

Full Length Research Paper

Uterovaginal packing with rolled gauze in postpartum haemorrhage: A prospective study of an Indian Medical College

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This study is to assess the safety and efficacy of uterovaginal packing in the management of post partum haemorrhage (PPH) and to observe its outcome. A prospective study was conducted for three (3) years in the department of Obstetrics and Gynaecology of Midnapore Medical College, West Bengal, India. Forty-nine cases of PPH following vaginal deliveries who were haemodynamically stable after initial resuscitation with fluid and blood but PPH not responding to bimanual compression and medical therapy were given with uterovaginal packing for 36 hours. PPH due to genital trauma or retained tissue were excluded. Assessment of haemodynamic status and measurement of fundal height were done every 15 minutes. Pack was removed when it was sure that there was no bleeding and no deterioration of haemodynamic status. Out of the forty-nine cases, PPH was arrested in forty-five cases by uterovaginal packing. Only four cases required more invasive surgical therapy. Two patients needed hysterectomy as they were haemodynamically unstable, quadruple ligation was done in one patient and one patient responded to internal iliac artery ligation. Uterovaginal packing is a safe, easy, quick and effective procedure for arresting uncontrollable PPH, if detected early, when patient is haemodynamically stable.

Keywords: PPH, Uterovaginal packing, haemodynamic status, quadruple ligation, internal iliac artery ligation, hysterectomy.

INTRODUCTION

According to World Health Organization (WHO) (2005), post partum haemorrhage (PPH) is the most common cause of maternal mortality and accounts for one quarter of all maternal deaths worldwide. In a systemic review by Khan KS et al (2006), it was reported that in developing countries, PPH accounts for over one-third of all maternal deaths. In another report by Department of Reproductive Health and Research, WHO (2000), it was found that 14 million cases of PPH occur every year with a case fatality rate of 1%. The famous monument Taj Mahal was built by

mughal emperor Shah Jahan in the memory of his wife Mumtaz who died of PPH during her 14th child birth in early part of the 17th century. In a recent confidential enquiry into maternal and child death as "Saving mother's lives (2003-2005)", the phenomenon of "too little, too late" was highlighted. There is no single satisfactory definition of PPH. An estimated blood loss in excess of 500 ml following a vaginal delivery or a loss greater than 1000 ml following caesarean section often has been used for diagnosis of PPH. The Scottish Confidential Audit of severe maternal morbidity by Penny G et al 2005 defines PPH as major haemorrhage where an estimated blood loss of >2500 ml or the transfusion of 5 or more units of blood or therapy for coagulopathy. The quantity of blood loss is less important than the effect it has on the healthy

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Table 1: Success rate of uterovaginal packing

Number of patients with uterine packing	No of patients responded to uterine packing	Success rate
49	45	91.8%

woman which depends on her blood volume and any underlying health factors. For this reason, it has been suggested by Doumouchsis et al (2008) that any amount of blood loss which causes major physiological changes (e.g. a fall in blood pressure or increase in pulse rate) should be included in the definition of PPH. The risk of dying from PPH depends not only on the amount and rate of blood loss but also on the health of the woman. PPH is of 2 types. Primary PPH occurs within 24 hours of delivery of the baby. According to ACOG Practice Bulletin 2006 secondary PPH is defined as uterovaginal bleeding that occurs after 24 hours but within 6-12 weeks postpartum. Etiologically, it may be atonic, traumatic, due to retained tissue (products of conception or blood clots) or due to coagulation abnormalities. There are various methods of arresting PPH, e.g. uterotonic drugs, uterine packing, uterine tamponade, uterine compression suture, arterial embolisation, surgical devascularization and lastly hysterectomy. Among these methods uterovaginal packing is safe where uterotonic drugs fail. Other procedures are more invasive and require more expertise whereas uterovaginal packing can be done in low resource setting. Thus uterovaginal packing may be suitable alternative to further surgical procedure in patients with intractable haemorrhage. Aim of our study is to assess the safety and efficacy of uterovaginal packing in the management of post partum haemorrhage (PPH) and to observe its outcome.

MATERIALS AND METHODS

After ethical committee approval and informed patient consent, a three year prospective study was conducted in the Dept. of Gynaecology and Obstetrics of Midnapore Medical College, West Bengal, India. Total number of normal delivery was 32,210 in last 3 years (2007-2010). Patients who had lost 25-30% of their blood volume following delivery characterised by fall of systolic blood pressure (SBP) by 30 mmHg, rise of heart rate (HR) by 30 beats/min from their pre delivery value were immediately resuscitated with fluid and blood. After the patient became haemodynamically stable (SBP and HR within 10% of the pre delivery value) but PPH did not respond to bimanual compression and medical therapy (uterotonic drugs), uterovaginal packing was planned and included in the study. Uterovaginal packing was given in

49 cases of atonic PPH. Exclusion criteria include PPH following caesarean section, secondary PPH, haemodynamically unstable patient even after resuscitation with fluid and blood, PPH due to trauma or retained tissue product, PPH before 28 weeks.

Two rolled gauze packing were given under general anaesthesia in the operation theatre (OT). First tight uterine packing was applied by using 8-10 metres gauze starting from one cornu of the uterus to the other and then starting from fundus downwards was given so that no space in the uterine cavity was left behind. Following uterine packing, vaginal packing was given to give additional pressure to uterine packing. Uterovaginal packing was left in situ for 36 hours. Simultaneous oxytocin infusion was continued (10 units in 540 ml of NS @30 drops/min). Antibiotic coverage was given with ceftriaxone 1 gm intravenously (iv) twice daily and metronidazole 500 mg iv thrice daily to all patients for five days. SBP, HR and height of the fundus were recorded as base line parameter just after the uterovaginal packings were applied. Foley's catheter was inserted to see hourly urine output. SBP, HR and height of the fundus were recorded every 15 min. When fundal height remained at the same level and there was no deterioration of haemodynamic status after 36 hours packs were removed. Packs were removed earlier than 36 hours if there is decrease in SBP more than 30%, increase in heart rate more than 40% or increase in the height of the fundus more than 2 cm from the base line. Packs were removed first from vagina and then from uterus. Post insertion morbidity included fever more than 100.4°F and episiotomy wound infection.

RESULTS

Total cases of uterovaginal packing were 49. We have observed 91.8% success rate among the patients who were given uterovaginal packing (Table 1). Out of 49 cases, only 4 cases required surgical management. 2 of them needed subtotal hysterectomy, 1 needed internal iliac artery ligation and 1 needed quadruple ligation (both uterine and ovarian arteries) (Table 2). It was observed from our study that success rate of uterovaginal packing was more in younger patients (Table 3) and success rate decreased with increase in parity (Table 4). Requirement of blood transfusion was more with increase in age and

Table 2: Outcome of uterovaginal packing

Arrest of PPH with uterovaginal packing	45 cases
Quadruple ligation	1 case
Internal iliac artery ligation	1 case
Subtotal hysterectomy	2 cases

In 45 cases PPH was completely arrested. Only in 4 cases PPH continued which were diagnosed clinically by assessing fundal height and haemodynamic status (SBP and HR). After removal of packings these patients were put for surgical management. 2 of them needed subtotal hysterectomy, 1 needed internal iliac artery ligation and 1 needed quadruple ligation (both uterine and ovarian arteries) (Table 2).

Table 3: Relation of age with success of uterovaginal packing

Age in years	No of patients	No of patients responded to uterovaginal packing	Percentage of patients responded to uterovaginal packing	Average unit of whole blood received
20-24	24	24	100%	2.25±0.67
25-29	16	15	93.75%	2.5±0.71
30-34	6	5	83.3%	2.65±0.68
≥ 35	3	1	33.3%	5.33±0.89

In our study it was observed that success rate of uterovaginal packing was more in younger patients than in elderly patients and more blood transfusions were needed in elderly patients (Table 3). One patient of 25-29 year age group required internal iliac artery ligation, one patient of 30-34 year age group required subtotal hysterectomy. Among the patients aged 35 years and above one patient responded to quadruple ligation and one required subtotal hysterectomy.

Table 4: Relation of parity with success of uterovaginal packing

Parity	No. of patients	No of patients responded to uterovaginal packing	Percentage of patients responded to uterovaginal packing	Average unit of whole blood received
Primi	8	8	100%	2.25±0.62
2	10	10	100%	2.4±0.67
3	24	23	95.8%	2.68±0.72
4	5	3	60%	4.8±0.65
≥ 5	2	1	50%	5.5±0.81

It was observed in table 4 that success rate of uterovaginal packing was decreased with increase in parity and requirement of blood transfusion was more in multiparous patients.

parity (Table 3 and 4). Incidence of hysterectomy was also increased with increase in parity (Table 5). Average blood loss was 2.43±0.87 litres. Two patients developed fever more than 100.4°F (Incidence 4.08%) and one patient developed episiotomy wound infection (Incidence 2.04%).

DISCUSSION

According to the observations made by Dildy et al (2002),

uterine packing has long been considered as safe, quick and effective method for controlling PPH. But, after the 1950s, uterine packing for management of PPH was disfavoured because it was a potentially traumatic and time consuming procedure. Risk of development of infection and concealed ongoing haemorrhage also rendered this procedure a non physiological approach.

But more recently, Maier et al (1993) concluded that uterine packing a safe, quick and effective procedure for controlling PPH. Wittch et al (1996) have also recommended uterine packing as a pre-surgical manage-

Table 5: Relation of parity with other invasive procedures

Parity	Internal iliac artery ligation (No of patients)	Quadruple ligation (No of patients)	Subtotal hysterectomy (No of patients)
3	1		
4		1	1
≥ 5			1

From table 5 it was observed that increase in parity is associated with increased requirement of subtotal hysterectomy

ment tool when lacerations of lower genital tract, uterine rupture and retained products have been excluded and medical therapy has failed to control uterine haemorrhage but the number of the cases managed by them by uterine packing was very few (only two) to make a generalized conclusion.

Subtotal hysterectomy is a radical procedure that causes undesirable side effects of reproductive sterility, secondary amenorrhoea, and physical and psychological trauma.

One recent study by Doumouchtsis et al (2007) comparing compression suture, arterial embolisation, pelvic devascularisation by arterial ligation and uterine balloon tamponade concluded that there was no significant difference in success rates among these procedures and they have recommended uterine balloon tamponade as first step in the management of intractable PPH which is not due to genital trauma or retained tissue, and which does not respond to medical treatment.

In developing countries like ours, where health system is not well developed and other invasive procedures like compression suture, arterial embolisation, pelvic devascularisation by arterial ligation and uterine balloon tamponade which require more expertise and sophisticated technology are not always available. Uterovaginal packing by roller gauze may be a good substitute for uterine tamponade.

Uterovaginal packing can be done by less trained medical personnel and can be learnt easily by all members of obstetric team. All members of obstetric team should know how to insert uterovaginal pack because time is of essence in management of PPH.

In the present study, success rate of uterine packing to control PPH was 91.8%. Our observation is similar to the observations made by Nwagha et al (2005) who have found uterine packing effective in 20 patients. Though they have given intra uterine packing intraoperatively in those patients who had delivery by caesarean section where as we have used uterine packing in those patients who had vaginal delivery and PPH due to uterine atony.

Haq et al., 2005 have also found uterovaginal packing successful in 85% of the cases of PPH which is similar to our observation. In our observation, we found that success rate of uterine packing is more in younger patients and gradually decreased with increase in age and parity (Table 4 and 5). Incidence of abdominal

hysterectomy was more in patients with parity 4 or more. This is similar to the observations made by Ozden et al (2005).

The relative increase in the incidence of failure of uterovaginal packing with increase in parity (3 or more) and need of other surgical intervention may be explained by the fact that in multiparous uterus collagen tissues are deposited in between the muscle fibres of uterus as mentioned in Dutta (2004).

In previous study by Nwagha et al (2005) pack was removed after 24 hours, Haq et al., 2005 removed uterine pack after 12-24 hrs depending on the case and Maier et al., 1993 have reported earliest removal of pack at 5 hrs and latest at 96 hrs. We have kept uterovaginal pack for 36 hrs if there was no haemodynamic instability or increase in fundal height so that PPH is properly controlled and chances of infection is minimized.

Average blood loss in our study is comparable to previous studies (12.13). In our study, we observed that requirement of blood transfusion has increased with increase of age and parity (Table 4 and 5). This is probably due to presence of pre existing anaemia, less contractile uterine muscular tissue in multiparous women as mentioned in Dutta (2004).

There is no randomized controlled trial but only some case series by Maier et al (1993), Nwagha et al (2005), Haq et al (2005) and case reports by Naqvi et al (2004), Bagga et al (2004) have been published about the effectiveness of uterine packing. All the case series and reports have concluded that maybe a reasonable alternative to further surgical intervention in patients with intractable post partum haemorrhage is needed. Randomized controlled trials under ethical approval on the use of uterine packing in the treatment of PPH are required to assess the effectiveness of uterine packing.

So, it is concluded from the present study that, uterovaginal packing is a safe, quick, easy and effective procedure for arresting post partum haemorrhage. Uterovaginal packing is less invasive and requires less surgical expertise and it is very effective in low-resource setting when the patient is haemodynamically stable after initial resuscitation.

REFERENCES

- ACOG Practice Bulletin (2006): Clinical Management Guidelines for Obstetrician-Gynecologists, Number 76, October 2006: Postpartum Hemorrhage. *Obstet. Gynecol.* 108:1039-47.
- Bagga R, Jain V, Chopra S, Kalra J, Gopalan S (2004). Uterovaginal Packing With Rolled Gauze in Postpartum Hemorrhage. *Medscape General Medicine.* 6(1):e30.
- Department of Reproductive Health and Research, World Health Organization. *Maternal Mortality in 2000: Estimates Developed by WHO, UNICEF and UNFPA.* Geneva: WHO, 2004.
- Dildy 3rd GA (2002). Postpartum hemorrhage: new management options. *Clin Obstet Gynecol.* 45: 330-44.
- Doumouchtsis SK, Arulkumaran S (2008). Post Partum Haemorrhage: changing practices. *Recent Advances in Obstetrics and Gynaecology* 24. Ed: William Dunlop, William L Ledger. The Royal Society of Medicine Press Ltd.
- Doumouchtsis SK, Papageorgiou AT, Arulkumaran S (2007). Systemic review of conservative management of postpartum hemorrhage: what to do when medical treatment fails. *Obstet. Gynecol. Surv.* 62:540-47.
- Dutta DC (2004). Grand multipara. Ed: In: Dutta DC ed. *Text Book of Obstetrics.* New Central Book Agency (P) Ltd. 22: 342-3.
- Haq G, Tayyab S (2005). Control of postpartum and post abortal haemorrhage with uterine packing. *The J.Pakistan Med. Asso.* 55(9): 369-71.
- Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF (2006). WHO analysis of causes of maternal death: a systemic review. *Lancet.* 367: 1066-1074.
- Maier RC (1993). Control of postpartum hemorrhage with uterine packing. *Am. J. Obstet. Gynecol.* 169: 317-21.
- Naqvi S, Makhdoom T (2004). Conservative Management of Primary Post Partum Hemorrhage. *JCPSP.* 14: 296-97.
- Nwagha UI, Okaro JM, Nwagha TU (2005). Intraoperative uterine packing with mops: an effective, but under utilized method of controlling post partum haemorrhage-experience from South Eastern Nigeria. *Niger. J. Med.* Jul-Sep; 14(3):279-82.
- Ozden S, Yildirim G, Basaran T, Gurbuz B, Dayicioglu V (2005). Analysis of 59 cases of emergent peripartum hysterectomies during a 13-year period. *Arch Gynecol Obstet.* 271(4): 363-67.
- Penny G, Kernaghan D, Adamson L (2005). *Scottish Confidential Audit of Severe Maternal Morbidity. 3rd Annual Report.* Edinburgh: Scottish Programme for Clinical Effectiveness in Reproductive Health.
- Saving mother's lives: Reviewing maternal deaths make motherhood safer. 2003-2005. *The Seventh Report of the Confidential Enquires into Maternal Deaths in the United Kingdom.* London: CEMACH, 2007.
- AC, Salminen ER, Hardin EL, Desantis RA (1996). Uterine Packing in Combined Management of Obstetric Hemorrhage. *Mill. Med.* 161: 180-2.
- World Health Organization (2005). *The World Health Report 2005. Make every mother and child count.* Geneva: WHO.