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Intrauterine Gauze Packing in Primary Post Partum Hemorrhage following Caesarean section: A Clinical study

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ABSTRACT

Aims: To study the effectiveness of uterine gauze packing to manage and prevent primary postpartum haemorrhage during cesarean delivery.

Methods: This was a prospective study that was conducted in the department of obstetrics and gynecology, first affiliated hospital of Chongqing Medical University from Jan to May 2011. Patients included in the study were those with intractable postpartum hemorrhage not responding to medical treatment and for prevention of hemorrhage that could develop during cesarean section. Exclusion criteria included cases of ruptured uterus and vaginal deliveries.Packing was done using 2 m long and 10 cm wide sterilized gauze from the fundus through the cesarean incision with its end passing through cervix into the vagina and left for 24-48 hours or removed earlier in cases of failure to control hemorrhage.

Results: Intrauterine gauze packing during cesarean section to arrest primary postpartum hamorrhage is a successful non-invasive technique. Intractable primary postpartum hamorrhage encountered in 42 (30.9%) cases had PPH after cesarean section. Placenta previa found in 48 (35.3%) cases unresponsive to uterotonics drugs was the commonest cause of uterine gauze packing. Intrauterine gauze packing was successful in 130 (95.6%) cases.

Conclusions: Uterine packing is a cost effective, quick and safe procedure to manage and prevent primary PPH during cesarean delivery. Uterine packing is of benefit in achieving hemostasis particularly in cases of post partum hemorrhage due to low-lying placenta previa/accreta associated with lower segment bleeding conserving the uterus in women with cesarean delivery.

Keywords: Cesarean delivery, hemorrhage, uterine packing.

INTRODUCTION

Although vaginal delivery is a natural birth process and have benefits both to the fetus and the mother, cesarean delivery has been recently overshadowing it. Today, cesarean delivery has been increasing in China, because of psychosocial factor such as "request" for cesarean section for pregnant women without specific medical indications. Despite this, there are additional fetal and maternal risk factors associated with termination of pregnancy only by cesarean delivery. With increasing cesarean delivery, complications of post partum morbidity are also increasing.[1]

Postpartum haemorrhage (PPH) complicates up to 18% of all deliveries. It is one of the most important causes of maternal mortality worldwide, accounting for 25-30% of all maternal deaths.[2] It complicates 6% of cesarean deliveries and leads to hysterectomy in 0.35 of every 1,000 deliveries. Maternal mortality approaches 13.6% in developing nations and 4% in developed nations.[3] Postpartum haemorrhage is a significant contributor for maternal morbidity and mortality worldwide.[4] Loss of up

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to 1000 ml blood is well tolerated by a healthy pregnant woman partly due to physiological increase in the plasma volume and red cell mass during pregnancy. Causes of PPH specially during and after cesarean delivery include atony of uterus, bleeding from uterine incision or extension, placenta accrete/increta/percreta, and uterine rupture. In China, the incidence of PPH is the leading cause of maternal mortality reported higher in rural areas 7.45% than in urban areas 1.56%.[5]

To prevent and manage PPH, there have been implementations of various invasive and non-invasive methods. Medical management of PPH usually involves the use of various uterotonics, such as oxytocin, methylergonovine maleate, 15-methylprostaglandin F2α, dinoprostone, and misoprostol. If uterotonics fail, techniques of tamponade include uterine gauze packing or the use of a Folley's intrauterine catheter, Sengstaken–Blakemore tube, and Bakri balloon.[6,7] Massive hemorrhage can occur in spite of active management of the third stage of labor.[8] Management of intractable primary PPH, refractory to oxytocics and prostaglandins requires prompt action. Intra uterine packing is a non-invasive, safe, quick and cost-effective method applied for management and prevention of PPH.

Uterine packing 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. The tight packing exerts direct pressure on at least some branches of the uterine arteries, decreasing blood flow to the uterus. By preventing the escape of uterine blood loss out of the vagina, the packing contributes to a back-up pressure that helps to control uterine bleeding. Uterine packing may be a reasonable alternative to further surgical intervention in patients with intractable obstetrical hemorrhage.[9]

METHODS

This was a prospective study that was conducted in the department of obstetrics and gynecology, first affiliated hospital of Chongqing Medical University from Jan to May 2011. The study was approved by the Ethics Committee at the first affiliated hospital of Chongqing Medical University, Chongqing, China. All patients and family were carefully explained of the possible complication and interventions during cesarean delivery and a written consent was taken. Total number of deliveries were 1997, out of which 1288 (64.5%) were cesarean deliveries and 709 (35.5%) were vaginal deliveries. Patients included in the study were those with intractable PPH not responding to medical treatment and cases of intrauterine packing for prevention of hemorrhage that could develop during cesaran section. Exclusion criteria included cases of ruptured uterus and vaginal deliveries.

Cesarean delivery was done under epidural analgesia or general anesthesia according to the patient's condition. After securing bilateral uterine incision angles, uterus was packed with folded sterile gauze about 2m long and 10cm wide gauze in layers through the cesarean incision 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.

Uterine packing should not be too tight or loose but adequate to create pressure to prevent bleeding without leaving empty space in uterine cavity. Incision in lower segment is sutured continuously in two layers taking care not to include inadvertently the gauze into the sutures.

Prophylactic broad-spectrum intravenous antibiotic coverage was used in all cases. Patients' vital signs were taken every hour and vaginal bleeding assessed. After giving mild sedative drugs, uterine packing was removed after 24-48 hours of insertion. According to the amount of blood loss and preoperative hemoglobin level blood transfusion was done. All the patients' blood routine, LFT and coagulation test was done preoperatively and postoperatively repeated as per necessary.

RESULTS

Total 130 patients undergoing LSCS were successfully packed with uterine gauze. Age group ranged from 23-44years (Table 1).

Table 1. Details of delivery, uterine packing and complication

Age(years)	range: 23- 44	
Gestational weeks	Cases No (136)	
30-37 weeks of gestation	30	
37-42 weeks of gestation	106	
Mode of delivery		
Total	1997	
Cesarean	1288 (64.5%)	
Vaginal	709 (35.5%)	
Parity for uterine packing in Cesarean delivery		
Primi	32	
2-4 (multiparity)	87	
>4 (grand multiparity)	17	
Common cause of PPH		
Placenta previa	48	35.3%
Lower segment bleeding	46	33.8%
Uterus atony	42	30.9%
Uterine packing	130	95.6%
Hysterectomy	4	3%
Arterial embolization	1	0.7%
Maternal death	1	0.7%

Placenta previa found in 48 cases (35.3%) was the commonest cause of hemorrhage. Associated factors were premature rupture of membrane (PROM), previous cesarean section, twins, pre-eclampsia toxemia, gestational diabetes mellitus (big baby, polyhydramnios), intrahepatic cholestasis of pregnancy, oligohydramnios, decreased platelets count, fibroid uterus, abruptio placenta and some cases without risk factors. Uterine atony occurred in 42 (30.9%) cases with blood loss more then 500ml. Forty six cases (33.8%) had lower segment bleeding from minimal (<500ml) to maximum massive bleeding (>5000ml) leading to hysterectomy to save mother's life. Thirteen cases had placenta adherent at the implanted site due to previous cesarean section, multiple pregnancy, multiparity, PROM and previous dilatation and curettage. One patient had undergone uterine arterial embolization along with uterine packing. Cesarean hysterectomy was done in four (3%) patients due to massive hemorrhage leading to DIC. Utero-vaginal packing was done in eight cases to counter pressure lower segment bleeding in central placenta previa (4), PROM (3), and twins.

The estimated blood loss occurred less than 500ml in 94 (69.1%) cases (Table2).

Table 2. Blood loss/ blood transfusion/ medicine used

Estimated blood loss	cases	(%)
<500	94	69.1
500-1000ml	27	30.9
1000-2000ml	8	
2000-6000ml	7	
Blood transfusion		
Whole blood	7	
FFP	16	
Pack cell	16	
Cryoprecipitate	5	
Medicine used		
Oxytocin 10-20units (intrauterine)	136	
Carboprost 250mg(intrauterine) once	36	
Methotrexate 100mg (intrauterine) once	9	
Mifepristone 50mg (orally) 3days	7	
Misoprostol 600ug (orally stat dose)	10	

Intrauterine oxytocin 10-20unit was given in all cases for active management of third stage of labor and continued intravenous 10unit in 5% dextrose or ringer's lactate 500ml post operatively for 24 hours. Transfusion of whole blood required in seven, red blood cell (RBC) and fresh frozen plasma (FFP) required in 16 cases. Cryoprecipitate transfusion was required in five for massive bleeding to control coagulopathy (Table 2). Intensive care management was needed in five patients where four mothers improved and discharged in normal condition. Despite aggressive management, there was one maternal death following amniotic fluid embolism.

Post uterine packing morbidity included fever more than 100°F in three patients who were given misoprostol 600µg sublingually. Direct intramyometrial injection of carboprost was given in 36 patients. Methotrexate 100mg intramyometrial was given in nine patients due to placenta accreta. Sublingual misoprostol 600µg was given in 10 patients and oral mifepristone 50mg 12 hourly was given in seven patients for additional uterine contraction (Table 2). Packing was effective to create pressure and stop bleeding. Thirteen patients were given placental bed suture with a figure of '8' due to active bleeding from placenta-implanted site to arrest active bleeding.

DISCUSSION

In our study the main criteria assessed was the success rate, maternal morbidity in terms of postpartum pyrexia and concealed hemorrhage and mortality. Uterine gauze packing is an effective management tool when hemorrhage is due to placenta previa/ accrete.[10] The main driving force to control bleeding from the placental bed is myometrial contraction and constriction of blood vessels. Active management of third stage of labor enhances this physiological process and reduces blood loss. Absence of this mechanism leads to PPH in placenta previa because of lack of these living ligatures in the lower segment.[11] Our study showed that successful management of hemorrhage was clinically evident after procedure was completed, although packing material became heavily soaked. Fever after uterine packing was minimal and of no clinical significance. Abdominal ultrasound was performed before discharge and concealed hemorrhage was not seen in any of our patients. Mussali et al[12] in 2000, has reported three cases of placenta accreta managed with methotrexate and succeeded in preserving the uterus in two cases.

Uterine packing fell into disfavour during the 1960s-1980s because it was perceived as concealing ongoing blood loss and increasing the risk of infection. However, it has had a recent resurgence of interest after reports of favorable outcomes in selected circumstances.[9] Comparing the results of postpartum morbidity, a study by Hsu et al[9] reported successful outcome of uterine packing for stopping hemorrhage in 9 patients, one patient had failure of packing resulting in postpartum hysterectomy. There was no significant morbidity secondary to packing. In our study, four patients had hysterectomy all were diagnosed with central placenta previa and previous cesarean delivery. Hysterectomy is a radical procedure that should not be delayed in women who require prompt control of uterine hemorrhage to prevent death.[13]

Bilateral uterine artery ligation was an effective procedure for management of uncontrolled postpartum hemorrhage. Failure occurred in 8% to 20% cases and hysterectomy was required. Richard Johanson described

an innovative method of tamponade using hydrostatic balloon catheter to prevent PPH.[14] Treatment of major postpartum hemorrhage by pelvic devascularization, iliac artery ligation, hypogastric artery ligation and arterial embolization may be difficult to perform in practice but uterine tamponade with gauze or balloon packing is least invasive and most rapid.[15] With placenta previa, adherent to myometrium the aforementioned techniques are often not successful in the control of bleeding in the lower segment. The technique of packing of the lower uterine segment is described for use when local control of bleeding points is unsuccessful. Preservation of reproductive potential may be accomplished with this technique with minimal maternal morbidity. Uterine packing showed successful management and it is recommended that packing could be practiced at tertiary hospitals and requires no special equipment and expertise.[16] B-Lynch Brace suture, which have the advantage of being simple to perform[17], is another conservative surgical pressure produced by the compression sutures could cause uterine synechiae, progressive myometrial ischemic necrosis ranging from partial to complete and myometrial defect in mid-anterior uterine wall, which could be hazardous in subsequent pregnancy.[18] It can only control upper uterine segment bleeding.

CONCLUSIONS

The study concluded that uterine packing is a safe, quick and effective procedure for control of primary postpartum haemorrhage during cesarean section. It is a useful tool for uterine atony and placental site bleeding caused by placenta previa or placenta accreta. Effective management requires teamwork, coordination, speed and adequate facilities for life saving, access to blood and blood products as well as laboratory facilities. Based on our study, 95.6% of women responded to the uterine gauze packing. In life-threatening hemorrhage, uterine gauze packing will not only halt the blood loss and preserve the uterus but also gives an opportunity to reverse and correct any consumptive coagulopathy. By using the uterine gauze packing, one would expect the total blood loss to be reduced and blood products avoided. Every obstetrician must be familiar with these simple methods in order to avoid having to perform a hysterectomy and thus preserving the reproductive capability, as well as diminishing the operative morbidity.

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