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Original Research Article

Comparison between intramuscular oxytocin versus oxytocin with sublingual misoprostol in blood loss reduction among risk of postpartum hemorrhage vaginal deliveries

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ABSTRACT

Background: This study compares the efficacy of intramuscular oxytocin and oxytocin with sublingual misoprostol administration among the primary postpartum hemorrhage (PPH) mothers of vaginal deliveries. The aim is to compare the effectiveness of intramuscular oxytocin versus oxytocin with sublingual misoprostol in blood loss reduction among women at risk of PPH undergoing vaginal deliveries.
Methods: Each group, 50 mothers were selected from the risk of PPH vaginal mothers in the labour ward of the study area.
Results: The two groups' mothers were not statistically significantly differed (P>0.05) in respect of their demographic and clinical variables such as age, gravida, risk factors, the onset of labour and type of delivery. The mean blood loss of group I was 315.4±111.4 ml and group II mean blood loss was 241.4±191.2 ml. The difference between the two groups' blood losses was statistically significant (P<0.05).
Conclusions: Oxytocin with sublingual misoprostol significantly reduced the blood loss during 3rd stage labour than only oxytocin administration.

Keywords: Blood loss, Oxytocin, Oxytocin with misoprostol, Vaginal delivery-PPH risk

INTRODUCTION

According to WHO postpartum hemorrhage continues to be the most significant cause of maternal mortality and morbidity worldwide.[1-3] Primary postpartum hemorrhage (PPH) is defined as loss of 500ml or more of blood per vaginam during the first 24hrs after the delivery of the baby or even if the blood loss is less than 500ml but associated with significant hemodynamic changes in the mother.[4] Excessive blood loss is estimated by a 10% drop in the hematocrit value post-delivery or by the need for blood transfusion; this occurs in approximately 4% of the vaginal deliveries. The routine use of oxytocin is associated with a significant reduction in the occurrence of PPH, it increases the frequency and strength of uterine contractions and augments retraction of the uterus, misoprostol a pge1 analogue is an effective myometrial stimulant selectively binding to ep-2/ep3 prostanoid receptors.[5-10] It is cheap and thermostable and bioavailability is more with sublingual route. This study compares the blood loss post vaginal delivery among women at risk of PPH among those receiving only intramuscular oxytocin with those receiving intramuscular oxytocin and sublingual misoprostol.[11,12]

The aim is to assess the effectiveness of intramuscular oxytocin versus intramuscular oxytocin and sublingual misoprostol in reducing the amount of blood loss among women at risk of postpartum hemorrhage undergoing vaginal deliveries.

METHODS

The study design was a prospective comparative study with sample sizes of 50 in each group. The study duration was 6 months. The study subjects were selected from the Antenatal mothers attending and admitted in the labour ward of Tirunelveli Medical College Hospital for six months from 1st July 2017 to 31st December 2017.

Inclusion criteria

- The mothers, those who were having the risk of PPH, big baby, high parity, abruption placenta, precipitate labour, chorioamnionitis and previous PPH were included in the study.

Exclusion criteria

- Among them, those who had heart diseases, epilepsy, severe anaemia, traumatic PPH, hepatic disorders, disorders of blood coagulation and previously scarred uterus were excluded from the study.

The above mothers were divided into two groups namely those who received only intramuscular oxytocin and those who received intramuscular oxytocin and sublingual misoprostol after delivery of the anterior shoulder. After delivery, the mother was brought to the edge of the table.

The Kelly's pad was placed under the patient's gluteal region. The pads lower end was inserted into measuring jug to measure the blood loss. The amount of blood loss was monitored among both groups, and the results analyzed. The collected information from both groups was analyzed and interpreted accordingly.

Statistical analysis

Both groups data were analyzed and interpreted with the help of the statistical package IBM SPSS statistics-20. The P value less than or equal to 0.05 ($P \leq 0.05$) were treated as statistically significant.

RESULTS

The demographic profile of the two groups such as age, gravid, risk factors, on set of labour, nature of delivery, duration of 3rd stage labour were described and compared between the two groups.

Table 1: Description and comparison between the two groups in respect of their demographic characteristics.

Demographic profile	Component	Group I (50)		Group II (50)		Results and significant
		No.	%	No.	%	
Age (years)	<20	5	10.0	3	6.0	χ^2=0.641 df=1 P=0.546
	20-24	19	38.0	25	50.0	
	25-29	21	42.0	17	34.0	
	30+	5	10.0	5	10.0	
Gravida	1st	18	36.0	15	30.0	χ^2=1.368 df=2 P=0.236
	2nd	20	40.0	22	44.0	
	3rd +	12	24.0	13	26.0	
Risk factors	Uterus*	29	58.0	28	56.0	χ^2=0.041 df=1 P=0.853
	Prolonged	17	34.0	20	40.0	
	Abruptio Pla	3	6.0	0	0.0	
	Grand Multi	1	2.0	2	4.0	
Onset of labour	Spontaneous	32	64.0	38	76.0	χ^2=1.714 df=1 P=0.213
	ARM and Oxyt	12	24.0	7	14.0	
	PGE_2 alone	3	6.0	3	6.0	
	PGE_2+Oxyto	3	6.0	2	2.0	
Type of delivery	Natural	23	46.0	19	38.0	χ^2=0.657 df=1 P=0.528
	Episiotomy	20	40.0	27	54.0	
	Vacu+Forecep	7	14.0	4	8.0	

* Over distended uterus

Table 1 describes and shows the homogeneity between the groups I and II. Most patients in control and study group were in the age group of 20-30yrs whereas 6% in control group and 10% in study group were less than 20 yrs. As per gravida distribution 40% in control and 40% in study group were second gravida and 30% in control

and 36% in study group were primi. As per risk factors 56% in control and 58% in study had over distend uterus and 40% in control and 34% in study had prolonged labour. As per onset of labour 76% in control and 64% in study group had spontaneous onset of labour and 14% in control and 24% in study group was induced with ARM and oxytocin. As per nature of delivery 38% in control and 46% in study group had vaginal delivery and 54%in control and 40% study group was delivered by labour natural with episiotomy or perineal laceration of II". All variables such as age, gravid, risk factors on set of labour and type of deliveries were not statistically significantly differed (P>0.05). Hence the two groups were comparable groups.

Table 2: Comparison of 3rd stage labour duration between the two groups.

Duration (minutes)	Group I n=50		Group II n=50	
	Frequency	%	Frequency	%
0-2	2	4.0	15	30.0
2-4	23	46.0	30	60.0
4-6	19	38.0	4	8.0
6-8	6	12.0	0	0.0
8+	0	0.0	1	2.0
Total	50	100.0	50	100.0
Mean±SD	4.5±1.4		3.25±2.6	
"t"	2.993 df= 98			
Significance	P=0.009			

Table 2 compares the duration of 3rd stage labour between the two groups. In 90% of cases in control group duration of third stage of labour was <4min, whereas in study group only in 50% of cases duration is <4minutes. The mean duration of group I was 4.5±1.4 min. The mean duration of the group II was 3.25±2.6 min. The difference of mean duration between the two groups was statistically highly significant (P<0.01).

Table 3: Comparison of blood loss between the two groups.

Blood loss (ml)	Group I n=50		Group II n=50	
	Frequency	%	Frequency	%
0-100	0	0.0	3	6.0
100-200	6	12.0	25	50.0
200-300	19	38.0	15	30.0
300-400	16	32.0	3	6.0
400-500	5	10.0	2	4.0
500+	4	8.0	2	4.0
Total	50	100.0	50	100.0
Mean±SD	315.4±111.4		241.4±191.2	
"t"	t=2.366 df= 98			
Significance	P=0.029			

Table 3 states the comparison of blood loss between the two groups during 3rd stage labour. In above table only 6%cases in control group had 100ml blood loss whereas in study group all had 100ml blood loss and 50% cases in control group had blood loss in range 200-300ml whereas in study group 38% had blood loss in range 100-200ml and 8% of control group had blood loss>500ml which is significant. The mean blood loss of group I was 315.4±111.4ml. The group II mean blood loss was 241.4±191.2ml. The difference between the two groups was statistically significant (P<0.05).

DISCUSSION

The sublingual route of administration of misoprostol was chosen in the present study because of better pharmacokinetics compared with oral and was as effective as conventional parenteral oxytocics. Sublingual administration of misoprostol has been used as a prophylactic oxytocic in a few studies. Sublingual misoprostol at a dose of 400 µg has been shown to result in significantly lower blood loss compared with 20 IU of oxytocin infusion during cesarean delivery.[13]

In this study, the maximum (42%) of mothers were in the age bracket of 25-29 years, and they were in the group I. In respect of group II 50% of mothers in the age group of 20-24 years. In both groups, the 2nd gravidity mothers were 40% and 44% as the maximum. In both groups, the risk factor of the overdistended uterus was 58% and 56%, which were recorded as maximum. Among this risk factor, the big baby 34% of group I and 36% in group II was the more contributing risk factor. The prolonged labour in Group I was 34%, and group II was 40%, which was the second most contributing risk factor. The spontaneous onset of labour in group I and II were 64% and 76% respectively, and next to this, the ARM & Oxytocin was the second most onset of labour in both groups. Most (46%) of the mothers in the group I had natural with Episiotomy and natural delivery was 40%. But in group II, the natural labour and natural with Episiotomy was 38% and 54% respectively. The 3rd stage means the duration of group I was 4.5±1.4min was significantly more than the Group II mean duration 3.25±2.6min. None of our patients have duration of third stage of labor to be ≥ 30 minutes, whereas in studies the duration was 7.9 minutes, > 30 minutes, 11-30 minutes, 8 minutes respectively.[14-17]

The blood loss of group I was 315.4±111.4ml was significantly more than the group II mean blood loss as 241.4±191.2 ml. In another study patients who received 600 µg of misoprostol had the lowest blood loss (96.05±21.1ml), followed by 400 µg of misoprostol (126.24±49.3ml), oxytocin (154.7±45.7ml), and methylergometrine (223.4±73.7ml).[18] Baskett et al reported no cases of transfusion need in their studies.[19] WHO multi-centric trial reported statistically higher rate of PPH and use of additional uterotonics with 600µg of misoprostol compared to other injectable uterotonics.[20]

CONCLUSION

The study results revealed that the duration of 3rd stage labour was more in the oxytocin only administered

subjects than the oxytocin with sublingual misoprostol mothers. The oxytocin with sublingual misoprostol significantly reduced the blood loss during 3rd stage labour than the only oxytocin administration.

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