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POSTPARTUM HAEMORRHAGE;

COMPARISON OF INTRA UMBILICAL AND INTRA VENOUS INJECTION OF OXYTOCIN ON BLOOD LOSS IN THIRD STAGE OF LABOUR

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ABSTRACT… The most common complication 0f the third stage of labour is postpartum haemorrhage, which remains a leading cause of maternal mortality (25.0%), especially in developing countries. In developed countries, 3-5% of deliveries are complicated by postpartum haemorrhage: in developing countries, it is 50 times more common .Third stage of labour which exceeds 30 minutes is associated with a significant risk of postpartum haemorrhage and puerperal infection. The best preventive strategy for these complications is active management of third stage of labour. Active management includes administration of oxytocin within one minute of birth of baby. **Objectives:** To compare the mean blood loss after administration of intra umbilical oxytocin versus intravenous oxytocin at anterior shoulder for active management of third stage of labour. **Study Design:** Randomized controlled trial. **Period:** Six months from 1-1-2013 to 30-06-2013. **Setting:** Department of Obstetrics and Gynaecology, Unit-III Jinnah Hospital Lahore. **Methodology:** 100 patients fulfilling selection criteria were included in the study from labour room. These patients were randomly divided into two groups by using lottery method. Group-A, 50 patients were administered 10 units of oxytocin diluted in 20ml of normal saline intraumbilically and group-B, 50 patients were administered 5 units of oxytocin intravenous stat at anterior shoulder. Total blood loss was noted after complete delivery of placenta. **Results:** Mean age was 25.0±3.9 and 24.4±3.5 in group-A and B, respectively. Mean gestational age was 38.20±0.96 weeks in group-A and 38.40±0.94 weeks in group-B. Mean blood loss in intraumbilical oxytocin group was 311.20±27.23 ml and in intravenous oxytocin group mean blood loss was 373.60±66.47 ml. There was statistically significant difference between two groups ($p<0.001$). In group-A 15 patients (30.0%) and in group-B 20 patients (40.0%) were primigravida while remaining patients were multigravida. **Conclusion:** The usage of intraumbilical oxytocin in active management of third stage of labour is beneficial in reducing the blood loss in third stage and thus helps in preventing postpartum haemorrhage.

Key words: Postpartum haemorrhage, Active management of third stage of labour, Intraumbilical oxytocin.

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INTRODUCTION

According to definition by WHO, PPH is a blood loss in excess of 500 ml following delivery.[1] If the postpartum blood loss is 1000ml or more causing hemodynamic compromise, it is known as massive PPH.[2] The exact definition of PPH remains problematic. Any greater blood loss could be termed PPH, however, clinical estimation of the amount of blood loss is notoriously inaccurateas in 50%, and it may be under- estimated.[3]

The leading cause of maternal mortality and morbidity in developing and developed world is PPH[4]. The reported incidence of postpartum haemorrhage is between 3.7 and 8.6% in developed countries[5]. Major PPH occurs following 1.3% of all deliveries in U.K.[6] The incidence of PPH for a vaginal delivery has been estimated 3.9% and 6.4% for a caesarean delivery[7].PPH account for approx. 25% of maternal deaths globally. Primary PPH is one of the top 5 causes of maternal mortality in both developed and developing countries.[8] It is responsible for over 125,000 deaths each year with a morbidity of 20 million/year.[9] Unfortunately, mortality from PPH in developing countries has remained high despite

international effort to decrease maternal mortality, since the launch of the safe motherhood initiative in 1987. While data are quite limited, studies have shown PPH to account for 59% of maternal deaths in Burkina Faso, 53% in Philippines, 43% in Indonesia, 24% in Mexico.[10] It accounts for 58.3% maternal deaths in Pakistan.[11] Uterine atony alone accounts for 75-90% of PPH.

Uterotonic drugs increase the uterine tone or contractility, or both. Different agents have been evaluated in several randomized controlled trials. Advocates of active management argue that administering prophylactic uterotonic agents promotes strong uterine contractions and leads to faster retraction and placental delivery. This decreases the amount of maternal blood loss and the rate of PPH. They also argue that the more effective uterine activity leads to a reduction in the incidence of retained placenta.[12,13]

Routine management of third stage of labour varies dramatically in different countries. In U.K, there is almost universal acceptance of active management of third stage in high-risk patients.[14] The active management combines administration of prophylactic oxytocic drugs as the anterior shoulder delivers, with early cord clamping, cutting, and delivery of placenta by controlled cord traction method with stabilization of uterus. AMTSL is the most effective means of preventing PPH. Compared to expectant management; active management has shown to reduce by more than 50% the risk of PPH, low Hb% and use of blood transfusion. Routine prophylaxis can result in 70% reduction in the need for therapeutic oxytocin to treat excessive bleeding.[15] Oxytocin is the current drug of choice for prevention of PPH in most of the world. The main advantage is its rapid onset of action and the fact that it does not cause elevation of blood pressure or tetanic contraction like ergometrine.[16] A potential advantage of oxytocin in tropical climate is its stability as compared to syntometrine.[17]

This study was designed to compare the mean blood loss after administration of intraumbilical oxytocin versus intravenous oxytocin at anterior shoulder for active management of third stage of labour. Often obstetricians prefer administration of I/V oxytocin for active management of third stage of labour at the time of delivery of anterior shoulder. Through this study we wanted to confirm that which route is better because there is controversy between these two routes, this will help to improve common practice and reduce mortality rate.

MATERIAL AND METHODS

This study was conducted at Obstetrics & Gynecology Department of Unit-III, Jinnah Hospital, Lahore. Over a period of six months from 1-1-2013 to 30-06-2013. This was a randomized controlled trial in which 100 patients fulfilling selection criteria were included from labour room, by Non-probability – purposive sampling technique. inclusion criteria was women of age range 20-40 years, Parity < 5, undergoing normal singleton delivery (assessed through USG) and presented at term gestation of 37-40 weeks (assessed through LMP & USG).whereas, High risk patients like PIH (BP>140/90mmHg), pre-eclampsia (PIH with protein urea+1 on dipstick), or eclampsia (Pre-eclampsia with convulsions), gestational diabetes (GTT>140mg/dl of 3-hours), anemia (Hb<11.0gm/dl),History of PPH in previous pregnancy were excluded from the study. Informed consent and demographics of patients (name, age, parity and gestational age) were obtained. Then patients were randomly divided into two groups by using lottery method. Group-A, 50 patients were administered 10 units of oxytocin diluted in 20ml of normal saline intra umbilically and group-B. 50 patients were administered 5 units of oxytocin i/v stat at anterior shoulder delivery. Then total blood loss was noted after complete delivery of placenta. All the information was recorded on a specially designed proforma. SPSS 16.0 was used to enter and analyze the collected data. Quantitative variables like age, gestational age and blood loss were presented as mean and standard deviation. Variable like parity was presented as frequency. T-test was used to compare mean blood loss in both groups. P value < 0.05 was considered as significant.

RESULTS

Majority of the patients in both groups were between 20-25 years of age and least patients were between 31-40 years old. Mean age was 25.0±3.9 and 24.4±3.5 in group-A and B, respectively (Table-I). In group-A 29 patients (58.0%) and in group-B 32 patients (64.0%) presented at 37-38 weeks of gestation while 21 patients (42.0%) of group-A and 18 patients (36.0%) of group-B presented at 39-40 weeks gestational age. Mean gestational age was 38.20±0.96 weeks in group-A and 38.40±0.94 weeks in group-B. (Table-II). There were 21 patients (42.0%) in group-A and 13 patients (26.0%) in group-B were Para 0-1 and 14 patients (28.0%) of group-A and 17 patients (34.0%) of group-B were Para 2-3 (Table-III). In group-A 15 patients (30.0%) and in group-B 20 patients (40.0%) were primigravida while remaining patients were multigravida (Table-IV). Mean blood loss in intraumbilical oxytocin group was 311.20±27.23 ml and in intravenous oxytocin group mean blood loss was 373.60±66.47 ml. There was statistically significant difference between two groups (p<0.001) (Table-V).

Age (Year)	Group-A (Intraumbilical oxytocin)		Group-B (Intravenous oxytocin)	
	No.	%	No.	%
20-25	31	64.0	33	66.0
26-30	17	34.0	16	32.0
31-35	01	02.0	01	02.0
36-40	01	02.0	-	-
Total	**50**	**100**	**50**	**100.0**
Mean±SD	**25.0±3.9**		**24.4±3.5**	

Table-I. Distribution of patients by age

Gestational (week)	Group-A (Intraumbilical oxytocin)		Group-B (Intravenous oxytocin)	
	No.	%	No.	%
37-38	29	58.0	32	64.0
39-40	21	42.0	18	36.0
Total	**50**	**100**	**50**	**100.0**
Mean±SD	**38.20±0.96**		**38.40±0.94**	

Table-II Distribution of patients by gestational age

Parity	Group-A (Intraumbilical oxytocin)		Group-B (Intravenous oxytocin)	
	No.	%	No.	%
0-1	21	42.0	13	26.0
2-3	14	28.0	17	34.0
Primigravida	15	30.0	20	40.0
Total	**50**	**100**	**50**	**100.0**

Table-III Distribution of patients by parity

Gravidity	Group-A (Intraumbilical oxytocin)		Group-B (Intravenous oxytocin)	
	No.	%	No.	%
2	20	40.0	12	24.0
3	11	22.0	15	30.0
4	04	08.0	03	06.0
Primigravida	15	30.0	20	40.0
Total	**50**	**100**	**50**	**100.0**

Table-IV. Distribution of patients by gravidity

Blood loss (ml)	Group-A (Intraumbilical oxytocin)	Group-B (Intravenous oxytocin)
Mean	311.20	373.60
Standard deviation	27.23	66.47
t value	**-5.030**	
P value	**P < 0.001**	

Table-V. Comparison of blood loss (ml)

DISCUSSIONS

Retraction of the uterus in the third stage is desirable for placental separation and control of postpartum hemorrhage. Different strategies were developed for minimizing the effect of post-partum hemorrhage. Significant reductions may be achieved in the incidence of massive hemorrhage after following available hospital guidelines.[19]

With the contraction of the uterine wall, there is more efficient myometrial contraction and placental separation. One possible method to facilitate myometrial contraction and placental separation is to make available the delivery of oxytocin beneath the placental site through an injection into the umbilical vein[20]. Increasing tension causes decidua spongiosa to give way with the formation of a hematoma which then accelerated the process of placental separation and expulsion. It will lead to short duration and amount of blood loss during the third stage of

labour.[21]

At the time of delivery of anterior shoulder of baby or after placental delivery, oxytocin or methergin are used commonly.[22,23] Side effects of these drugs and certain contraindications have restricted the use of these drugs. The obstetricians were in the constant search for a safe and effective method for the proper management of third stage of labour. Intraumbilical administration of oxytocin during third stage of labor devised in 1983 by Golan[24] has been evaluated by many authors with results in favors of this method.[25, 26]

Studies reported that the efficacy of intraumbilical oxytocin in active management of third stage. However, the study did not include any appropriate control group. This was later followed by many more studies on effect of intraumbilical oxytocin on management of third stage of labour and retained placenta proving and disapproving its efficacy. One study showed that the amount of postpartum blood loss was significantly less in intraumbilical group (178.40±2.64ml) as compared to i/v injection at anterior shoulder (276.90±31.97ml), but another study reported earlier that intraumbilical oxytocin had significantly greater calculated blood loss compared with those who received peripheral administration (P=0.01) and authors concluded that intraumbilical oxytocin is no more beneficial than peripheral administration.[18]

In current study we have found that intraumbilical oxytocin is very effective in reducing the amount of blood loss in third stage of labour when compared with intravenous oxytocin (311.20±27.23ml vs. 373.60±66.47 ml). Uterine contraction and placental separation can be achieved better by employing this procedure which facilitates the delivery of high levels of oxytocin to placental beds and uterine wall.

CONCLUSION

The usage of intraumbilical oxytocin in active management of third stage of labour is beneficial in reducing the blood loss in third stage and thus helps in preventing postpartum haemorrhage. It is a method of choice especially in those patients in which there is high risk of PPH and ergometrine is contraindicated.

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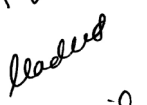
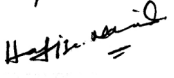
AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Faiqa Saleem Baig	Conception & design of the study	
2	Dr. Nadeem Shahzad	Analysis & interptation of the data and statistical analysis	
3	Dr. Hafiza Naveeda Khurshid	Collection & assembly of data	
4	Dr. Aisha Malik	Review & final approval