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The study of preoperative rectal misoprostol and its comparison with inj oxytocin during caesarean delivery to prevent intra- partum & post-partum haemorrhage

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Abstract

Aim and objective- The study was done to evaluate the effect of 400microgram per rectal misoprostol just prior to caesarean-section (CS) and its comparison with 10 IU IM oxytocin after delivery of baby during CS in reducing intra-operative and postoperative blood loss. **Methodology-** A prospective randomized controlled study was done including 270 patients, divided into two groups (135 in each). **Group A-** Cases in this group were received with 400 microgram per rectal misoprostol just prior to incision for CS, **Group B-**Cases in this group were received 10 IU IM oxytocin after delivery of baby during CS. Primary outcomes measured were the mean blood loss, need for additional uterotonics, mean drop in hemoglobin and PCV and secondary outcomes measured include need for blood transfusion and side effects of drug. **Observation-** We observed the mean blood loss was significantly less in misoprostol group (P=0.001). The incidence of fever (P=0.03) and shivering (P=0.02) were higher in misoprostol group. **Conclusion-** Per rectal misoprostol was proven by our study to be more effective than 10 IU IM oxytocin in reducing blood loss during and after CS without any adverse effect on foetus. Though incidence of shivering/pyrexia was significantly higher in the misoprostol group but these side effects were trivial and only transient.

Keywords: Cesarean Delivery (CD), Oxytocin, Misoprostol, postpartum haemorrhag (PPH), AMTSL, Low resource settings

INTRODUCTION

One of most common surgery among women is caesarean section. Epidemiologic data report a caesarean incidence of 20–30% worldwide, with comparable rates in high-income and low-income countries (1). The number of caesarean sections is increasing with increasing range of indications, increasing preterm deliveries and increasing legal disputes. It is estimated that 500-1000ml/minute blood perfuses the maternal uterus at term. Caesarean delivery (CD) inevitably result in significant blood loss (intra-partum and early post-partum) before the uterine musculature can contract around uterine spiral arteries (2). Average blood loss in a vaginal delivery is about 500 ml while in CD it is twice of vaginal delivery that is 1000ml. World Health Organization (WHO) define PPH as "blood loss greater than or equal to 500 ml within 24 hours of birth", and sever PPH as "blood loss greater than or equal to1000ml within 24 hours" (3,4). A Haematocrit falls by 10% and blood transfusion is required in more women undergoing CD then the women having vaginal delivery. PPH is leading cause of maternal mortality in low-income countries and the primary cause in nearly one quarter of all maternal death globally as world Health Organization (WHO) reported that in 2015, around 303,000 maternal deaths occurred worldwide

and 25% of these deaths were caused by Post-Partum Haemorrhage (PPH) (5). Nigeria and India had the highest estimated numbers of maternal deaths, accounting for approximately one third (35%) of estimated global maternal deaths in 2017, with approximately 67000 and 35000 maternal deaths (23% and 12% of global maternal deaths), respectively (6). That's why the prevention of PPH in low resources countries must be prioritized to prevent these unnecessary avoidable deaths.

Active management of third stage of labour (AMTSL) is considered "Gold standard" strategy for declining the incidence of PPH. It combines non drug intervention (controlled cord traction/CCT and delayed cord clamping) with the administration of uterotonic drug oxytocin 10IU iv/im (7,8,9,10,11). Unfortunately, oxytocin has limited application in resource poor countries due to its heat instability and required administration by a skilled provider (12). Side effects of oxytocin are nausea, vomiting, headache, blurring vision, tachycardia, myocardial ischemia, hypotension and water intoxication (ADH like action) if large amount of fluid given along with high doses (13). Misoprostol is a prostaglandin E1 (PGE1) analogous with strong uterotonic properties and can be administer through various routs (oral, sublingual, buccal, vaginal, intrauterine, intracervical and rectal). It has good safety profile, low cost and heat stability makes it a good option in recourse poor settings. Patients under anesthesia for CD are prone for vomiting and risk of aspiration should avoid oral, sublingual, buccal routs. As there are more chances of washing out of medicine from vagina with vaginal / cervical secretions, amniotic fluid and bleeding in women undergoing CD, rectal route can be thinking of. Many studies available on misoprostol use for prevention of PPH with different routes but not much with rectal route that is preoperative too, that's why we designed this randomized control study in our institute.

MATERIAL AND METHOD

This study was carried out in August 2017 to Aug.2019 in the department of obstetrics and gynaecology, Sarojini Naidu medical college Agra (UP) India. 270 antenatal women in which caesarean section indicated were selected from the OPD and labour room.

INCLUSION CRITERIA-

1. Uncomplicated singleton pregnancy
2. Gestational Age of 38-40 weeks
3. No foetal distress
4. Up to third gravida

▶ **EXCLUSION CRITERIA: -**

1. Multiple pregnancy
2. Foetal distress
3. High risk pregnancy

The selected cases were randomly allocated in two groups: -

GROUP A- Cases in this group received 400 microgram per rectal misoprostol just prior to incision over abdomen for caesarean section (two tab of misoprostol 200mcg placed per rectally after spinal anaesthesia, just prior to painting and draping the abdomen). (n=135)

GROUP B- Cases in this group received 10 IU injection oxytocin intravenously slowly just after delivery of baby during caesarean section. (n=135).

Caesarean sections were performed by competent senior residents and faculties in both the group

Study Design

It was a prospective, randomised controlled, interventional study.

ASSESSMENT OF BLOOD LOSS

Amount of blood loss assessed by-

1) Two isolated suctions, one for evacuation of amniotic fluid through small incision over the uterus and another one used for collection of blood.
2) Weight of dry and wet gauze, number of gauzes soaked.
3) Requirement of additional uterotonic drug.
4) Number and weight of dry and wet sanitary pads used within 24 hours of caesarean section.
5) Blood indices (Haemoglobin and haematocrit) preoperatively and postoperatively (on second day following caesarean delivery).

▶ The total volume of blood collected in the suction jar was recorded.

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- The total weight of the blood-soaked gauze and pads in first 24 hours were recorded to get the cumulative volume of blood lost. 1 gram weight = 1 ml of blood lost.
- The equation used when calculating the amount of blood lost was, wet item weight (in grams) – dry item weight (in grams) = amount of blood lost in ml.

This was added to the volume of blood loss collected in the suction jar.

Observation

The patients in the both groups were comparable regarding their demographic and obstetrics parameters like their age, socioeconomic status, parity, gravida, haemoglobin on admission, packed cell volume on admission.

The mean blood loss in group A (Misoprostol group) was 384.25 ml while in group B it was 571.37 ml with P value 0.001thus the difference was statistically significant (table 2). Mean fall in haemoglobin in the misoprostol group was 0.78 gm/dl while in the oxytocin group it was 0.93 gm/dl which was statstically not significant similarly fall in pack cell volume was also greater in oxytocin group (table 3). In our study 4 women out of 135 required additional uterotonic in misoprostol group while more (8 women) required in the oxytocin group but the difference was statistically insignificant (p value>0.05). Use of extra uterotonics and blood transfusion was on higher side in oxytocin group although statistically not significant (table 4) . Among side effects Fever (>37.5 degree Celsius) and chills were found more with misoprostol than with oxytocin group during first post-partum hour to the sixth post-partum hour. 26 Patients in the misoprostol group while only 9 patients in the oxytocin group had fever during first post-operative day (table 5). Chills are common complain immediately after delivery by many of women it was also on higher side misoprostol group (table 5).

Discussion

Although not much study available with rectal use of misoprostol that is preoperative too. Most of the study involve oral/sublingual or rectal misoprostol in post-delivery cases only.

The blood loss in misoprostol group was found significantly lower in our study as well as in study by Seeta Garag et al and Sitaula et al. Although Blood loss was found comparable in studies conducted by Dipak Mandi et al (14,15,16)

The mean fall in haemoglobin was higher in the oxytocin group in comparison to the misoprostol group but the result was statistically insignificant. Similar fall in haemoglobin was found in studies conducted by Dipak Mandi and Mohammad Reza Fazel et al (16,17). In our study total 5.40% women need additional uterotonic in misoprostol group while more women10.80% in the oxytocin group required additional uterotonics but the difference was statistically insignificant (p value>0.05), which was similar to studies conducted by Seeta Garag et al and Sitaula et al.(14,15)

In our study 16.20% women needed blood transfusion in misoprostol group while in the oxytocin group it was 27.00% women and the difference was statistically insignificant as studied by Seeta Garag et al and Mohammad RezaFazel (14,17)

Side effects like fever and chills in the misoprostol, group were higher than in the oxytocin group in our study, Similar results were obtained in studies by Dipak Mandi et al(16). However, in study done by Mohammad Reza Fazel et al the difference in two group was not statistically significant, may be because of higher cut off temperature (>40 degree Celsius)(17).

Shivering was seen more often in the misoprostol group (37.59%) in comparison to the oxytocin group (15. 56%) in our study while in 11% and 5% respectively in Seeta et al study (14). Vimala et al has reported shivering in 26% of patient with 400mcg sublingual misoprostol & 4%in oxytocin group while 8.3%and 1.1% in study by Chaudhary et al. (18,2) This difference may be because of different doses and routs of drug in uses. Nausea was seen in 16.20% Patients in the misoprostol group while it was in 13.50% patients in the oxytocin group. Almost similar results were found in studies done by Seeta Garag et al., Dipak Mandi et al and Mohammad Reza Fazel et al. (14,16,17)

6.75% patients in the misoprostol group had vomiting while 912.15% patients complained of vomiting in the oxytocin group. Thus the incidence of vomiting was higher in the oxytocin group but the result was statistically insignificant similar to other

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studies (Seeta Garag et al , Dipak Mandi et al and Mohammad Raze Fazel et al). (14,16,17) In a systemic review analysis misoprostol found to be more effective than oxytocin in the 10 out of 12 studies with fewer side effects (19). Alwani M et al studied 200 women with high risk for PPH after CD and compared 600mcg preoperative par rectal misoprostol with i/m oxytocin and found comparable in terms of blood loss, fall in Hb and need for blood transfusion. (20)

WHO recommends oxytocin for the intrapartum and postpartum periods IV/Im, oxytocin should be given slowly since it causes a temporary decrease in blood pressure (19,21). With current knowledge of effectiveness of misoprostol, its concurrent use with uterotonic can reduce mortality figures (22). Recently comparative study done between preoperative rectal misoprostol and intraoperative intrauterine misoprostol in the reduction of blood loss during and after caesarean delivery and found no significant difference in estimated blood loss (EBL) and PPH(23)

CONCLUSION

Per rectal misoprostol was proven by our study to be more effective than 10 IU intra-vascular oxytocin in reducing blood loss during and after caesarean section without any adverse effect on foetus. The incidence of postoperative shivering/pyrexia was significantly higher in the misoprostol group, compared with the oxytocin group however these side effects were trivial and only transient. Misoprotsol is easily available, thermostable, light stable, does not require specific condition for transport and cheaper drug in comparison to other uterotonics, that's why can be better option specially in developing countries with low resources settings.

REFERENCES

1. Sahu S., Verma U., Singh S. et al Assessment of Caesarean scar strength by different techniques 3(3)2018; 50-55 IJMSIR (A)
2. Chaudhari P, Mazumdar A Sublingual mesoprostol as an adjunct to oxytocin during caesarean delivery in women at risk of PPH. Int J Gynecol Obstet 2015; 128(1)48-52. (B)
3. World health organization. WHO guidelines for management of postpartum haemorrhage and retained placenta (Internet). WHO; 2009(cited 2012 Aug 20). Available from: http://whqlibdoc.who.int/publications/2009/9789241598514_eng.pdf (C)
4. World health organization. WHO recommendations for the prevention and treatment (internet). WHO; 2012(CITED 2013 Jan14). Available from: http://apps.who.int/iris/bitstream/10665/75411/9789241548502_eng.pdf (D)
5. World Health Organization WHO Trends in maternal mortality: 1990-2015: estimates from WHO, UNICEF, UNFPA, World Bank Group & the United Nations population Division. WHO (updated 2015) available at http://www.afro.who.int/site/default/files/2017-05/trends-in maternal-mortality-1990-2015 (E)?
6. World Health Organization (WHO) Trends in maternal mortality: 2000-2017: estimates from WHO, UNICEF, UNFPA, World Bank Group & the United Nations population Division. WHO (updated 2019) (F)
7. Lalonde A. International federation of gynaecology & obstetrics: Prevention of PPH in low resource settings. Int J Gynaecol Obstet 2012; 117(2), 108-118. (G)
8. Aflaifel N., Weeks AD. Active management of third stage of labour. BMJ 2012; 345: e4546 (H)
9. Althabe F., Aleman A., Tomasso G. et al. A Pilot randomized controlled trial of controlled cord traction to decrease post-partum blood loss. Int J Gynecol Obstet 2009; 107(1), 4-7 (I)
10. Deneux -Thareux C. et al Effect of routine CCT as part of AMTSL on PPH: multicentric RCT (TRACOR) BMJ 2013;346 p1541 (J)
11. Gulmezoglu AM, Landoulsi S, Widmer M et al AMTSL with or without CCT: A Randomized controlled non-inferiority trial Lancet 2012; 379 (9827) 1721-1727. (K)
12. Mc Donald SJ. Effect of timing of umbilical cord clamping of term infant on maternal and neonatal outcome. Review Cochrane

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Database Syst. Review2013(7) CD004074 (L)

13. Pakniat H. et al. "The effect of combined oxytocin- misoprostol Vs oxytocin and misoprostol alone in decreasing blood loss at Caesarean Delivery, A Prospective Randomised Double-Blind Study" Journal of Obstetrics & Gynaecology of India 2015; 65(6):376-381 (M)
14. Garag S and Hadi V. Comparative study of rectally administered misoprostol afterspinal anaesthesia versus routine intramuscular oxytocin for reducing blood loss in caesarean section. J.Evolution Med.Dent.Sci. 2018;7(11):1396-1399.(N)
15. Sitaula S, Uprety DK, Thakur A, Pradhan T. Impact of preoperative rectal misoprostol on blood loss during and after elactive CD: A randamized controlled trial. NJOG 2016 Jul-Dec;22(2):37-41. (O)
16. Mandi Dipak, Sen Sayantan et al. Oxytocin infusion Vs rectal misoprostol in prevention of primary PPH in mother with severe pre-eclamsia during CS at peripheral medical college. International Journal of Biomedical Research 2018;09(08):287-292. (P)
17. Mohammad Reza Fazel, Mansoure-Samimi and Fakharian. A comparision of rectal misoprostol and intravenous oxytocin on hemorrhage and homeostatic changes during caesarean section. (Q)
18. Vimla N, Mittal S et sublingual mesoprostol Vs oxitocin infusion to reduce blood loss at CS. Int J Gynecol Obstet 2006;92(2)106-10(R)
19. Bilgin Z et al. Comparison of the effects and side effects of misoprostol and oxytocin in the postpartum period: A Systematic review. Taiwanese journal of obstetrics and gynecology2019; 58(6): 748-756 (S)
20. Alwani M, Singh S et al A randomised study comparing rectally administration of misoprostol after spinal anaesthesia verses i/m oxytocin for prevention of PPH. IJRCOG 2014; 3(3) 512-5 (T)
21. Gallos ID, Willium H, Price M. et al Uterotonic agent for prevention of PPH: A Network meta-analysis chochrane database syst review 12(12) Health tecolAssess 201923(9)1-356 (Z)
22. Ngwenya S. Postpartum haemorrhage: Incidences, risk factor and outcome in a low resource setting. Int J Women,s Health 2016;8:647-50 (U)
23. Moutaz M. et al A comparative study between preoperative rectal misoprostol and intraoperative intrauterine administration in the reduction of blood loss during and after caesarean delivery: a randomized controlled trial. International journal of Gynecology & Obstetrics 2020; 153 (1) 113-118(V)

Table 1. Demographical distribution of women

Parameters		**Group A (n=135) (Misoprostol)**	**Group B (n=135) (Oxytocin)**	**P value**
Age in years	<21	05	05	0.36
	21-25	87	81	
	26-30	39	43	
	31-35	04	06	
	Mean	25.06	25.35	

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	SD	2.95	3.15	Not significant (>0.05)
Parity	0	83	76	
	1	39	42	
	2	13	17	0.83
	Mean	1.4_+ 0.1	1.3+_0.02	Not significant (>0.05)
Socioeconomic status	Upper	08	07	
	Middle	29	26	0.53
	Lower	98	102	Not significant (>0.05)

Table 2. distribution of cases according to blood loss

Variables		Misoprostol (n=135)	Oxytocin group (n=135)	P value
Blood Loss (ml)	200-349	67	07	0.001 (significant) p value <0.05
	350-499	59	43	
	500-699	07	63	
	700-999	04	18	
	>1000	02	04	
	Mean	384.25	571.37	
	SD	141.27	162.55	

Table 3. Distribution of cases according to change in Hb and PCV in both groups

Variables		Misoprostol (n=135)	Oxytocin (n=135)	p-value
Hb gm/dl (Pre-operative)	7.9-9.9	106	101	0.58
	10-10.9	19	22	
	11-11.9	08	9	
	>12	02	4	

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	Mean	8.96	9.01	
	SD	0.54	0.74	
Post-operative Hb	Mean	8.66	8.67	1.0
	SD	0.73	0.78	
Preoperative PCV	Mean	28.17	28.43	0.2
	SD	1.91	1.98	
Postoperative PCV	Mean	26.41	26.60	0.41
	SD	1.84	1.99	

Table 4- According to use of utrotonics & blood transfusion

Variables	Misoprostol (n=135)	Oxytocin (n=135)	Pvalue
Methargin	2	5	0.72
Carboprost	2	3	
Oxytocin infusion	0	0	
Mesoprost	0	0	
Blood transfusion	12(16.20%)	20 (27.00%)	0.53

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Table 5 – According to side effects

Variables	Misoprostol (n=135)	Oxycotin (n=135)	P value
Fever	26	09	0.03
Shivering	44	21	0.02
Nausea	12	10	0.56
Vomiting	5	9	0.08
Headache	4	10	0.27

Table 6- Comparison with other somewhat similar studies

Workers	**Our study (2018)**		**Seeta Garg et al (2018)**		**Dipak mandi et al (2018)**		**Mohd Reza Fazel et al (2013)**	
Groups	Miso (rectal)	Oxy(10 U i/m)	Miso (rectal)	oxy	Miso	oxy	miso	Oxy
Mean blood loss(ml)	384.25+/-141.27	571.37+/-162.55	389.25+/-172.56	445+/-180.42	822.40+/-199.29	807.40+/-205.17		
	P value = 0.001		P = 0.02		P value=0.71			
Mean fall Hb (gm/dl	0.78	0.84	0.84	1.10	1.15	1.07	1.03	1.10
	P = 0.28		P = 0.03		P = 0.294		P = 0.35	
Uterotonic use	4	8	12	17	-	-	-	-
	0.72		0.31		-			
Blood transfusion	12	20	18	22	-	-	-	-
	0.51		0.47		-			
Fever	19.26%	6.67%	3%	1%	39%	6%	8%	2%
Shivering	44(32.59%)	21(15.56%)	11 (11%)	5 (5%)	10 (20%)	1(2%)	8 (16%)	1(2%)

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