



# PRIMARY POSTPARTUM HEMORRHAGE; THE EFFECTIVENESS OF UTERINE MASSAGE WITH ACTIVE MANAGEMENT AS COMPARED TO ACTIVE MANAGEMENT ALONE, IN THE PREVENTION AT A TERTIARY CARE HOSPITAL IN KARACHI PAKISTAN

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**ABSTRACT... Objectives:** The aim of our study is to determine the effectiveness of uterine massage with active management and compare it with active management alone, in primary postpartum hemorrhage prevention. **Study Design:** Randomized control trial. **Period:** 8 months from September 2014 to April 2015. **Setting:** Tertiary Care Hospital in Karachi, Pakistan. **Method:** The study population consists of n=118 patients, both emergency and elected cases, who came to the gynecology and obstetrics ward at our hospital. The patient population was divided into two groups, group I received active management of labor (third stage) while group II received active management of labor (third stage) in addition to the uterine massage (for a 2hr duration), the outcome was measured by measuring the amount of blood loss and the need for uterotonic agents. A p value of less than 0.05 was considered significant. **Results:** The study population consisted of n=118 patients, undergoing spontaneous labor, and divided into two groups, the mean blood loss in group I (control group) was 211.4mls and in group II (massage group) was 167.8mls (p value= 0.015). In group I n=15 patients required additional uterotonic support, while in group II only n=3 patients required it (p value= 0.00058). **Conclusion:** According to the results of our study, uterine massage in addition to the active management of labor reduces post-partum hemorrhage, and it also reduces the requirement for additional uterotonic agents for the control of hemorrhage.

**Key words:** Post-partum hemorrhage, uterotonics, uterine massage, third stage of labor.

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## INTRODUCTION

The loss of greater than 500ml of blood from the reproductive tract within the initial 24 hours of child birth is referred to as post-partum hemorrhage, which occurs in 2 to 11% of child births<sup>1,2</sup>, both in the developing and the developed countries obstetric hemorrhage is a major player when it comes to morbidity and mortality<sup>3</sup> and about 106 million women suffer from anemia which is a direct result of PPH<sup>4</sup> death from hemorrhage has seen a steady increase being 7 women out of 100,000 child births in 1997-1999 to 17 in 2000-2002 in the UK.<sup>5</sup> An atonic uterus is the primary cause of PPH<sup>6</sup> and its risk factors include prolonged stages of labor, retained placenta, augmented labor, over distention of uterus, placenta accrete, multiparty or previous history of PPH.<sup>7</sup> The key to the prevention of PPH is active management of the

third stage of labor, by giving oxytocin by 2 min of delivery of the baby, cord clamping and delivery of the placenta by cord traction, however recent studies suggest that immediate cord clamping is harmful for the baby being delivered.<sup>6,8,9</sup> Uterine massage is a method that could be used to prevent PPH, it stimulates uterine contractions by local prostaglandin release.<sup>10</sup> Routine massage of the uterus is recommended by the International confederation of midwives and the international federation of gynecologists and obstetricians.<sup>11</sup> The process involves placing a hand on the lower part of the abdomen and stimulation of the uterus by massaging the abdomen, but this practice is not followed routinely in clinical practice, the technique is inexpensive and can be used effectively without the need of any instrumentation or drugs. The only down side is the use of time of

the staff and the mild discomfort caused to the woman. There is a need to evaluate the efficiency of uterine massage as a preventive tool for PPH.<sup>10</sup> To which effect is the purpose of our study. It can be used to help reduce PPH, and can be taught to the traditional birth attendants and lady health workers, who conduct a major part of the deliveries in our country, and also it requires no special instrumentation or drugs which are already lacking in most rural areas of Pakistan.

## MATERIALS AND METHODS

The type of study is a randomized control trial, conducted for a period of 8 months from September 2014 to April 2015, at a tertiary care hospital in Karachi, Pakistan. The study population consisted of n=118 patients, both emergency and elected cases, who came to the gynecology and obstetrics ward at our hospital. The patient population was divided into two groups, group I received active management of labor (third stage) while group II received active management of labor (third stage) in addition to the uterine massage (for a 2hr duration), the outcome was measured by measuring the amount of blood loss and the need for uterotonic agents. The inclusion criteria consisted of all the patients at a gestational age of greater than 37 weeks with a singleton pregnancy and undergoing labor spontaneously, where a normal vaginal delivery is possible. While the exclusion criteria included women in whom a normal vaginal delivery is not feasible, multiple pregnancies, grand multiparty, anemia, and history of PPH. After taking due informed consent, a proper history and clinical examination was done on all the patients, ultrasound was done to confirm pregnancy (singleton) and the gestational age was determined by using the last menstrual period, base line vitals were noted and appropriate laboratory investigations were done (CBC, blood chemistry, RBS, urine analysis). The amount of blood loss was quantified using standardized pre weighted pads to soak the blood and they were weighted again after a duration of 2 hours. The difference in weight in grams was taken as the amount of blood that is lost. The patient's blood pressure and pulse rate was also noted to determine effects of hemorrhage, when

required uterotonics were used (Injection oxytocin 5IU IM). All patients were observed for a duration of 24 hours, and a proforma was used to collect the patients data. Data analysis was done using SPSS version 20, mean and standard deviations were used for quantitative variables (age of patient, gestational age), and frequency and percentages were used for qualitative variables (parity, augmentation of labor, requirement for uterotonics). Chi square test was used to analyze and compare the blood loss. A p value of less than 0.05 was considered significant.

## RESULTS

The study population consisted of n=118 patients, undergoing spontaneous labor, and divided into two groups using a random number generator, the groups were similar in regards to clinical characteristics. The age range was between 19 to 39 years of age, the mean age of patients in group I was 25.4 years and the mean age of the second group II was 25.7 years, the mean gestational age of patients belonging to group I was 38.4 weeks and group II was 38.1 weeks. The primigravidas and multigravidas of groups I and II were as 31:28 from group I and 30:29 in group II. In group I a total of n=2 (3.38%) had post-partum hemorrhage and in group I n=1 (1.69%) had post-partum hemorrhage in 24 hours' time duration post-delivery. Tables-I and II describe the various characteristics of the two groups and compare them.

## DISCUSSION

According to a study by Jafarey SN et al who concluded that hemorrhage was the leading cause of birth related mortality in Pakistan.<sup>12</sup> It can be reduced effectively by active management of the third stage of labor. As observed by Prata N et al<sup>13</sup> management of PPH at home by lady health worker or mid wife, resulted in lesser number of referrals and lesser requirement for interventions, which is a burden on economy. Hence training of midwives for management of PPH is mandatory as advised by the Royal College of Midwives.<sup>14</sup>

Hemorrhage	Group I	Group II	P value
Less than 500ml	53 (89.83%)	56 (94.91%)	0.27
500 – 1000ml	4 (6.77%)	2 (3.385%)	
Greater than 1000ml	2 (3.38%)	1 (1.69%)	
Hemorrhage in mls	Group I	Group II	P value
100 – 200	21 (35.59 %)	34 (57.62%)	0.015
201 – 400	32 (54.23%)	22 (37.28%)	
401 – 800	2 (3.38%)	1 (1.69%)	
801- 1000	2 (3.38%)	1 (1.69%)	
Greater than 1000	2 (3.38%)	1(1.69%)	
MEAN +/- Standard deviation	211.4 (146.8)	167.8 (89.8)	

**Table-I. Comparison of the amount of blood loss in the two groups.**

Uterotonic Requirement	Group I	Group II	P value
Required	15 ( 25.42% )	3 ( 5.08% )	0.00058
Not required	44 ( 74.57% )	56 ( 94.91% )	

**Table-II. Comparison of the requirement of uterotonics in the two groups.**

According to the Pakistan Demographic and Health survey of 2012-13 about 52% of deliveries are attended by a unskilled birth attendance and about 48% of the deliveries take place at a health facility, while 4% of women used services of a skilled birth attendant at their home<sup>15</sup>.

This fact was also highlighted by Abou Zahr et al who showed that most of the deliveries still occur at home without the presence of a skilled birth attendant.<sup>16</sup> In a country like Pakistan where most deliveries are still conducted by Lady health workers and traditional birth attendants, the simple techniques of preventing postpartum hemorrhage can be taught to these workers to a great benefit for the patients. Khan KS et al observed that in order to decrease the maternal mortality rate it is required for there to be an essential PPH management program at a community level.<sup>17</sup> The technique of uterine massage for the prevention of PPH is a simple and in expensive method which can significantly reduce blood loss after delivery. The time honored first line management of PPH according to the RCOG guidelines (2009) is uterine massage with emptying the bladder to stimulate the contractions of the uterus.<sup>14</sup> According to WHO guidelines of 2009 uterine massage should be initiated as soon as PPH is diagnosed. The recommendation was

present but there were no randomized controlled trials to figure out the true efficiency with supporting data for uterine massage. We found only a case report series<sup>10</sup> and systemic review<sup>19</sup> on uterine massage. The major determinant for making uterine massage a strong recommendation is the low cost and safety of the procedure<sup>18</sup>, the latest WHO (2012) recommendation states that prolonged uterine massage is not recommended for the prevention of PPH, in those women who have received oxytocin (prophylactic), but the recommendation is weak and not based by strong evidence. There is still data lacking for the efficacy of uterine massage alone with no uterotonic use for PPH prevention, or for a uterotonic other than oxytocin to be used. According to a study by Aleem et al, effectiveness of uterine massage was noted and outcomes were as blood loss greater than 500ml, mean blood loss after engagement, delivery of placenta greater than 30 mins after birth, uterotonics use, need for blood transfusion, and in the study massage was done for after every 10 min duration for a total period of one hour after the third stage of labor. The massage was linked with non-significant decrease in the incidence of hemorrhage of greater than 500ml and a significant reduction in the use of uterotonic agents. Our study is comparable in terms of patients, methods and measure of the primary

outcome. The method of measuring the blood was in aleem et al study was to place drapes under the patient, which is in contrast to our use of weighing the pads, in aleem et al study both vaginal and lower cesarean c section deliveries were measured but in our study we measure in only spontaneous vaginal deliveries. There were no cases of retention of placenta in both the studies. The need for blood transfusion in aleem et al study was for n=2 patients in the control group and none in the study group, while in our study the need of blood transfusion was in n=5 patients in the control group and in n=2 patients in the massage administered group, however the data is too few for statistical analysis. In the aleem et al study the mean loss of blood in the massage group was found to be less at 30mins and 60mins after enrollment, in our study the assessment of blood loss was done at 2 hours after enrollment which was found to be less in the study group (167.8) as compared to the control group (211.4) and a p value of 0.015.

The need for uterotonics in the massage group in aleem et al study was reduced by 80%, while in our study n=3 patients in massage group needed uterotonics versus n=15 in the control group, having a p value of 0.00058. The Aleem et al study was reviewed by Soltani H and invitation for larger trials was made.<sup>21</sup> According to the statement by ICM/FIGO ( 2004 ) it is advised that in the management of the third stage of labor uterine massage to be done after the delivery of placenta to prevent the incidence of postpartum hemorrhage, which is consisted with the results of our study.<sup>11</sup> Our study has some limitations such as short duration and a small sample size, also the method of measurement of blood loss was not perfect. Hematocrit measurements also help solidify the results of the blood loss measured, but due to lack of proper follow up by patients and compliance issues we were unable to perform the hematocrit measurements. Hence an invitation is made for further researches on the topic.

## CONCLUSION

According to the results of our study, uterine massage in addition to the active management

of labor reduces post-partum hemorrhage, and it also reduces the requirement for additional uterotonic agents for the control of hemorrhage.

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### PREVIOUS RELATED STUDY

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