age	No. of patients	No. of patients responded to packing	%age	Blood units required
20-30	32	32	100	2.5-3
30-40	12	10	83.33	3-4
>40	6	4	66.66	5-6

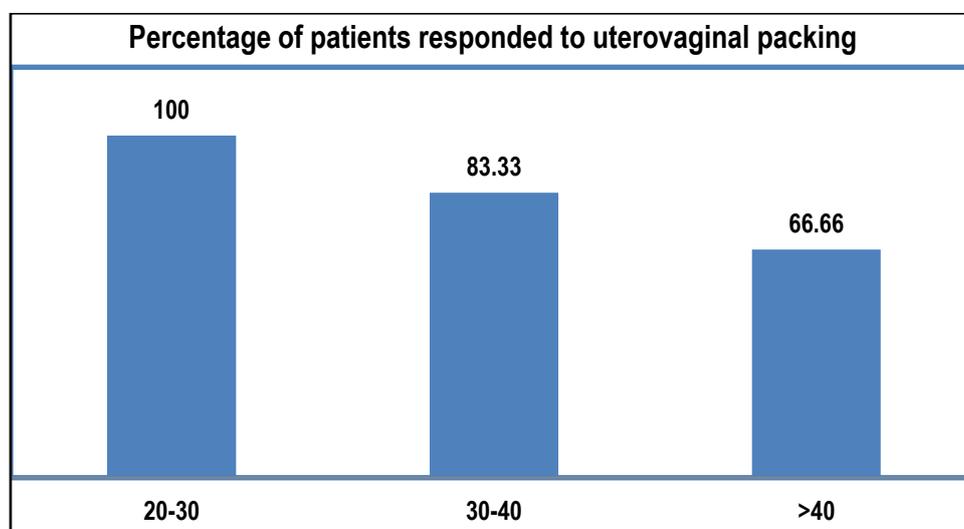


Table 2: Relationship of parity with successful uterovaginal packing

Parity	No. of patients undergoing packing	Responders to packing	Percentage	Blood Units
Primigravida	10	10	100	2-3
2-4	24	22	91.66	3-5
>4	16	14	87.5	>5

Table 3: Etiological factors in PPH

Etiological factors	No .of patients	Percentage
Uterine atony	35	70
Thrombin deficiency or coagulopathy (DIC)	8	16
Placental site bleeding / placenta accreta , percreta	7	14

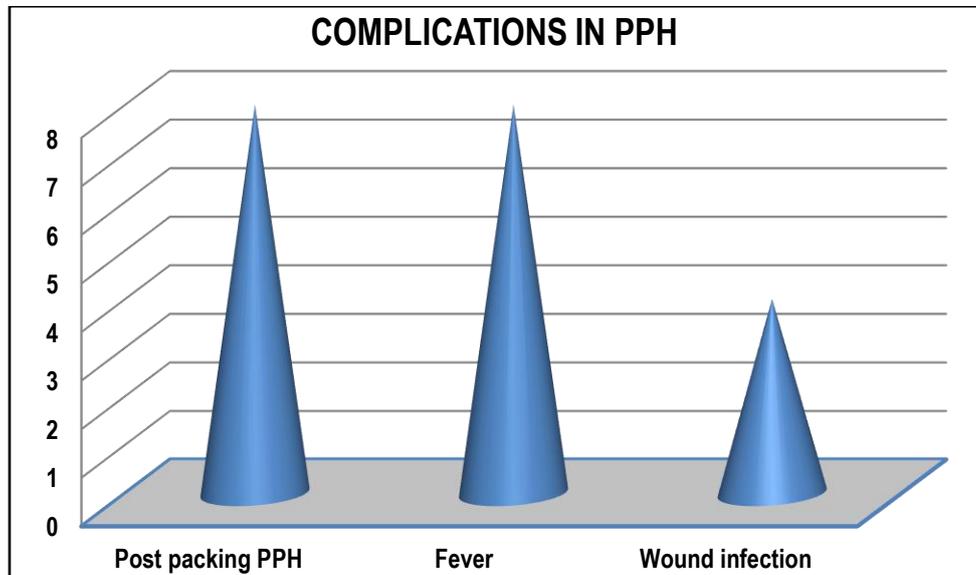
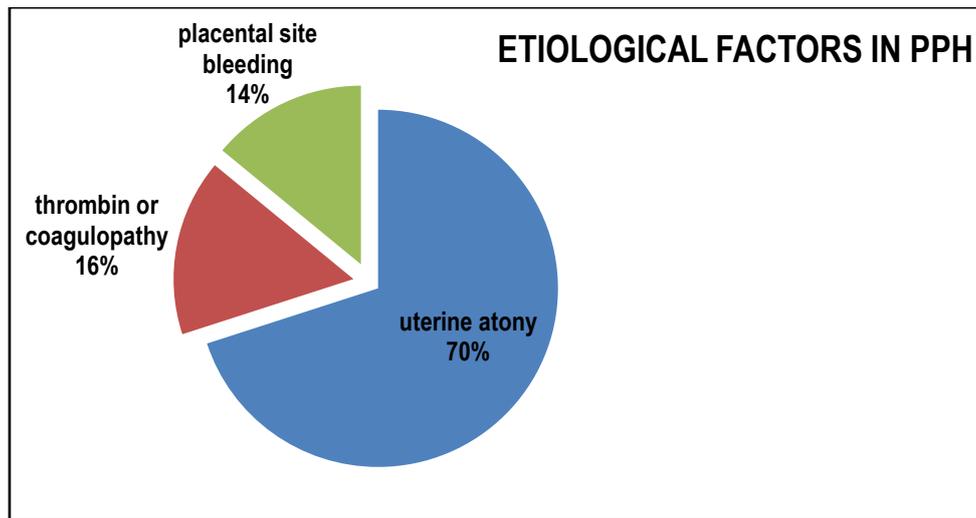


Table 4: Responders to uterovaginal packing & its success rate

No of patients with packing	Responders	Success rate
50	46	92%

Table 5: Complications encountered during intrauterine packing

Complications	No. of patients	Percentage
Post packing PPH	4	8
Fever	4	8
Wound infection	2	4

OBSERVATION& RESULTS

50 patients presented with atonic intractable PPH in whom uterovaginal packing was required. Out of 50 patients, 30 (60%) had PPH after vaginal delivery and 20 (40%) after LSCS. In table

1, it was concluded that younger patients are better responder for intrauterine packing with less amount of blood transfusion. In table 2, it was observed that the failure of uterovaginal packing was more in multipara with more need for blood transfusion. Various high risk factors were encountered during the study period most common cause observed was uterine atony (70%) followed by retained placental tissue (14%) & thrombin (16%) as shown in table 3. Out of 8 patients with coagulopathy, 4 patients were having thrombocytopenia due to dengue fever, 4 patients were referred from outside in DIC due to massive PPH. In table 4 there is 92% success rate was observed among the patients with utero vaginal packing only 4 cases required surgical management 1 patient was managed with quadruple ligation, 1 with internal iliac ligation & 2 were with hysterectomies due to failure to step wise devascularisation and in hemodynamically unstable patient's condition. Table 5 shows the morbidity pattern of patients with utero vaginal packing failure was 8% and most common complications was fever.

DISCUSSION

Post-partum hemorrhage is a serious complication of postpartum period in both developed and developing countries. Uterovaginal packing for atonic PPH was first introduced in 1960s but due to certain complications like septicemia the procedure was disliked as mentioned by Didley et al (2002).¹⁰

It is the best procedure in primary health care centre with low resources in managing the post-partum hemorrhage associated with uterine atony, placental site bleeding and DIC. It has a miraculous effect on patients with atonic PPH by Maier et al (1993).¹¹

Further studies Wittich et al (1996) have recommended uterine packing as a pre surgical management option for atonic PPH.¹² In our study the commonest cause of PPH was uterine atony unresponsive to oxytocics which responded well in 92% of the cases to uterovaginal packing similar results have been shown by Iram et al, Ozden et al & Malay et al.¹³⁻¹⁵

It was observed that the outcome of younger patients with low parity success rate was better which was similar to the studies done by Amarpreet et al (2016).¹⁵ The reason of failure of uterovaginal packing with higher parity could be explained by the fact that there is collagen deposition in between the uterine muscle fiber as mentioned by Dutta et al (2004).¹⁶

Hence requirement for blood transfusion is more in multipara & average blood loss in our study was comparable to other studies.^{6,13}

In our study, we removed the uterine pack after 24 hour depending on the cases. Various other studies done by Iram et al, Nwagha et al also have removed pack after 24 hour in their series although Mayer initially has reported removal of pack from 5-96 hours.^{13,17} According to Robert C. Maier the procedure has rarely been associated with concealed hemorrhage when properly performed.¹¹ We found this statement to be true as none of our 46 successful cases had concealed hemorrhage, as was seen in the present study.

As such there are no randomized control trial have been reported so far except some case series by Nawghaet al 2005, Haq et al (2005) have been published all these recommend effectiveness of uterine packing in intractable PPH.^{17,18} Uterovaginal packing can be done by less trained personnel it is easy to learn by all the members of obstetric team.

The surgical methods involved not only stepwise devascularisation but also subtotal hysterectomy and B-Lynch procedure which require training and time management beside hysterectomy leads to undesirable side effects like reproductive sterility, amenorrhea and psychological trauma to the women hence we recommend uterovaginal packing before resorting to more invasive surgical options in atonic PPH .

In our study, it was also seen that the failure of uterovaginal packing was more in multipara with more need for blood transfusion. In our study 46 (92%) patient showed successful response to utero vaginal packing failure was noted in 4 patients, one was managed with quadruple ligation other one responded to internal iliac ligation while in two cases due to unstable condition of the patient hysterectomy was done. Whereas Iram et al found a success of 87% with this method and 4 patients landed up into hysterectomy while one was managed with B-Lynch suture.¹³

The morbidity pattern of patients with utero vaginal packing failure was 8% and most common complication was fever.

CONCLUSION

PPH is an obstetrician nightmare. After atonic PPH when the patient fails to respond to oxytocics and uterine massage, early availability of the facilities to pack the uterine cavity comes as a sigh of relief for an obstetrician.

Due to grand multiparity, prolonged labor, big baby or any other risk factor for atonic PPH, tight uterovaginal packing had proved to decrease any other operative intervention following vaginal delivery. Also during LSCS many patients with known case of morbidly adhered placenta were prophylactically resorted to uterovaginal packing thereby proving to minimize the blood loss.

Few patients referred from outside already in DIC, thrombocytopenia due to dengue, other factors like hepatitis with deranged liver function tests & in inevitable shock had responded to packing & shown to minimize the morbidity and mortality .

In our study it was found that uterine packing is a safe, quick and effective method in controlling PPH following vaginal delivery and caesarean section. It gives time in a peripheral centre to shift the patient to a tertiary care unit for surgical management. Hence it was concluded that all obstetrician must be aware of this simple method to preserve the fertility and to avoid unwanted hysterectomy in the patient of atonic PPH as well as decreasing the maternal morbidity and mortality.

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