Section: Obstetrics and Gynecology

Original Research Article

COMPARATIVE STUDY ON PROPHYLACTIC ADMINISTRATION OF OXYTOCIN AS PER KERALA FEDERATION OF OBSTETRICS AND GYNECOLOGY AND WHO GUIDELINES FOR THE PREVENTION OF POSTPARTUM HEMORRHAGE IN FULL TERM VAGINAL DELIVERIES IN A TERTIARY CARE CENTRE

Kukku Thomas[1], Neetha George[2], Bindu Menon[3], Sareena Gilvaz[4], Arundhathi Ramadas[5], Dona Maria Joseph[6]

[1]PG Resident, Department of Obstetrics and Gynecology, Jubilee Mission Medical College & Research Institute, Thrissur, India.
[2]Associate Professor, Department of Obstetrics and Gynecology, Jubilee Mission Medical College & Research Institute, Thrissur, India.
[3]Professor, Department of Obstetrics and Gynecology, Jubilee Mission Medical College & Research Institute, Thrissur, India.
[4]Professor & Head, Department of Obstetrics and Gynecology, Jubilee Mission Medical College & Research Institute, Thrissur, India.
[5]JRll JMMC, Department of Obstetrics and Gynecology, Jubilee Mission Medical College & Research Institute, Thrissur, India.
[6]3rd Year MBBS, GMC, Thrissur, India.

Received : 02/09/2024
Received in revised form : 23/10/2024
Accepted : 07/11/2024

Keywords:
Postpartum Hemorrhage, KFOG, WHO guidelines, full term deliveries.

Corresponding Author:
Dr. Neetha George,
Email:georgeyogiaveedu@gmail.com

DOI: 10.47009/jamp.2024.6.6.13

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (6); 61-64

Abstract

Background: Primary postpartum haemorrhage refers to bleeding occurring within the initial 24 hours following childbirth, whereas secondary postpartum haemorrhage refers to bleeding that occurs between 24 hours and 12 weeks after childbirth. To compare the effect of prophylactic administration of oxytocin as per KFOG guidelines versus the WHO guidelines. **Materials and Methods:** It was a Cross-sectional study conducted in Department of Obstetrics and Gynecology, Jubilee Mission Medical College, Thrissur for a period of 18 months. Eligible women who were given prophylactic oxytocin as per KFOG and WHO guidelines for the prevention of postpartum haemorrhage. Predicted on the blood loss estimation mean and standard deviation in postpartum hemorrhage recorded in a previous publication, with a minimum sample size of 100 in each group is required with a 95% confidence interval and 90% power. Simple Random sampling techniques was used for sample selection. SPSS (25.0) was used for analysis. **Result:** The patients mean age among KFOG group has been 26.96 years (±4.13) and in patients among WHO group was 27.28 years (±4.29) which was substantially insignificant (p-value0.592). The mean blood loss in patients among KFOG group was 408.54 ± 163.88ml and in patients among WHO group was 525.34 ± 222.8ml, which was statistically significant (p value 0.0001) There were 4% patients among WHO group, who had blood loss of more than 1000ml in our study. There was statistically significant higher rate of usage of uterotonics like Inj. Methylergometrine, Inj Carboprost, Inj Tranexamic acid and Tab Misoprostol, among the patients of WHO group in our study. (p<0.005). **Conclusion:** KFOG guidelines are better than WHO guidelines for the prevention of postpartum hemorrhage in third stage of labour.

INTRODUCTION

Postpartum haemorrhage (PPH) is a medical condition defined by the World Health Organization (WHO) as the loss of more than 500 ml of blood during vaginal delivery (considered severe if it exceeds 1000 ml), or the loss of more than 1000 ml of blood during a cesarean section. (WHO, 2012). Primary postpartum haemorrhage refers to bleeding occurring within the initial 24 hours following childbirth, whereas secondary postpartum haemorrhage refers to bleeding that occurs between 24 hours and 12 weeks after childbirth.[1]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

An estimated blood loss of more than 500 milliliters during vaginal delivery or more than 1000 milliliters during cesarean delivery is what is known as postpartum hemorrhage, or PPH. The American College of Obstetrics and Gynecology reinterpreted this in 2017, and it is now defined as cumulative blood loss of more than 1000 milliliters with hypovolemia symptoms and signs within 24 hours of delivery, regardless of delivery method1. Postpartum hemorrhage is a very prevalent issue related to maternal morbidity and mortality. It is responsible for roughly 35% of all maternal deaths worldwide and is one of the main causes of morbidity in mothers. Approximately 14 million women worldwide experience postpartum hemorrhage annually.[2]

In India, postpartum hemorrhage is responsible for 25% of maternal fatalities. It is estimated that the incidence of postpartum hemorrhage (PPH) is 2-4% following vaginal delivery and 6% following cesarean section, with uterine atony accounting for approximately 80% of PPH cases.[3] Regardless of numerous collaborative efforts at various levels, there continues to be a deficiency in the execution or compliance with the guidelines for managing postpartum hemorrhage in the presence of obstetric emergencies. The delay in implementation is partly due to the absence of a unified set of guidelines for diagnosing and controlling PPH.[4]

It is essential for every obstetric unit to establish a distinct protocol for the regular use of uterotonics immediately after childbirth and implement active management of the third stage of labor for all mothers. This analytical cross-sectional investigation is meant to evaluate the effect of Kerala Federation of Obstetrics and Gynecology guidelines over WHO guidelines for active management of the third stage of labor.5 By calculating the amount loss of blood along with hemodynamic response following PPH, the severity of PPH can be assessed.

MATERIALS AND METHODS

It was a Cross sectional study conducted in Department of Obstetrics and Gynecology, Jubilee Mission Medical College, Thrissur for a period of 18 months. Eligible women who were given prophylactic oxytocin as per KFOG and WHO guidelines for the prevention of postpartum hemorrhage

Inclusion Criteria

- Primi/ second gravida
- Age group: 19-35 years
- Singleton pregnancy
- Gestational age 37 weeks-40 weeks
- Cephalic presentation
- Spontaneous / Induced vaginal deliveries
- Birth weight 2.5-4 kg

Exclusion Criteria

- Abnormal placentation
- Prolonged labour
- Instrumental deliveries
- Cervical, Vaginal, perineal lacerations
- Anaemia
- Coagulopathies
- Hypertensive disorders
- Gestational diabetes / pregestational diabetes
- Heart disease complicating pregnancy
- Severe oligo/ Polyhydramnios
- Fibroids complicating pregnancy
- Chorioamnionitis
- Intrauterine death / Stillbirth

Sample Size: Predicted on the blood loss estimation mean and standard deviation in postpartum hemorrhage recorded in a previous publication Rajani Somanathan et al6, with a minimum sample size of 100 in each group is required with a 95% confidence interval and 90% power. Simple Random sampling techniques was used for sample selection.

Methodology: All women eligible for the study as per inclusion and exclusion criteria were enrolled. After taking the informed consent from the patient, a detailed obstetric history and other relevant details were collected from the patient admitted in the labour room for safe confinement. In our hospital, we are practicing both WHO and KFOG guidelines for the prophylactic administration of oxytocin in prevention of postpartum hemorrhage. Those participants who were given oxytocin 5 U diluted with 5 ml normal saline as IV bolus over 5 seconds, 10 U intramuscularly, and 20 U in 500 normal saline as infusion at a rate of 60 drops per minute(KFOG guidelines) were categorised as group A and those who were given oxytocin 10 U IM/IV(WHO guidelines) were categorised as group B. Amount of blood loss will be assessed by gravimetric method which was the difference between weight of dry and blood soaked materials like under drape, mops. In addition, the amount of blood collected in the suction container was used for blood loss estimation. The weight of blood clots measured in grams is equivalent to the amount of blood loss in ml. The difference between pre partum and postpartum hemoglobin and hematocrit will be considered along with hemodynamic response to postpartum hemorrhage. By comparing the two study groups, the effectiveness of KFOG guidelines for the active management of the third stage of labour was assessed.

Statistical Analysis: The mean and standard deviation were used to represent numerical variables. Frequency and percentage have been utilized to represent categorical variables. For numerical variables, the unpaired t test was used, and for categorical variables, the chi-square test. SPSS (25.0) was used for analysis. $P<0.05$ is considered statistically significant.

RESULTS

The patients mean age among KFOG group has been 26.96 years (±4.13) and in patients among WHO group was 27.28 years (±4.29) which was substantially insignificant (p-value0.592). [Table 1]

ISSN (O): 2687-5365; ISSN (P): 2753-6556

44% were Primi and 56% were second pregnancy among KFOG group and 37% were Primi and 63% were second pregnancy among WHO group in our study. There was no substantial variance of parity among 2 groups. (p=0.313). [Table 2]

The mean blood loss in patients among KFOG group was 408.54 ± 163.88ml and in patients among WHO group was 525.34 ± 222.8ml, which was statistically significant (p value 0.0001) There were 4% patients among WHO group, who had blood loss of more than 1000ml in our study. [Table 3]

There was statistically significant higher rate of usage of uterotonics like Inj. Methylergometrine, Inj Carboprost, Inj Tranexamic acid and Tab Misoprostol, among the patients of WHO group in our study. (p<0.005). [Table 4]

There was statistically significant higher rate of need for additional measures like Vaginal packing(p=0.001), Suction cannula (p =0.018) and need for blood transfusion(p=0.003) among the patients of WHO group in our study. The need for TVUA clamp was there in 9% patients of KFOG group and 18% of WHO group. This finding was statistically not significant in or study. (p=0.063) None of the patients required laparotomy to control bleeding among both groups in our study. There were no side effects with the dosage given according to KFOG and WHO guidelines in our study. [Table 5]

Table 1: Age wise distribution of study participants.

	Frequency	Mean	Std. Deviation	Minimum	Maximum
KFOG	100	26.96	4.13	19	35
WHO	100	27.28	4.29	19	35
P = 0.592					

Table 2: Parity distribution among groups

	Primi		second		Total
	n	%	n	%	n
KFOG	44	44%	56	56%	100
WHO	37	37%	63	63%	100
Total	81		119		200
P = 0.313					

Table 3: Comparison of Blood loss distribution among groups

	KFOG		WHO		Total
	n	%	n	%	n
<300ml	42	42%	8	8%	50
300 -500ml	19	19%	53	53%	72
500 -800ml	37	37%	28	28%	65
800 -1000ml	2	2%	7	7%	9
>1000ml	0	0%	4	4%	4
Total	100		100		200
Mean	408.54 ± 163.88ml		525.34 ± 222.8ml		P = 0.0001

Table 4: Usage of Uterotonics

Uterotonics	KFOG		WHO		Total	P -value
	n	%	n	%	n	
Inj. Methyl ergometrine	41	41%	59	59%	100	0.013
Inj. Carboprost	16	16%	36	36%	52	0.001
Inj. Tranexamic acid	26	26%	47	47%	73	0.002
Tab. Misoprostol	21	21%	41	41%	62	0.002

Table 5: Additional measures

Additional measures	KFOG		WHO		Total	P -value
	n	%	n	%	n	
Vaginal packing	21	21%	42	42%	63	0.001
Suction Cannula	12	12%	25	25%	37	0.018
TVUA clamp	9	9%	18	18%	27	0.063
Blood transfusion	13	13%	30	30%	43	0.003

DISCUSSION

The "primary justification of maternal mortality and morbidity in the globe is postpartum haemorrhage.About 25% of deaths that happen during pregnancy, childbirth, or the puerperium are caused by postpartum haemorrhage. The frequency is higher in underdeveloped nations. Maternal mortality is a startling phenomenon and a crucial sign of a nation's overall health" and progress.[7]

About 25% of all maternal deaths worldwide are caused by PPH, which is the major reason of maternal mortality globally.[8] A multidisciplinary team must take a coordinated approach to prevention, early detection, and intervention in order to prevent excess maternal mortality. While certain women may exhibit risk factors for PPH during pregnancy, labor, or delivery, the majority of women who suffer from

ISSN (O): 2687-5365; ISSN (P): 2753-6556

severe PPH do not have any such characteristics. Pregnant women ought to be regarded as having PPH at high risk of. Retained placenta, coagulopathy Uterine atony or uterine trauma, and genital tract are common reasons. More and more people are realizing how important fibrinogen and hyperfibrinolysis are to the development of PPH and as a therapeutic target.[9,10]

Prophylactic oxytocin may lower the risk of blood loss of 500 ml after delivery, with an average risk ratio of 0.51(0.42-0.83) at a 95% confidence interval, when compared to no uterotonics or placebo, according to a meta-analysis and systematic review by Jennifer A. Salati.[11]

In a study conducted by Tita et al, it was discovered that when prophylactic oxytocin was given in 500 mL over an hour for vaginal birth, compared to 10 units, 80 units, or 40 units did not lessen overall postpartum hemorrhage management. The requirement for extra oxytocin and the chance of a haematocrit drop of 6% or more were both reduced by 80 units.[12,13]

According to MR Torloni et al. Early oxytocin injection has been shown to lessen blood loss and the requirement for subsequent uterotonics in women with prelabor contractions. Very little data points to no appreciable differences in the need for extra uterotonics, nausea/vomiting, or prophylactic oxytocin administered before versus after placental separation on PPH.[14]

We observed that patients mean age among KFOG group has been 26.96 years (±4.13) and in WHO group was 27.28 years (±4.29). 44% were Primi and 56% were second pregnancy among KFOG group and 37% were Primi and 63% were second pregnancy among WHO group in our study. 75% had induced delivery and 25% had spontaneous delivery among KFOG group and 76% had induced delivery and 24% had spontaneous delivery among WHO group in our study. There no substantial variation in delivery type among both the groups. As none of these findings were statistically significant. We conclude that the demographic parameters of the patients in both the groups were comparable.

Regarding the blood loss we found the mean loss of blood in patients among KFOG group has been 408.54 ± 163.88ml and in patients among WHO group was 525.34 ± 222.8ml, which was statistically significant (p value 0.0001).

There were 4% patients among WHO group, who had blood loss of more than 1000ml in our study. Patients who were given Oxytocin according to WHO guidelines had more blood loss compared to KFOG guidelines in our study.

There was statistically significant higher rate of usage of uterotonics like Inj. Methylergometrine, Inj Carboprost, Inj Tranexamic acid and Tab Misoprostol, among the patients of WHO group in our study. ($p<0.005$). we observed that the usage of uterotonics are more in WHO group compared to KFOG group. There was statistically significant higher rate of need for additional measures like Vaginal packing($p=0.00$), Suction cannula ($p =0.018$) and require transfusion of blood ($p=0.003$) among the patients of WHO group in our study.

CONCLUSION

The demographic details of patients in both groups were comparable. The loss of blood has been more in patients who received Oxytocin according to WHO guidelines. There was increased usage of uterotonics, vaginal packing, suction cannula and need for blood transfusion among patients treated as per WHO guidelines. We conclude that KFOG guidelines are better than WHO guidelines in treating PPH.

REFERENCES

1. Wormer KC, Jamil RT, Bryant SB. Acute postpartum hemorrhage. InStatPearls [Internet] 2023 May 8. StatPearls Publishing.
2. Rath WH. Postpartum hemorrhage–update on problems of definitions and diagnosis. Acta obstetricia et gynecologica Scandinavica. 2011 May;90(5):421-8.
3. Oyelese Y, Scorza WE, Mastrolia R, Smulian JC. Postpartum hemorrhage. Obstetrics and gynecology clinics of North America. 2007 Sep 1;34(3):421-41.
4. Borovac-Pinheiro A, Pacagnella RC, Cecatti JG, Miller S, El Ayadi AM, Souza JP, Durocher J, Blumenthal PD, Winikoff B. Postpartum hemorrhage: new insights for definition and diagnosis. American journal of obstetrics and gynecology. 2018 Aug 1;219(2):162-8.
5. Anger H, Durocher J, Dabash R, Winikoff B. How well do postpartum blood loss and common definitions of postpartum hemorrhage correlate with postpartum anemia and fall in hemoglobin?. PloS one. 2019 Aug 22;14(8):e0221216.
6. Somanathan G, Arulkumaran S. Postpartum hemorrhage. Journal of Obstetrics and Gynaecology Canada. 2006 Nov 1;28(11):967-73.
7. Su CW. Postpartum hemorrhage. Primary Care: Clinics in Office Practice. 2012 Mar 1;39(1):167-87.
8. GILSTRAP III LC, Ramin SM. Postpartum hemorrhage. Clinical Obstetrics and Gynecology. 1994 Dec 1;37(4):824-30.
9. Breathnach F, Geary M. Uterine atony: definition, prevention, nonsurgical management, and uterine tamponade. InSeminars in perinatology 2009 Apr 1 (Vol. 33, No. 2, pp. 82-87). WB Saunders.
10. Miller HE, Ansari JR. Uterine atony. Current Opinion in Obstetrics and Gynecology. 2022 Apr 1;34(2):82-9.
11. Salati JA, Leathersich SJ, Williams MJ, Cuthbert A, Tolosa JE. Prophylactic oxytocin for the third stage of labour to prevent postpartum haemorrhage. Cochrane Database of Systematic Reviews. 2019(4).
12. Tita AT, Szychowski JM, Rouse DJ, Bean CM, Chapman V, Nothern A, Figueroa D, Quinn R, Andrews WW, Hauth JC. Higher-dose oxytocin and hemorrhage after vaginal delivery: a randomized controlled trial. Obstetrics & Gynecology. 2012 Feb 1;119(2 Part 1):293-300.
13. Phung LC, Farrington EK, Connolly M, Wilson AN, Carvalho B, Homer CS, Vogel JP. Intravenous oxytocin dosing regimens for postpartum hemorrhage prevention following cesarean delivery: a systematic review and meta-analysis. American journal of obstetrics and gynecology. 2021 Sep 1;225(3):250-e1
14. Torloni MR, Siaulys M, Riera R, Cabrera Martimbianco AL, Leite Pacheco R, Latorraca CD, Widmer M, Betrán AP. Timing of oxytocin administration to prevent post-partum hemorrhage in women delivered by cesarean section: a systematic review and metanalysis. PLoS One. 2021 Jun 3;16(6):e0252491

ISSN (O): 2687-5365; ISSN (P): 2753-6556