

Original Article

Intraumblical Infusion of Oxytocin; As an Efficacious Route for Prevention of Complications of 3rd Stage of Labor at Tertiary Care Hospital of Sindh

Farhana Anjum¹, Roomi Memon², Farah Naz³, Samreen Pathani⁴, Farzana Memon⁵, Mozna Talpur⁶

¹Associate Professor, Dept. of Obs & Gynae, Isra University Hospital Hyderabad, ²Senior Lecturer, Physiology department Isra University Hospital, Hyderabad, ³Department of Obs & Gynae, Liaquat University Hospital Hyderabad, ⁴Assistant Professor, Pharmacology department, Isra University Hospital Hyderabad.

⁵Senior Lecturer, Physiology department, Isra University Hospital, Hyderabad.

⁶Assistant Professor, Pharmacology department, Isra University Hospital Hyderabad.

Correspondence: Dr Roomi Memon

Senior Lecturer, Physiology department, Isra University Hospital Hyderabad

Email: roomimemon2015@gmail.com

Abstract

Objective: To determine the efficacy of intraumblical oxytocin with intravenous oxytocin to reduce the 3rd stage labor related complications.

Methodology: This case control study was conducted on 100 parturient women at LUMHS University Hospital Hyderabad Sindh in a period of 1 year from February 2016 to January 2017. All the patients with reproductive age having singleton pregnancy with cephalic presentation undergoing uncomplicated labor reaching 3rd stage of labour with no medical and obstetrical complication were randomly recruited into two groups. Group 1 given 10 units of oxytocin with 20ml of normal saline through intraumblical vein infusion by (Pipangas technique) for the 3rd stage of labor management. While in Group 2 (control group) were given 10 unit of oxytocin on intravenously for 3rd stage labor management. In both groups the duration of 3rd stage in minutes, amount of blood loss in milliliters and complications were documented. Data was recorded in the preform and analyzed by spss version 16.

Results: Hundered patients were studied, 50 in study group A and 50 in group B (control). Most of the patients were with age group of 21-30 years 30(60.0%) in study group and 25(50.0%) in control group, p-value 0.041. Blood loss was markedly decreased in study group in contrast to controls, p-value 0.001. Third stage labor markedly decreased in study group 4.57 ± 3.29 minutes as compared to control group 8.19 ± 4.2 minute, p-value 0.0005. Complications were less in study group, while statistically insignificant, p-value 0.426.

Conclusion: Intraumblical oxytocin with intravenous oxytocin showed the best effectiveness in 3rd stage related blood loss and labor duration with fewer complications.

Key words: Intraumblical oxytocinon, 3rd stage of labor, maternal morbidity.

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Introduction

Pregnancy and child birth related Post-partum hemorrhage (PPH) remains still the main cause of maternal morbidity and mortality in reproductive age group women in developing countries.¹ About 585000 females die due to complication of pregnancy each year.² World Health Organization in

1990 reported 146,250 (25 %) maternal deaths worldwide due to severe PPH.³ Severe bleeding during childbirth is very important cause of mortality throughout the world.⁴ Each pregnant women may confront dangerous blood loss during delivery. Antenatal care and labor management are most

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important phases for the safe motherhood and to prevent the complication of labor among which the most important is post-partum hemorrhage. Post-partum hemorrhage can be defined as "Amount of bleeding from or into genital tract following birth of baby up to the end of puerperium which adversely affects the general condition of patients evidenced by rise in pulse rate and falling of blood pressure". In addition to 3rd stage complications, PPH remains still an important risk for morbidity and mortality in developing countries.⁵ This stage of labor has been expressed as risk stage. Commonest complications occurring during third stage of labor are PPH, Retained Placenta, morbidly adherent placenta, placenta accreta, placenta increta, percreta, perineal tears and uterine inversion increasing the maternal morbidity and mortality.⁶

Labor's 3rd stage begins with the fetus delivery, which comprises of two periods of partition and exit of the placenta. Defective placental separation leads to separation of the blood sinus and subsequently PPH.⁷ Prolonged 3rd stage of labor is the commonest risk factor of postpartum haemorrhage with massive bleeding, though distinctive time intervals are set to analyze the anomalous condition of placenta and the likelihood of the postpartum haemorrhage (PPH).⁷ Blood loss average in this stage of labor is 250 to 350 ml, and 12% of the females lose > 500 ml of blood.⁸ Hemorrhage, sepsis and hypertensive disorders are the three leading causes of death in 52% of cases.⁶ As per WHO 25% of maternal mortality is due to PPH. Postpartum Hemorrhage is the quickest maternal killer and can even kill healthy mother within 2 hours if not treated.⁶

Manual evacuation of the placenta is performed in about 1-3% of patients, and in spite of the fact that it is generally a safe technique, it is related to many complications. Intra-umbilical vein oxytocin "10 IU (1 mL)" following delivery of the fetus was clinically effective for less time of 3rd stage labor.⁹ On the other hand, this has not been significantly effective,¹⁰ and further studies have been suggested to address this issue.⁹ Therefore this study has been planned to assess the effectiveness of intra-umbilical infusion of oxytocin in prevention of complications of 3rd stage labor.

Methodology

This was a case control study, which was conducted on 100 parturient women at Isra University Hospital and LUMHS University Hospital Hyderabad. Study duration was one year, from February 2017 to January 2018. All the patients with reproductive age having singleton pregnancy with cephalic presentation undergoing uncomplicated labor reaching 3rd stage of labor with no medical and obstetrical complication were randomly recruited into two groups. The patients of group 1 were given 10 units of intra-umbilical oxytocin with 20 ml saline through PIPENGAS technique for 3rd stage labor management. In this technique as the baby delivered, cord of placenta was cut and refreshed and umbilical vein was located by its tortuous course, feeding tube was inserted up to 5 cm or where the resistance could be felt. A 30cc syringe containing 20 ml saline and 10 unit oxytocin was infused through umbilical vein directly to placental bed and uterine myometrium. Patients of Group B (control group) underwent 10 units of oxytocin with routine management of intravenous infusion of oxytocin for 3rd stage of labor after the delivery of baby through the intravenous cannula. Labor was monitored through partogram. Delivery was conducted by senior gynaecologist having experience >5 years. Duration of third stage was recorded in minutes. Blood loss during third stage was measured by weighing the blood in ml and blood clots, and one fist of clot was considered as 500 ml. Patients were kept under observation for 1 hour for recording any 3rd stage complications like primary partum hemorrhage, retained placenta, and inversion of uterus. Data was recorded in the self-made proforma and analysis done was done by using SPSS version 16.

Results

Total 100 patients were studied, 50 in the study group and 50 were taken as control. Most of the patients 30(60.0%) were in age group of 21-30 years in study group and 25(50.0%) in control group, followed by 17(34.0%) patient of group A and 15(30.0%) of group B were found with age group of 31-40 years, age was statistically insignificant among both groups; p-value 0.529. Multipara were significantly high in control group and grand

multipara were more in study group, p-value 0.041, results have been shown in Table I

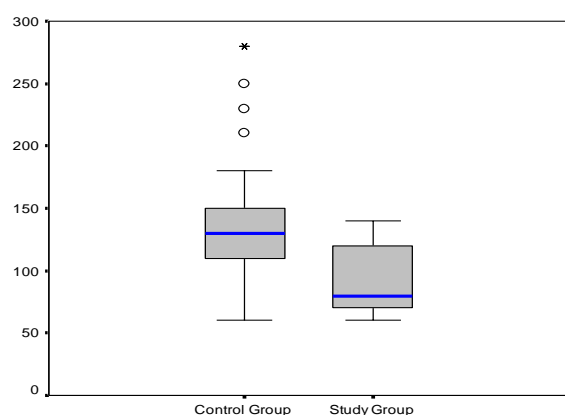
Blood loss was markedly decreased in study group in contrast to controls, p-value 0.001, as mean of the blood loss was 95.57 ± 26.52 ml in study group and 133.4 ± 50.61 ml in control group. Mean duration of third stage of labor (4.57 ± 3.29 minutes) was significantly decreased in study group as compared to control group (8.19 ± 4.2 minute); p-value 0.0005, results have been shown in table I

Median of blood loss was less in the study group as compared to control group, results have been shown in figure 1

Table I: Age and parity comparison among study groups (n=100)

Variables	Control Groups n=50	Study Groups N=50	p-value
Age groups			0.529
<20 years	08(16.0%)	05(10.0%)	
21-30 years	25(50.0%)	30(60.0%)	
31-40 years	17(34.0%)	15(30.0%)	
Total	50(100.0%)	50(100.0%)	
Parity			0.041
Primipara	06(11.0%)	05(10.0%)	
Multipara	32(64.0%)	21(42.0%)	
Grand multipara	12(24.0%)	24(48.0%)	
Total	50(100.0%)	50(10.0%)	

Figure 1. Comparison of median blood loss between groups



According to the complications, postpartum haemorrhage was 6(12.0%) in study group and 10(20.0%) in control group, followed by retained placenta in one case of study group and in 2 cases of control group, while inversion of uterus was found

only in one case of control group. Complications were less in the study group, while statistically insignificant, p-value 0.426. Table III.

Table II: Blood loss and duration of 3rd stage of labour among groups (n=100)

Variables	Study Groups N=50	Control Groups n=50	p-value
Total estimated blood loss			
50-100 ml	15(30%)	27(54%)	0.0001
100-150 ml	12(24%)	17(34%)	
150-200 ml	13(26%)	06(12%)	
>200 ml	10(20%)	0(0%)	
Total	50(100.0%)	50(100.0%)	
Mean blood loss (mean±SD)	95.57±26.52 ml	133.4±50.61ml	
Duration of third stage of labour			
< 5 minutes	7(14%)	35(70%)	0.0005
5 to 10 Minutes	26(52%)	9(18%)	
10 to 20 minutes	17(34%)	6(12%)	
Total	50(10.0%)	50(100.0%)	
Mean duration of labor (mean±SD)	4.57±3.29 minutes	8.19±4.2 minutes	

Table III: Comparison of complication between groups (n=100)

Complication	Study Groups n=50	Control Groups n=50	P-Value
No complications	43(86.0%)	37(74.0%)	0.426
Post-partum Haemorrhage	6(12.0%)	10(20.0%)	
Retained placenta	1(2.0%)	2(4.0%)	
Inversion of uterus	00	1(2.0%)	
Total	50(100.0%)	50(10.0%)	

Discussion

This study was conducted to find out the efficacy of intra-umbilical infusion of oxytocin versus routine intravenous infusion of oxytocin for management of 3rd stage of labor. In this study, duration of third stage of labor was significantly decreased in study group (4.57 ± 3.29 minutes) as compared to control group (8.19 ± 4.2 minute); p-value 0.0005. Nazarpur et al¹¹ also reported in their results that significant decreases in labor duration was in intra-umbilical group 4.45 minutes when compared to control group 6.99 minutes. In comparison to our results, study conducted by Nankali A et al,¹² reported in their results that intra-umbilical oxytocin group women

had shorter duration of third stage of labor in contrast to controls, $p < 0.001$). Intra-umbilical Oxytocin when injected and on reaching in the placental bed the stimulation of uterine contractions starts, which leads to decrease the placental attachment site area. This causes tension in the decidua spongiosa resulting in the formation of hematoma. This whole process accelerates the separation of placenta and results in its expulsion, which causes shortened time of 3rd stage of labor and a decrease in blood loss. Hydraulic effects of the injected solution can also result in separation of placenta by mechanical pressure. Results of a study conducted in Florida, USA, concluded that mean duration of 3rd stage labor was insignificant in groups receiving intra-umbilical oxytocin and intravenous oxytocin respectively. Devi AM et al¹³ reported that intra-umbilical oxytocin intra-umbilical injection of oxytocin instantly after birth and before placental delivery markedly reduced the third stage labor duration and loss of blood in contrast to intramuscular or intravenous oxytocin. Khalid T et al¹⁹ reported that intra-umbilical oxytocin including active treatment showed significant reduction in 3rd stage labor duration as compared to only active management.

In this study, blood loss was markedly decreased in study group in contrast to controls, p -value 0.001, as mean of the blood loss was 95.57 ± 26.52 ml in study group and 133.4 ± 50.61 ml in control group. Godha Z et al.¹⁴ found comparable results. Another study conducted by Kore et al.¹⁵ also found significant decrease in loss of the blood and 3rd stage labor duration by the administration of intra-umbilical injection of oxytocin when compared with intravenous oxytocin. A study conducted by Manhas et al.¹⁶ also found significant decrease in time of labor and loss of blood when intra-umbilical injection of oxytocin was given. Another study conducted by Gungorduk K et al¹⁷ mentioned less blood loss in females treated with oxytocin, was significantly less as compared to control group P -value 0.001, and duration of 3rd stage of labor was also significantly decreased in oxytocin group as compared to control group, p -value 0.001. Another study conducted by Tehseen F et al¹⁸ reported that women who underwent intra-umbilical vein syntocinon had a

blood loss about 234.03 ml while in control group 276.51 ml of blood loss was noticed, $p=0.001$.

Conclusion

It was concluded that intraumbilical oxytocin with intravenous oxytocin for management of 3rd stage of labor, is safe and most effective in the prevention of PPH and prolonged duration of 3rd stage of labor and its related complications. More research is suggested in this regard.

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