COMPARING THE EFFECTIVENESS OF TRANSRECTAL MISOPROSTOL WITH INTRVANEOUS OXYTOCIN IN PREVENTING POST PARTUM HAEMORRHAGE

ABSTRACT

Background: In India, the routine Active Management of Third Stage of Labour (AMTSL) with conventional oxytocin, at the rural, resource-constrained areas, is often compromised due to lack of trained healthcare personnel and proper maintenance of cold chain system, causing maternal mortality and morbidity from Postpartum Haemorrhage (PPH). In these scenarios, tablet misoprostol, can be efficacious and convenient alternative.

Aim: To compare the effectiveness of transrectal misoprostol with intravenous oxytocin in active management of third stage of labour in preventing PPH.

Materials and methods: The study was conducted at AVBRH sawangi. 200 eligible pregnant women were randomised into two groups. Group A received 600mcg misoprostol and Group B received 10 IU oxytocin following delivery of baby as a part of active management of third stage of labour. primary outcomes measured were blood loss during third stage of labour, total blood loss within 24 hours following delivery of baby, occurrence of post partum haemorrhage (PPH). Secondary outcomes measured were duration of third stage of labour, requirement of additional uterotonics, change in haemoglobin concentration, requirement of blood transfusion, pre delivery and post delivery systolic and diastolic blood pressures, side effects of drugs.

Result: total sample size 200 was divided equally into two groups with a mean age of 25.34 ± 3.72 and 25.65 ± 3.85 respectively in misoprostol and oxytocin group. The mean blood loss during third stage of labour (134.73.71 ±73.71 and 133 ± 62.95) was statistically insignificant (p value=0.91). The mean blood loss 24 hours following delivery (209.11 ± 108.59 and 207.02 ± 93.92) was statistically insignificant (p value=0.88). The occurrence of PPH (2% and 1%) was statistically insignificant. (p value=0.56). duration of third satge of labour, requirement of additional uterotonics, change in haemoglobin concentration, requirement of blood transfusion, pre delivery and post delivery diastolic and systolic blood pressures were statistically insignificant between both the groups. There was no significant difference between the groups in terms of occurrence of nausea, vomiting and diarrhea. However, both groups differed significantly in terms of fever and shivering, they occurred more commonly in misoprostol group than oxytocin group.

Conclusion: This study concludes that transrectal misoprostol was as effective as intravenous oxytocin in active management of third stage of labour in preventing PPH.

Keywords: Active management of third stage of labour, oxytocin, transrectal misoprostol, postpartum haemorrhage.

INTRODUCTION:

The world health organization aims at a safe and an efficient peripartum care with aid of least possible interventions consistent with safety to achieve the overall goal of a healthy neonate with a healthy mother.(1) Post partum hemorrhage is one of the most dreaded complications even in the present modern day scenario and is a leading cause maternal morbidity and mortality. In terms of percentage it accounts for 1-6% of all complications related to childbirth and is about 28% of the causative factor for overall peripartum maternal mortality. (2) (3) (4) On reviewing the literature, as per the conventional idea, PPH is described as an amount of blood loss which is greater than 500 ml during vaginal delivery or greater than 1000 ml during caesarean section. (4) (5) (6) Amongst the enumerable factors, uterine atony still remains the leading cause of PPH, its incidence being 81% of all PPH cases. (7)

WHO recommends that the third stage of labour should be managed actively in all women giving birth. The active management of third stage labour includes use of uterotonic drugs as soon as the anterior shoulder of baby is delivered with early cord clamping and controlled cord traction for early delivery of placenta following its separation. (8) (9) (10)

As per WHO, Oxytocin given in dose of 10 IU intravenously/intramuscularly is the recommended uterotonic agent for prevention of PPH of all births. (4) Other uterotonic agents recommended by WHO include misoprostol, ergometrine/methylergometrine, carbetocin and a fixed drug combination of oxytocin and ergometrine. Cochrane systemic review shows that the use of oxytocin halves the risk of PPH. There are however many issues with oxytocin use in developing countries such as optimal temperature conditions for storage, sterile equipments and skilled administration. (11) Misoprostol, a prostaglandin E1 analogue is resistant to heat and can be administered by various routes like oral, sublingual and rectal route. Misoprostol is associated with side effects like nausea, vomiting, diarrhea, shivering and fever. Rectal route, having a more gradual and sustained increase in plasma levels is associated with comparatively lesser side effects than oral and sublingual route of administration. Moreover, rectal route bypasses the first pass metabolism and lessens the gastrointestinal side effects associated with oral and sublingual route. Nausea and vomiting are common during delivery, many women are unable to or are reluctant to swallow a tablet at immediate point of delivery, suggesting a non-oral route of administration of misoprostol. (12) (13) (14)

In India, inspite of modernization even today large number of deliveries occurs without trained birth attendants in rural settings where refrigeration, cold chain facilities and skilled staff are unavailable. There are many cases of mortality recorded due to PPH in rural areas. Different studies have varied view about the efficacy of rectal misoprostol for prevention of PPH.(15) (16) (17) Also there are limited studies available in this field, so the present study was designed to compare the effectiveness of transrectal misoprostol with intravenous

oxytocin in active management of third stage of labour in preventing post partum haemorrhage.

MATERIALS AND METHODOLOGY

The present prospective comparative study was conducted at Department of obstetrics and gynaecology, Acharya vinoda bhave rural hospital, Sawangi, Wardha, Maharashtra in a span of 2 years from December 2020 to November 2022. A total of 200 low risk pregnant women undergoing spontaneous term vaginal delivery fitting into inclusion and exclusion criteria, giving informed written consent were included in this study.

INCLUSION CRITERIA

Pregnant women with:

- gestational age 37-42 weeks (according to reliable last menstrual period or first trimester ultrasound).
- Singleton live foetus with cephalic presentation.
- spontaneous onset of labour.
- undergoing vaginal deliveries with or without episiotomy.

EXCLUSION CRITERIA

Pregnant women with:

- multifoetal pregnancy.
- non-cephalic presentation.
- induced or augmented labour.
- assisted vaginal deliveries, caesarean sections, vaginal birth after caesarean section.
- pre-eclampsia/gestational hypertension/eclampsia, anemia (Haemoglobin <7gm %), gestational diabetes mellitus, heart disease, antepartum haemorrhage, oligohydromios, polyhydromios, coagulation disorders, any other medical or surgical disorder.
- known hypersensitivity to prostaglandins

Women after screening for enrolment using inclusion and exclusion criteria were included in the study. Detailed history was taken and general examination was performed for the patient. Pre delivery blood pressure (systolic and diastolic) and haemoglobin concentration of the patient was noted. Patients were randomised into two groups using sealed envelope system. When patient enters into active labour BRASS-V drape was placed under her buttocks. Once

the patient delivers vaginally, she was given the drug she was randomised into as a part of active management of third stage of labour.

GROUP A- received 600 micograms misoprostol (3 tablets of 200 micrograms each) per rectally after delivery of baby

GROUP B- received 10 IU oxytocin (2 ampoules of 5 IU each) in 500ml isotonic solution (ringer lactate/ dextrose normal saline/ 5% dextrose /normal saline) was started intravenously after delivery of anterior shoulder of baby

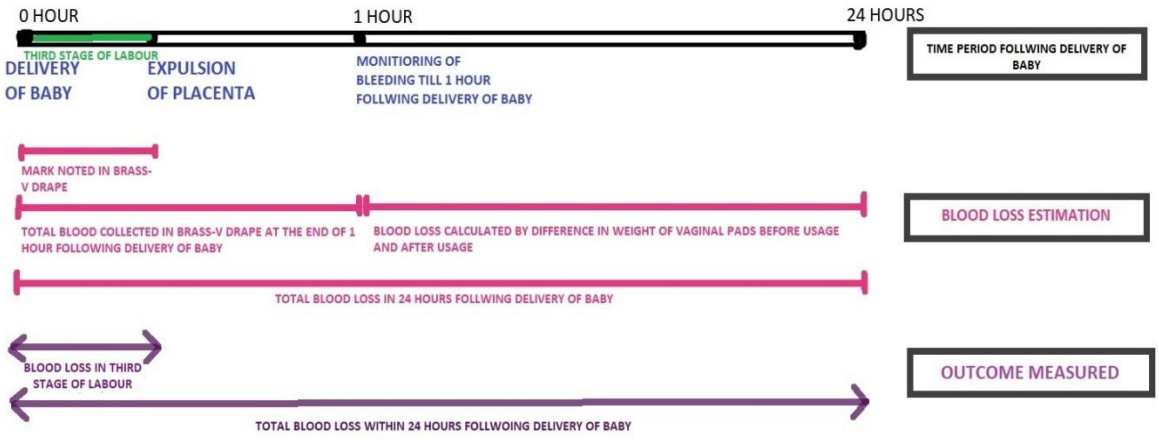
Time taken from delivery of baby till expulsion of placenta. i.e., Duration of third stage of labour was noted. After delivery of placenta blood loss in the BRASS-V drape was noted. This is the blood loss during third stage of labour.

Episiotomy if given was covered with separate pad to avoid blood loss due to episiotomy to be estimated in the drape. Separate gauze pieces were used to suture the episiotomy, which are not quantified in this procedure.

After one hour BRASS-V drape was removed after noting the blood loss. This is the total blood loss using BRASS-V drape.

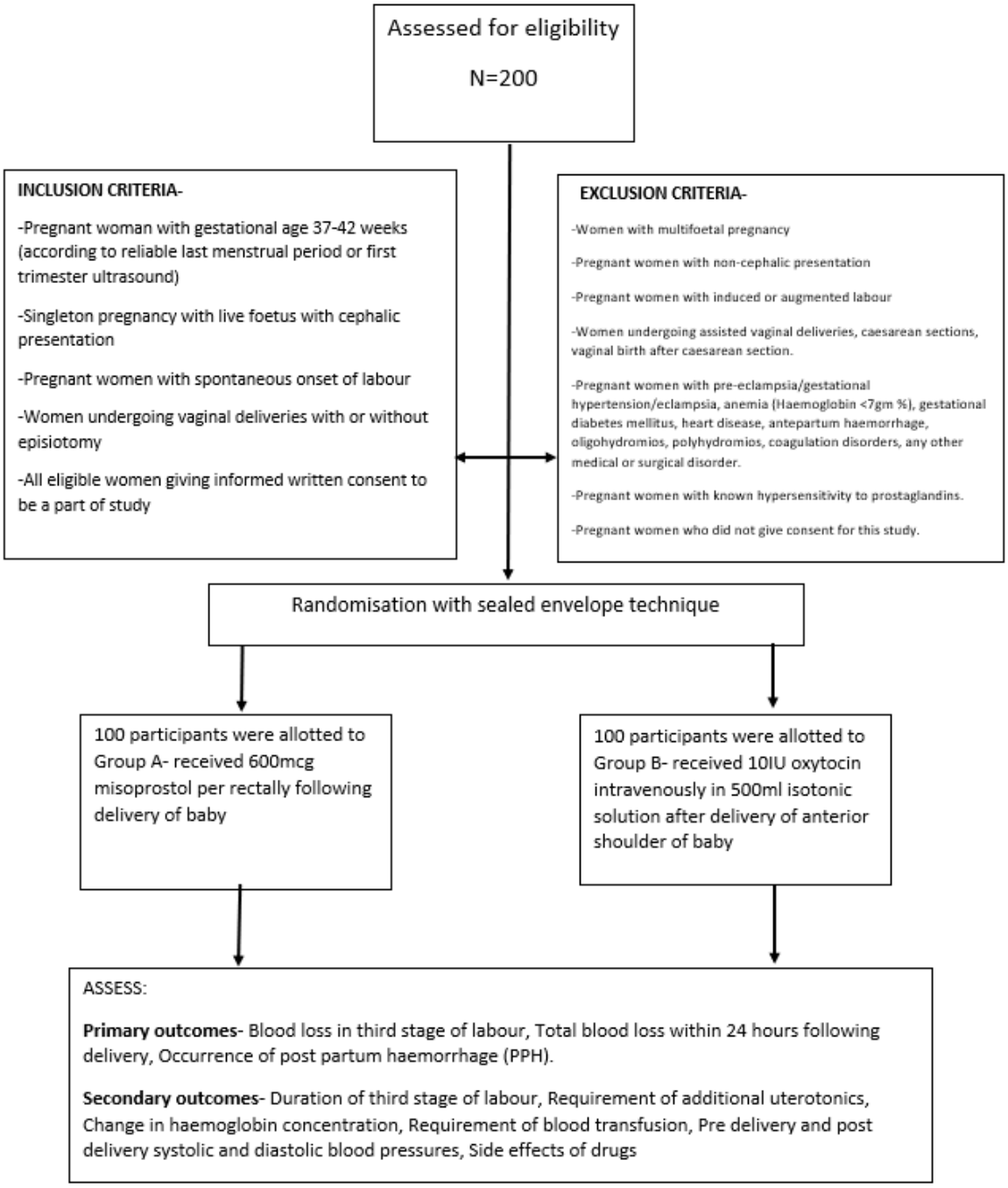
For 24 hours the women used vaginal pads, the difference of the weight of vaginal pads before usage and after usage was noted in grams. The blood loss in these pads was calculated by formula 1 gram= 1 ml.

Total blood loss within 24 hours following delivery of baby was sum of total blood loss using BRASS-V drape and blood loss calculated by difference in weight of vaginal pads before and after usage.



Post delivery after one hour blood pressure (systolic and diastolic) was noted. Any side effects of the drug one hour following delivery was noted. Haemoglobin concentration 24 hours following delivery was noted.

The need for additional uterotonic to minimise blood loss and need for blood transfusion was also noted.



STATISTICAL ANALYSIS

Statistical analysis was done by using descriptive and inferential statistics using Chi-square test, Student's unpaired t test and software used in the analysis were SPSS 27.0 version and GraphPad Prism 7.0 version and $p<0.05$ is considered as level of significance.

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154 RESULTS

DEMOGRAPHIC AND LABOUR VARIABLES				
VARIABLE		GROUP		P-VALUE
		MISOPROSTOL GROUP (n=100)	OXYTOCIN GROUP(n=100)	
MEAN AGE (In years)		25.34 ± 3.72	25.65 ± 3.85	0.82
PARITY (% of participants)	0	38 %	37%	0.85
	1	56 %	55%	
	2	6 %	8%	
MEAN GESTATIONAL AGE (In weeks)		39.21 ± 0.78	39.09 ± 0.94	0.33
MEAN BIRTH WEIGHT OF BABY (In grams)		2723 ± 323.21	2777 ± 299.69	0.22
REQUIREMENT OF EPISIOTOMY (% of patients)		78 %	76 %	0.73

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156 • The mean age in misoprostol group was 25.34 ± 3.72 years and in oxytocin group was
157 25.65 ± 3.85 years. (p-value = 0.82)
158 • Majority of the patients were primiparous [Misoprostol group 56(56%) and Oxytocin
159 group 55(55%)]. Multiparous were 6(6%) and 8(8%) in misoprostol and oxytocin
160 group respectively. Nulliparous were 38(38%) and 37(37%) in misoprostol and
161 oxytocin groups respectively. (p-value = 0.85)
162 • The mean gestational age at the time of delivery in misoprostol group was 39.21 ±
163 0.78 weeks and in oxytocin group was 39.09 ± 0.94 weeks. (p-value = 0.33)
164 • The mean birth weight of baby in misoprostol group was 2723.5 ± 323.21 grams and
165 in oxytocin group was 2777 ± 299.69 grams. (p-value = 0.22)
166 • Majority of the patients required episiotomy in both groups [Misoprostol group
167 78(78%) and Oxytocin group 76 (76%)]. (p-value = 0.73)

CHARACTERISTICS OF THIRD STAGE OF LABOUR

VARIBALE		MISOPROSTOL GROUP (n=100)	OXYTOCIN GROUP (n=100)	P-VALUE
MEAN BLOOD LOSS DURING THIRD STAGE OF LABOUR (in ml)		134.6 ± 73.71	133 ± 62.95	0.86
MEAN BLOOD LOSS USING BRASS-V DRAPE i.e. DELIVERY + 1 HOUR POST DELIVERY (in ml)		155.3 ± 90.07	156.5 ± 74.04	0.91
MEAN TOTAL BLOOD LOSS 24 HOURS FOLLOWING DELIVERY (in ml)		209.11 ± 108.59	207.02 ± 93.32	0.88
OCCURRENCE OF PPH (in %)		2%	1%	0.56
DURATION OF THIRD STAGE OF LABOUR (in mins)		4.87 ± 2.19	4.65 ± 1.76	0.43
MEAN FALL IN HAEMOGLOBIN (gram %)		0.61 ± 0.44	0.59 ± 0.31	0.795
REQUIREMENT OF ADDITIONAL UTEROTONICS (in %)		2%	1%	0.56
REQUIREMENT OF BLOOD TRANSFUSION (in %)		3%	2%	0.65
SYSTOLIC BP (in mmHg)	PRE DELIVERY	113.50 ± 7.26	111.92 ± 7.53	0.12
	POST DELIVERY	110.33 ± 8,82	109.94 ± 8.91	0.69
DIASTOLIC BP (in mmHg)	PRE DELIVERY	73.92 ± 5.53	73.68 ± 5.65	0.76
	POST DELIVERY	70.67 ± 6.21	70.89 ± 6.79	0.76

- The mean blood loss during third stage of labour in misoprostol group was 134.6 ± 73.71 and in oxytocin group was 133 ± 62.95 ml. (p-value=0.86)
- The mean total blood loss using BRASS-V drape in misoprostol group was 155.30 ± 90.07 ml and in oxytocin group was 156.50 ± 74.04 ml.(p-value=0.91)
- The mean total blood loss within 24 hours following delivery of baby in misoprostol group was 209.11 ± 108.59 ml and in oxytocin group was 207.02 ± 93.32 ml.(p-value=0.88)
- The occurrence of PPH was 2(2%) and 1(1%) in Misoprostol and Oxytocin groups respectively. (p-value=0.56)
- The mean duration of third stage of labour in misoprostol group was 4.87 ± 2.19 mins and in oxytocin group was 4.65 ± 1.76 mins.(p-value = 0.43)

- The mean fall in haemoglobin is 0.61 ± 0.44 and 0.59 ± 0.31 gram % respectively in misoprostol and oxytocin group. (p-value = 0.795).

- 2(2%) and 1(1%) patients required additional uterotonic in misoprostol and oxytocin group respectively. (p-value= 0.56)

- In Misoprostol and Oxytocin groups, only 3(3%) and 2(2%) patients required blood transfusion, respectively. (p-value = 0.65).

Side effects	Misoprostol (n=100)	Oxytocin (n=100)	p-value
Nausea	1	0	0.31
Vomiting	2	0	0.15
Diarrhea	1	0	0.31
Shivering	7	1	0.030
Fever	12	2	0.005

- In Misoprostol group, 1, 2, 1, 7, and 12 patients developed nausea, vomiting, diarrhoea, shivering and fever, respectively. In Oxytocin group, 1 patient developed shivering and 2 developed fever, while none had nausea, vomiting, or diarrhoea. On analysis, the Misoprostol and Oxytocin groups did not differ significantly in terms of nausea, vomiting, diarrhoea all (p-values > 0.05). While the misoprostol and oxytocin group differ significantly in terms of shivering and fever (both p values < 0.05). Shivering and fever was more common in misoprostol group than oxytocin group

DISCUSSION

Post partum haemorrhage (PPH) is defined as blood loss of more than 500 ml during normal vaginal delivery and more than 1000 ml following caesarean section. (4)

Role of active management of third stage of labour is well recognised. Cochrane review 2003 (10) concluded that active management is superior to expectant in terms blood loss, post partum haemorrhage and serious complications of third stage. Standard treatment guidelines (Green top Guidelines) framed by RCOG (Royal college of Obstetricians and Gynaecology) and WHO Recommendations for prevention of post partum haemorrhage strongly recommends to follow active management of third stage of labour (AMTSL) to reduce incidence of PPH. AMTSL includes usage of uterotonic agents as one of its criteria along with early cord clamping and uterine massage.

According to WHO (4), injectable oxytocin has been recommended for routine use in active management of third stage of labour, however, administration of an injection requires skills and sterile equipment for safe administration. Oxytocin may be inactivated if exposed to high ambient temperatures. Misoprostol, a prostaglandin analogue with uterotonic effects, is reportedly more stable than oxytocin in all temperatures and has been administered by oral, sublingual and rectal routes in several studies. Suggestions have been made in several studies for usage of misoprostol tablets where oxytocin is not available in low resource settings for active management of third stage of labour.

In our study a total of 200 low risk pregnant women undergoing spontaneous vaginal delivery were divided into two groups. Group A received 600 mcg misoprostol and Group B received 10 IU oxytocin IV infusion as a part of active management of third stage of labour and the effectiveness of both the drugs as an uterotonic in active management of third stage of labour was compared.

DEMOGRAPHIC, OBSTETRICS AND NEONATAL VARIABLES

TABLE - COMPARISION OF DEMOGRAPHIC, OBSTETRICS AND NEONATAL VARIABLES WITH OTHER STUDIES

STUDY	**COMPARISION GROUP**	**NO OF PATEINTS**	**DEMOGRAPHIC VARIABLES AND OBSTETRICS VARIABLES**				
			AGE (YEARS)	**PARITY**	**PRIMIPAROUS %**	**GESTATIONAL AGE (WEEKS)**	**BIRTH WEIGHT (GRAMS)**
Chaudhry et al.,2022 (14)	**MISOPROSTOL**	**36**	**27.08 ± 4.83**	**-**	**-**	**-**	**-**
	OXYTOCIN	**36**	**27.94 ± 4.8**	**-**	**-**	**-**	**-**
Burman et al., 2021 (18)	**MISOPROSTOL**	**40**	**23 ± 3.1**	**-**	**45.8**	**39.2 ± 1.4**	**3256 ± 105.3**
	OXYTOCIN	**40**	**23.7 ± 3.8**	**-**	**54.2**	**38.8 ± 1.4**	**3184 ± 197.3**
Firouzbakht et al., 2013 (19)	**MISOPROSTOL**	**50**	**24.3 ± 4.3**	**-**	**52**	**39 ± 1.8**	**3420 ± 490**
	OXYTOCIN	**50**	**24.9 ± 5**	**-**	**54**	**39 ± 2.3**	**3300 ± 410**

Mirteimouri et al., 2013 (20)	**MISOPROSTOL**	**200**	**29 ± 9.3**	**-**	**-**	**-**	**-**
	OXYTOCIN	**200**	**28.8 ± 5.6**	**-**	**-**	**-**	**-**
Badejoko et al., 2012 (21)	**MISOPROSTOL**	**126**	**29.22 ± 4.41**	**2.39 ± 1.78**	**-**	**-**	**-**
	OXYTOCIN	**126**	**29.13 ± 5.38**	**2.31 ± 1.7**	**-**	**-**	**-**
Nasr et al., 2009 (22)	**MISOPROSTOL**	**257**	**27.4 ± 2.3**	**3.1 ± 0.8**	**-**	**37.2 ± 1.4**	**-**
	OXYTOCIN	**257**	**28.5 ± 2.6**	**3.4 ± 0.9**	**-**	**37.4 ± 1.3**	**-**
Parsons et al., 2007(23)	**MISOPROSTOL**	**224**	**25.7 ± 6.6**	**1**	**-**	**37.1 ± 2**	**2961 ± 574**
	OXYTOCIN	**226**	**25.8 ± 7.1**	**1**	**-**	**37.1 ± 2.5**	**2950 ± 538**
Karkanis et al., 2002 (13)	**MISOPROSTOL**	**110**	**-**	**-**	**47.2**	**39.3 ± 1.1**	**3437 ± 436**
	OXYTOCIN	**113**	**-**	**-**	**47**	**39.6 ± 1.1**	**3456 ± 531**
Gerstenfeld and Wing, 2001(24)	**MISOPROSTOL**	**159**	**27.8 ± 0.5**	**1.9 ± 0.1**	**-**	**39 ± 0.1**	**3312 ± 38**
	OXYTOCIN	**166**	**27 ± 0.5**	**1.5 ± 0.1**	**-**	**39.2 ± 0.1**	**3422 ± 38**
PRESENT STUDY	**MISOPROSTOL**	**100**	**25.34 ± 3.72**	**-**	**56**	**39.21 ± 0.78**	**2723.5 ± 323.21**
	OXYTOCIN	**100**	**25.65 ± 3.85**	**-**	**55**	**39.09 ± 0.94**	**2777 ± 299.69**

As shown in the table above the demographic, obstetrics and neonatal variables of present study were comparable with various studies described above. The maternal age, socioeconomic status, parity, gestational age at the time of delivery, birth weight of baby in both the misoprostol and oxytocin group were statistically insignificant. These results were in concordance with the above shown studies.

LABOUR VARIABLES

TABLE - COMPARISION OF LABOUR VARIABLES WITH OTHER STUDIES

STUDY	**COMPARISION GROUP**	**LABOUR VARIABLES**		
		ONSET OF LABOUR		**EPISIOTOMY (%)**
		SPONTANEOUS (%)	**INDUCED (%)**	
Burman et al., 2021 (18)	**MISOPROSTOL**	**100**	**0**	**-**
	OXYTOCIN	**100**	**0**	**-**

Firouzbakht et al., 2013 (19)	**MISOPROSTOL**	**22**	**78**	**66**
	OXYTOCIN	**20**	**80**	**58**
Badejoko et al., 2012 (21)	**MISOPROSTOL**	**90.5**	**9.5**	**38.9**
	OXYTOCIN	**91.1**	**8.9**	**47.3**
Nasr et al., 2009 (22)	**MISOPROSTOL**	**100**	**0**	**-**
	OXYTOCIN	**100**	**0**	**-**
Parsons et al., 2007 (23)	**MISOPROSTOL**	**97.8**	**2.2**	**16.8**
	OXYTOCIN	**98.7**	**1.3**	**21**
Gupta et al., 2006 (25)	**MISOPROSTOL**	**100**	**0**	**-**
	OXYTOCIN	**100**	**0**	**-**
Karkanis et al., 2002 (13)	**MISOPROSTOL**	**80**	**20**	**-**
	OXYTOCIN	**78**	**22**	**-**
Gerstenfeld and Wing, 2001 (24)	**MISOPROSTOL**	**55**	**45**	**-**
	OXYTOCIN	**60**	**40**	**-**
PRESENT STUDY	**MISOPROSTOL**	**100**	**0**	**78**
	OXYTOCIN	**100**	**0**	**76**

The table shows comparison of labour variables of present study with various other studies. In present study we have included all women undergoing spontaneous vaginal delivery. The percentage of patients requiring episiotomy were comparable between misoprostol and oxytocin group was statistically insignificant. These results were in concordance with the above-mentioned studies.

CHARACTERISTICS OF THIRD STAGE OF LABOUR

TABLE - COMPARISION OF CHARACTERISTICS OF THIRD STAGE OF LABOUR WITH OTHER STUDIES

STUDY	COMPARISION GROUP	DOSE AND ROUTE	NO OF PATEINTS	ESTIMATED BLOOD LOSS	TIME PERIOD OF BLOOD LOSS ESTIMATION	P VALUE	PPH (%)	P VALUE	DURATION OF THIRD STAGE OF LABOUR (MINS)	P VALUE	NEED FOR ADDITIONAL UTEROTONICS	P VALUE	PRE-DELIVERY HB(GM%)/ HEMATOCRIT (%)	P VALUE	POST DELIVERY HB (GM%)/ HAEMATOCRIT	P VALUE	CHANGE IN HB (GM%)/ HAEMATOCRIT (%)	P VALUE	NEED FOR BLOOD TRANSFUSION	P VALUE
Chaudhry et al., 2022(14)	MISOPROSTOL	400 µg, rectal	36	128 ± 89.37	Third stage of labour + 1 hour postpartum	0.203	0	0.07	5.30 ± 2.05	0.012	-	-	11.11 ± 1.1	0.76	10.7 ± 1.1	0.88	-	-	-	-
	OXYTOCIN	10 IU IM bolus	36	165 ± 146.64			3		3.75 ± 2.97		-		11.19 ± 1		10.8 ± 1.1		-		-	
Burman et al., 2021(18)	MISOPROSTOL	600 µg, rectal	40	426.55 ± 80	Third stage of labour + 8 hours postpartum	0.9	10	0.6	-	-	-	-	9.7 ± 1.5	0.45	9.46 ± 1.41	0.4	-	-	-	-
	OXYTOCIN	10 IU, IM bolus	40	424.87 ± 61.58			7.5		-		-		9.5 ± 0.8		9.3 ± 0.7		-		-	
Firouzbakht et al., 2013(19)	MISOPROSTOL	400 µg, rectal	50	136 ± 111.3	Third stage of labour	0.005	12	0.8288	5.08 ± 3.07	0.1933	6	0.5	12.6 ± 1.12	0.2066	11.8 ± 1.03	0.28	1.15 ± 1.28	0.04	-	-
	OXYTOCIN	20 IU, IV infusion	50	162.4 ± 115.2			10		5.49 ± 2.45		8		12.3 ± 1.23		11.53 ± 1.34		1.41 ± 1.3		-	
Mirteimouri et al., 2013(20)	MISOPROSTOL	400 µg, rectal	200	-	-	-	19	0.005	-	-	18	0.003	11.44 ± 0.7	-	10.83 ± 1.1	-	-	≤0.001	8	0.0188
	OXYTOCIN	3 IU, IV infusion	200	-			31.3		-		30.8		11.38 ± 0.8		10.25 ± 1.1	-	-		14	
Badejoko et al., 2012(21)	MISOPROSTOL	600 µg, rectal	132	387.28 ± 203.09	Third stage of labour + 2hours postpartum	0.07	22.2	0.8	-	-	5.6	0.74	34.11 ± 2.8	0.13	34.96 ± 2.96	≤0.0001	1 ± 2.3	≤0.001	0.8	0.0031
	OXYTOCIN	20 IU, IV infusion	132	386.73 ± 298.51			20.9		-		4.7		34.67 ± 3.08		31.76 ± 4.24		2.9 ± 3.1		4.6	
Nasr et al., 2009(22)	MISOPROSTOL	800 µg, rectal	257	-	-	-	6.6	0.54	8.25 ± 2.31	0.72	2.3	0.54	10.6 ± 1.2	0.844	9.8 ± 1.4	0.78	-	-	2.3	0.54
	OXYTOCIN	5IU, IV infusion	257	-			4.7		7.97 ± 2.82		1.6		10.7 ± 1.4		10 ±1.3		-		1.6	

In the present study, blood loss in third stage of labour, total blood loss in third stage of labour and one following delivery of baby, total blood loss within 24 hours following delivery of baby in misoprostol group and oxytocin group were statistically insignificant. This was in concordance with the Firouzbakht et al., 2013(19) where blood loss in third stage of labour and Chaudhry et al., 2022(14), Gupta et al., 2006(25) where blood loss in third stage of labour and one hour following delivery of baby were compared. The results of studies done by Burman et al., 2021(18) and Badejoko et al., 2012(21) comparing blood loss

during third stage of labour and 2 hours and 8 hours respectively following delivery of baby were similar as found in our study.

In the present study the occurrence of post partum haemorrhage in misoprostol and oxytocin group was statistically insiginificant. This was in concordance with results observed in studies done by Chaudhry et al., 2022(14), Burman et al., 2021(18), Firouzbakht et al., 2013(19), Badejoko et al., 2012(21), Nasr et al., 2009(22), Parsons et al., 2007(23), Gupta et al., 2006(25), Gerstenfeld and Wing, 2001(24), Mirteimouri et al., 2013(20). However, Mirteimouri et al., 2013(20) concluded in his study that incidence of PPh was more in oxytocin group compared to misoprostol group. The overall occurrence of PPH in our study is less compared to other studies, this may be because we have used an objective method using BRASS-V drape. This prevents overestimation of the estimated blood loss, providing near accurate estimation of blood loss during the process of delivery. Secondly, the study is conducted in a tertiary hospital where proper antenatal care is provided. Any high risk factors are detected and treated early during the antenatal period. This makes the women less prone to developing PPH during labour. Moreover, being a tertiary hospital, the care providers are well trained and hospital is well equipped for handling obstetric labour and its complications. In our study all the three patients having PPH, blood loss was controlled by medical measures i.e. With use of additional uterotonics.

The duration of third stage of labour in misoprostol and oxytocin group were statistically insignificant. This was in concordance with study results of Firouzbakht et al., 2013 (19), Nasr et al., 2009(22), Parsons et al., 2007 (23), Karkanis et al., 2002 (13). However Chaudhry et al., 2022(14) observed that The duration of third stage of labour was more in misoprostol group than oxytocin group.

In present study the need for additional requirements to control blood loss in misoprostol and oxytocin group were statistically insignificant. This was in concordance with study results of Firouzbakht et al., 2013 (19), Badejoko et al., 2012 (21), Nasr et al., 2009(22), Parsons et al., 2007(23), Gupta et al., 2006(25), Karkanis et al., 2002(13). In Mirteimouri et al., 2013(20) oxytocin group had more requirement of additional uterotonics than misoprostol group. Gerstenfeld and Wing, 2001(24) study concluded that misoprostol group had more requirement of additional uterotonics than oxytocin group.

In present study the pre delivery and post delivery haemoglobin concentration in misoprostol and oxytocin group were statistically insignificant. This was in concordance with results of Chaudhry et al., 2022(14), Burman et al., 2021(18), Firouzbakht et al., 2013(19), Nasr et al., 2009(22), Parsons et al., 2007(23), Gerstenfeld and Wing, 2001(24).

The mean fall in heamoglobin in misoprostol and oxytocin was statistically insignificant. This was in concordance wirh Parsons et al., 2007(23), Karkanis et al., 2002(13), Gupta et al., 2006(25) and in contrast with Firouzbakht et al., 2013(19), Mirteimouri et al., 2013(20), Badejoko et al., 2012(21) where the mean change in heamoglobin was more in misoprostol group than oxytocin group.

In present study the requirement for blood transfusion in misoprostol and oxytocin group was statistically insignificant. This was in concordance with Nasr et al., 2009(22), Parsons et al., 2007(23), Gerstenfeld and Wing, 2001(24). However in Mirteimouri et al., 2013(20) and Badejoko et al., 2012(21) the oxytocin group required more blood transfusion than misoprostol group.

In present study the correlation of both the groups for pre delivery and post delivery systolic and diastolic blood pressure was statistically insignificant. This was in concordance with studies conducted by Gerstenfeld and Wing, 2001(24) and Burman et al., 2021(18).

TABLE 25- COMPARISION OF OCCURRENCE OF SIDE EFFECTS OF DRUGS WITH OTHER STUDIES

STUDY	COMPARISION GROUP	SIDE EFFECTS (%)									
		NAUSEA	P VALUE	VOMITING	P VALUE	DIARRHEA	P VALUE	SHIVERING	P VALUE	FEVER	P VALUE
Chaudhry et al., 2022(14)	MISOPROSTOL	0	0.31	-	-	-	-	11	0.04	5.6	0.151
	OXYTOCIN	2.8		-		-		0		0	
Burman et al., 2021(18)	MISOPROSTOL	-	-	27.5	0.17	20	0.38	20	0.21	12.5	0.23
	OXYTOCIN	-		15		12.5		10		5	
Mirteimouri et al., 2013(20)	MISOPROSTOL	3.5	0.57	0	-	0	-	0.5	0.33	0	-
	OXYTOCIN	2.5		0		0		0		0	
Firouzbakht et al., 2013(19)	MISOPROSTOL	10	0.42	4	0.52	-	-	20	0.035	-	-
	OXYTOCIN	6		0		-		10		-	
Badejoko et al., 2012(21)	MISOPROSTOL	-	-	23	<0.001	-	-	27	<0.01	22.2	<0.001
	OXYTOCIN	-		5.4		-		13.2		5.4	
Nasr et al., 2009(22)	MISOPROSTOL	0.39	1	2.33	0.77	2.33	0.77	31.13	<0.001	18.68	<0.001
	OXYTOCIN	0.39		1.96		1.96		0		0.78	
Parsons et al., 2007(23)	MISOPROSTOL	0.5	>0.05	0.5	>0.05	-	-	7.5	<0.001	4	<0.04
	OXYTOCIN	1.9		0.9		-		0.9		1.9	
Gupta et al., 2006(25)	MISOPROSTOL	2	0.497	-	-	-	-	16	0.547	2	0.497
	OXYTOCIN	0		-		-		13		0	
Karkanis et al., 2002(13)	MISOPROSTOL	7	0.34	5.7	0.53	-	-	24	0.04	18.1	0.06
	OXYTOCIN	4.5		3.6		-		13.6		10.7	
Gerstenfeld and Wing, 2001(24)	MISOPROSTOL	0	-	0	-	0	-	7	>0.05	-	-
	OXYTOCIN	0		0		0		7		-	
PRESENT STUDY	MISOPROSTOL	1	0.31	2	0.15	1	0.31	7	0.03	12	0.005
	OXYTOCIN	0		0		0		1		2	

In the present study misoprostol and oxytocin group differed significantly in terms of shivering and fever. Shivering and fever was more common in misoprostol group than oxytocin group. The misoprostol and pxytocin group did not differ significantly in terms of nausea, vomiting and diarrhea. These results were in concordance with Chaudhry et al., 2022(14), Firouzbakht et al., 2013(19), Badejoko et al., 2012(21), Nasr et al., 2009(22), Parsons et al., 2007(23) and Karkanis et al., 2002(13). In Burman et al., 2021(18), Mirteimouri et al., 2013(20), Gupta et al., 2006(25) and Gerstenfeld and Wing, 2001(24)

there was no statistical significance between oxytocin and misoprostol for nausea, vomiting, diarrhoea, shivering and fever.

CONCLUSION

There was no significant difference in the effectiveness when transrectal misoprostol was compared with intravenous oxytocin as an uterotonic in active management of third stage of labour.

Hence, the study concludes that transrectal misoprostol was as effective as intravenous oxytocin in active management of third stage of labour.

DECLARATIONS

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References.

1. Iravani M, Janghorbani M, Zarean E, Bahrami M. An overview of systematic reviews of normal labor and delivery management. Iranian Journal of Nursing and Midwifery Research. 2015 Jun;20(3):293.

2. Wormer KC, Jamil RT, Bryant SB. Acute Postpartum Hemorrhage. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 [cited 2023 Jan 8]. Available from: http://www.ncbi.nlm.nih.gov/books/NBK499988/

3. Rani PR, Begum J. Recent Advances in the Management of Major Postpartum Haemorrhage - A Review. J Clin Diagn Res. 2017 Feb;11(2):QE01–5.

4. WHO recommendations for the prevention and treatment of postpartum haemorrhage [Internet]. [cited 2023 Jan 4]. Available from: https://www.who.int/publications-detail-redirect/9789241548502

5. FIGO recommendations on the management of postpartum hemorrhage 2022: International Journal of Gynecology & Obstetrics: Vol 157, No S1 [Internet]. [cited 2023 Jan 11]. Available from: https://obgyn.onlinelibrary.wiley.com/toc/18793479/2022/157/S1

6. Prevention and Management of Postpartum Haemorrhage (Green-top Guideline No. 52) [Internet]. RCOG. [cited 2023 Jan 8]. Available from: https://www.rcog.org.uk/guidance/browse-all-guidance/green-top-guidelines/prevention-and-management-of-postpartum-haemorrhage-green-top-guideline-no-52/

7. Leduc D, Senikas V, Lalonde AB, CLINICAL PRACTICE OBSTETRICS COMMITTEE. Active management of the third stage of labour: prevention and treatment of postpartum hemorrhage. J Obstet Gynaecol Can. 2009 Oct;31(10):980–93.

8. Begley CM, Gyte GM, Devane D, McGuire W, Weeks A, Biesty LM. Active versus expectant management for women in the third stage of labour. Cochrane Database Syst Rev. 2019 Feb 13;2(2):CD007412.

9. Prendiville WJ, Elbourne D, McDonald S. Active versus expectant management in the third stage of labour. Cochrane Database Syst Rev. 2000;(3):CD000007.

10. Wj P, D E, S M. Active versus expectant management in the third stage of labour. The Cochrane database of systematic reviews [Internet]. 2000 [cited 2023 Jan 4];(3). Available from: https://pubmed.ncbi.nlm.nih.gov/10908457/

11. Wu Y, Wang H, Wu QY, Liang XL, Wang J. A meta-analysis of the effects of intramuscular and intravenous injection of oxytocin on the third stage of labor. Arch Gynecol Obstet. 2020 Mar;301(3):643–53.

12. Chong YS, Chua S, Shen L, Arulkumaran S. Does the route of administration of misoprostol make a difference? The uterotonic effect and side effects of misoprostol given by different routes after vaginal delivery. Eur J Obstet Gynecol Reprod Biol. 2004 Apr 15;113(2):191–8.

13. Karkanis SG, Caloia D, Salenieks ME, Kingdom J, Walker M, Meffe F, et al. Randomized controlled trial of rectal misoprostol versus oxytocin in third stage management. J Obstet Gynaecol Can. 2002 Feb;24(2):149–54.

14. Chaudhry S, Rajani H, Rais R, Ali HS. Efficacy and Safety of Misoprostol Administered Rectally Compared with Oxytocin for the Prevention of Postpartum Hemorrhage. Pakistan Journal of Medicine and Dentistry [Internet]. 2022 [cited 2022 Dec 15]; Available from: https://www.semanticscholar.org/paper/Efficacy-and-Safety-of-Misoprostol-Administered-for-Chaudhry-Rajani/71b1c7e44e3f37746e4b924fceeeda89160f4d47

15. Ng PS, Lai CY, Sahota DS, Yuen PM. A double-blind randomized controlled trial of oral misoprostol and intramuscular syntometrine in the management of the third stage of labor. Gynecol Obstet Invest. 2007;63(1):55–60.

16. Shojai R, Desbrière R, Dhifallah S, Courbière B, Ortega D, d'Ercole C, et al. [Rectal misoprostol for postpartum hemorrhage]. Gynecol Obstet Fertil. 2004 Sep;32(9):703–7.

17. Chong YS, Su LL, Arulkumaran S. Misoprostol: a quarter century of use, abuse, and creative misuse. Obstet Gynecol Surv. 2004 Feb;59(2):128–40.

18. Burman SK, Samanta R, Lata KK, Mukherjee J, Dey TK. Prophylactic Administration of Per Rectal Misoprostol vs Intramuscular Injection of Oxytocin in Third-stage of Labour for Prevention of Postpartum Haemorrhage: A Randomised Controlled Trial. JCDR [Internet]. 2021 [cited 2022 Dec 15]; Available from: https://jcdr.net/article_fulltext.asp?issn=0973-709x&year=2021&volume=15&issue=9&page=QC09&issn=0973-709x&id=15387

19. Firouzbakht M, Kiapour A, Omidvar S. Prevention of post-partum hemorrhage by rectal Misoprostol: A randomized clinical trial. J Nat Sci Biol Med. 2013;4(1):134–7.

20. Mirteimouri M, Tara F, Teimouri B, Sakhavar N, Vaezi A. Efficacy of rectal misoprostol for prevention of postpartum hemorrhage. Iran J Pharm Res. 2013;12(2):469–74.

21. Badejoko OO, Ijarotimi AO, Awowole IO, Loto OM, Badejoko BO, Olaiya DS, et al. Adjunctive rectal misoprostol versus oxytocin infusion for prevention of postpartum hemorrhage in women at risk: A randomized controlled trial. Journal of Obstetrics and Gynaecology Research. 2012;38(11):1294–301.

22. Nasr A, Shahin AY, Elsamman AM, Zakherah MS, Shaaban OM. Rectal misoprostol versus intravenous oxytocin for prevention of postpartum hemorrhage. Int J Gynaecol Obstet. 2009 Jun;105(3):244–7.

23. Parsons SM, Walley RL, Crane JMG, Matthews K, Hutchens D. Rectal misoprostol versus oxytocin in the management of the third stage of labour. J Obstet Gynaecol Can. 2007 Sep;29(9):711–8.

24. Gerstenfeld TS, Wing DA. Rectal misoprostol versus intravenous oxytocin for the prevention of postpartum hemorrhage after vaginal delivery. American Journal of Obstetrics & Gynecology. 2001 Oct 1;185(4):878–82.

25. Gupta B, Jain V, Aggarwal N. Rectal misoprostol versus oxytocin in the prevention of postpartum hemorrhage - A pilot study. Int J Gynaecol Obstet. 2006 Nov;94 Suppl 2:S139–40.