DOI: https://doi.org/10.53350/pjmhs21155914

ORIGINAL ARTICLE

Comparison of Misoprostol with Tranexamic Acid in Preventing Post-Partum Hemorrhage

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ABSTRACT

Aim: To compare the amount of average blood loss in transamine and misoprostol groups in patients undergoing spontaneous vaginal delivery in third stage of labour.
Method: We conducted the randomized controlled trial from July 26th 2016 to 25th of January 2017.
Results: In my study the mean age of the patients undergoing normal vaginal delivery was 28.47 years, parity wise, 31%, 33%, 24% and 11% of participants were para 1, para 2, para 3 and para 4 respectively. Mean blood loss in group A was 224.08 +/- 20.81mls and in group B 331 +/- 398 mls.
Conclusion: This study has demonstrated that the blood loss in transamine group (group A) is less than the mean blood loss in misoprostol group (group B).
Keywords: Transamine, misoprostol, normal vaginal delivery.

INTRODUCTION

The postpartum hemorrhage (PPH) is the leading cause of maternal mortality[1]. The direct pregnancy-related maternal mortality rate in the United States is approximately 7-10 women per 100,000 live births. National statistics suggest that approximately 8% of these deaths are caused by PPH[2]. This is also the main cause of maternal deaths in Pakistan[3]. According to World Health Organization statistics, 25% of maternal deaths are due to PPH, accounting for more than 100,000 maternal deaths per year[4]. The American College of Obstetricians and Gynecologists shows that the estimate at 140,000 maternal deaths per year or 1 woman every 4 minutes[5].

The PPH is defined as the loss of more than 500 ml of blood in vaginal delivery and greater than 1000 ml in cesarean section[6]. Early or primary and late or secondary are defined as blood loss within and after 24 hours respectively. The etiological factors of the PPH are uterine atony, Retained placenta, Failure to progress during the second stage of labor, Placenta accreta, Instrumental delivery, Large-for-gestational age, and hypertensive disorders, Induction of labor and Augmentation of labor with oxytocin[7].

Transamine (tranexamic acid) has a good role in reducing PPH loss[8]. Tranexamic acid is an anti-fibrinolytic agent that inhibits clot breakdown by blocking the lysine binding sites on plasminogen molecules[8]. Misoprostol is a synthetic prostaglandin E1 analogue which act as uterotonic agent and increases uterine contraction which results in decrease blood loss in postpartum period when given per rectal as compared to placebo ($p < 0.0001$)[10]. A systematic review showed one third decrease in PPH by the use of the tranexamic acid[9]. Another study showing that average blood loss between transamine and misoprostol group was 1.2+/-0.33 liters and 1.18 +/- 0.47 liters which is statistically not significant ($p=0.79$)[7]. A study showed blood loss of 261.5+/-146.8ml and 349.97 +/-188.35ml for transamine and without transamine groups respectively ($p=0.001$)[8].

Received on 24-0-2021
Accepted on 15-04-2021

The aim of the study is to determine the average amount of blood loss in liters between groups of transamine and misoprostol because there is only one trial in literature comparing the transamine with misoprostol. So this study is planned to generate confirmatory results that whether transamine should be used in routine for prevention of PPH.

MATERIALS AND METHODS

We conducted this Randomized controlled trial in the department of obstetrics and gynecology, Shaikh zayed hospital, Lahore from July 26th 2016 to 25th of January 2017.The sample size of 250 with 125 in each group is estimated by using 95% of confidence level, 80% power of test with expected blood loss of 349.97+/- 188.35 ml and 1180+/-470 ml for transamine and without transamine groups respectively and the sampling technique was non probability consecutive sampling

Inclusion criteria

- Female patients aged 17 to 45 years.
- Patients with term pregnancy i.e. 37 weeks and 6 days till 41 weeks and 6 days assessed by ultrasound and date of last menstrual period.
- Vertex presentation assessed by ultrasound
- Spontaneous delivery (as per operational definition)

Exclusion criteria

- Patient not willing to participate in study
- Patients with retained products of placenta assessed by ultrasound.

RESULTS

In this present study total 250 cases participated. The mean age of patients was 28.47 years with minimum age of 17 and maximum of 45 years (Table 1)Group wise distribution of parity among patients showed that 31% , 33%, 24% and 11%f patients were para 1, para 2, para 3 and para 4 respectively.(Table 2). Comparison of Mean blood loss between age groups of 20 to 32 years in group A and Group B was 222 +/- 81.46 and 316+/- 20.64 mls

respectively with p value less than 0.0001 which is statistically significant and in age group 33 to 44 years in group A and Group B was 229 +/- 22.89 and 324 +/- 26.9 mls respectively with p value less than 0.0001 which is statistically significant (Table 3).Comparison of mean blood loss according to parity in parity 1 group was 222 +/- 18 mls and 316 +/- 20.46 mls in group A and B respectively, in parity 2 group 222+/- 18.64 mls and 316 +/- 20.64 mls in group A and Group B respectively , in parity 3 group 229 +/-22.89 mls and 324 +/- 26.9 mls in group A and group B respectively , inn parity 4 group 229 +/- 22.89 mls and 324 +/- 26.9 mls respectively with p value of less than 0.0001 which is statistically significant (Table 4).

Table 1: Descriptive statistics of age (years)

Groups		Group A transamine	Group B misoprostol
N	250	125	125
Mean	28.47	29.1	28.87
SD	5.42	5.17	4.56
Minimum	17	20	22
Maximum	45	40	42

Table 2: Group-wise distribution of parity

Groups		Group A transamine	Group B misoprostol
N	250	125	125
Mean	28.47	29.1	28.87
SD	5.42	5.17	4.56
Minimum	17	20	22
Maximum	45	40	42

Table 3: Results of comparison of mean blood loss between group A (transamine) and Group B (misoprostol) with respect to age

Age group (yrs)	Groups	Mean blood loss (mls)		P-value
		n	mean +/- SD	
20 – 32	A	62	222+/- 18.46	<0.0001
	B	62	316+/-20.64	
33 – 42	A	63	229+/-22.89	<0.0001
	B	63	324+/-26.9	

Table 4: Comparison of mean blood loss according to parity Group A (Transamine) and Group B (misoprostol) with respect to parity

Parity	Groups	Mean blood loss (mls)		p- value
		n	mean +/- SD	
1	A	43	222+/-18	<0.0001
	B	43	316+/-2046	
2	A	37	222+/-22.86	<0.0001
	B	37	316+/-2064	
3	A	28	229+/-22.89	<0.0001
	B	30	324+/-26.90	
4	A	15	229+/-22.89	<0.0001
	B	15	324+/-26.90	

DISCUSSION

This present randomized controlled trial was conducted at shaikh zayed hospital Lahore to determine the difference of mean blood loss among pregnant ladies undergoing normal vaginal delivery with transamine in Group and and misoprostol in group B.

In literature there are studies which showed Transamine (tranexamic acid) has a good role in reducing PPH loss[14]. Tranexamic acid is an anti-fibrinolytic agent that inhibits clot breakdown by blocking the lysine binding sites on plasminogen molecules[15]. Misorostol is a synthetic prostaglandin E1 analogue which act as uterotonic agent and increases uterine contraction which results in decrease blood loss in postpartum period when given per rectlly as compared to placebo (p <0.0001)[16]. A systematic review showed one third decrease in PPH by the use of the tranexamic acid[17]. Another study showing that average blood loss between transamine and misoprostol group was 1.2 +/- 0.33 liters and 1.18 +/- 0.47 liters which is statistically not significant (p=0.79)[18]. A study showed blood loss of 261.5 +/- 146.8 ml and 349.97 +/- 188.35 ml for transamine and without transamine groups respectively (p=0.001)[19].The aim of this study was to determine the average amount of blood loss in mili liters between groups of transamine and misoprostol because there is only one trial in literature comparing the transamine with misoprostol. So this study is planned to generate confirmatory results that whether transamine should be used in routine for prevention of PPH.

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