

DOI: <http://dx.doi.org/10.18203/2320-1770.ijrcog20181341>

Original Research Article

Intramuscular methergine versus per-rectal misoprostol for prevention of atonic post-partum haemorrhage

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Received: 18 January 2018

Accepted: 28 February 2018

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ABSTRACT

Background: Postpartum haemorrhage (PPH), is a major hazard of maternal death which is accounting for 30% of deliveries with a 1% mortality rate globally. Present study was designed to compare the efficacy of per rectal misoprostol and intramuscular methergine in the management of 3rd stage labour for prevention of postpartum haemorrhage.

Methods: A total four hundred cases with low risk term pregnancy admitted and attending department of obstetrics and gynecology were considered and were divided in 2 groups such as group 1 consists of 200 patients administered with misoprostol 600µg after delivery and group 2 consists 200 patients administered with methyl ergometrine 0.2mg (intramuscular) after delivery.

Results: Methyl ergometrine group had a significant reduction in duration of third stage ($p < 0.05$) and blood loss ($p < 0.05$) when compared to misoprostol group. Need for additional Oxytocics was also more in misoprostol group (8%) as compared to methyl ergometrine group (4%). In group 1 average blood loss was found to be 241.3ml, whereas in group 2 it was 179.3ml. Average Hb levels were significantly reduced in group 2 when compared to group 1 patients. Incidence of side effects like nausea, vomiting is more in methergine group than misoprostol group.

Conclusions: Intramuscular methergine results in lower blood loss, reduction in duration of third stage of labour, significantly reduction in hemoglobin level after delivery but is associated with more side effects while per rectal misoprostol is less effective but safe with lesser side effects.

Keywords: Methylergometrine, Misoprostol, Postpartum haemorrhage, Third stage labour

INTRODUCTION

Third stage labour is the most complicated part of the mother, which requires necessary attention. The most usual happen condition in this stage is postpartum haemorrhage defined as blood loss > 500 ml in the first 24hours of post-delivery.¹ It is an important cause of maternal morbidity and mortality.²⁻⁴ The world health organization (WHO) reports that over 20 million morbidities results every year due to post-partum haemorrhage.⁵

Preventive measures like early cord cutting, supplementation of Oxytocics and cord traction may decrease the probability rate of postpartum haemorrhage.⁶⁻⁸ Conventional treatment for prophylaxis against postpartum haemorrhage include methyl ergometrine, oxytocin and 15 methyl PGF_{2α}. Usage of oxytocic agents shown to decrease incidence of postpartum haemorrhage by 40%. The use of uterotonic agent may reduce blood loss but often associated with nausea, vomiting, myocardial infarction, intracerebral haemorrhage and increased BP.⁹ Misoprostol an effective

uterotonic agent which binds selectively to EP2 or EP3 prostanoid receptor administering orally or rectal route to prevent postpartum hemorrhage and helpful in the management of third stage labour.¹⁰ Methergine is a conventional oxytocic used extensively but is associated with unpleasant side effects like hypertension.¹¹

With the above facts the present study attempted to compare intramuscular methergine and perrectal misoprostol in the management of third stage labour for prevention of post-partum haemorrhage.

METHODS

The present study was conducted in department of Obstetrics and Gynecology, Chalmeda Anand Rao Institute of Medical Sciences, Karimnagar during March 2016 to September 2017. A total 400 cases attended and admitted in the department and fulfilling the selection criteria were considered. Patients between 20-30 years age group, gravida ranging from 1st - 4th and between 36-40 weeks of gestation were included. Patients with pregnancy induced hypertension, cardiovascular diseases, renal disorders, antepartum haemorrhage, bronchial asthma, previous caesarean and multiple pregnancies were excluded from the study. Informed consent was obtained from all the patients. All the participants underwent through general and systemic examination like per vaginal, per abdominal, cardiovascular and respiratory examinations. Based on the drug administered, the patients were divided into two groups such as group 1 with misoprostol 600µg through perrectally immediately after birth of baby and group 2 with intramuscular Inj. methergine 0.2mg at the time of delivery to anterior shoulder.

The blood loss during the third stage of labour and the immediate postpartum period (1 hour after delivery) was calculated by placing plastic sheet under the women's buttocks and on the floor and by keeping a sterile kidney tray at the vulva. After the delivery of fetus, amount of blood loss is estimated by totaling up the blood in kidney tray, secondary blood spillage on plastic sheets and collected blood and blood clots and volume measured by a measuring jar. If intravenous oxytocin was used during the second stage of labour, it was stopped immediately after delivery. Length of third stage of labour, and side

effects including nausea, vomiting, diarrhoea, shivering, hypertension and retained placenta were recorded. Statistical analysis of the 2 groups was done by Chi-square test and t-test (normality test).

RESULTS

A total 400 cases with low risk term pregnancy admitted and attending department were considered. Group 1 consists of 200 patients administered with misoprostol 600µg after delivery and group 2 consists 200 patients administered with methyl ergometrine 0.2mg (intramuscular) after delivery.

Table 1: Age wise distribution of cases.

Age (in years)	Misoprostol		Ergometrine	
	No.	Percent	No.	Percent
20-22	54	27	67	33.5
23-26	88	44	105	52.5
27-30	58	29	28	14

In misoprostol group 56% of cases were multigravidas and 49% were primigravida but in methergine group 40% were multigravidas and 60% were primi gravidas. In misoprostol (52%) and methergine groups (49%) majority of patients were between 39-40 weeks of gestation. Mean period of gestation in misoprostol group was 38.5 weeks and in methergine it was 38.4 weeks. In misoprostol group, average duration of 3rd stage of labour was found to be 8.98 minutes whereas in methergine group it was found 6.02 minutes ($p < 0.05$).

Table 2: Volume of blood loss during third stage of labour.

Blood volume (ml)	Group 1		Group 2	
	No.	Percent	No.	Percent
< 100	18	9	67	33.5
101-200	67	33.5	108	54
201-300	73	36.5	10	5
301-400	22	11	7	3.5
401-500	5	2.5	3	1.5
501-600	15	7.5	5	2.5
	P<0.05			

Table 3: Effect of SBP and DBP in both group patients.

	Systolic blood pressure				Diastolic blood pressure			
	Group 1		Group 2		Group 1		Group 2	
	No	Percent	No	Percent	No	Percent	No	Percent
Rise or insignificance change	158	79	134	67.5	171	85.5	138	69
Rise of 5-10 mm Hg	5	2.5	32	16	4	2	38	19
Fall of 5-10 mm Hg	37	18.5	34	17	25	12.5	24	12

In group 1, additional oxytocin (10 IU) in intravenous drip was required in 8% patients and average blood loss was found to be 241.3ml. Whereas in group 2, additional oxytocin was needed in 4% of patients and average blood loss was found to be 179.3ml. 11% of cases had blood transfusion in group 1 whereas it was 8% in group 2. Average Hb levels were significantly reduced in group 2 when compared to group 1 patients.

Table 4: Side effects of drugs in both group patients.

Side effects	Group 1		Group 2	
	No.	%	No.	%
Vomiting	5	2.5	18	9
Pyrexia	2	1	1	0.5
Nausea	6	3	21	10.5
Diarrhea	-	-	-	-
Shivering	3	1.5	6	3
Abdominal cramps	-	-	-	-

DISCUSSION

The third stage labour is potentially most complicated part of the mother. The present study aimed to compare the efficacy of intramuscular methergine (0.2mg) and per rectal misoprostol (600µg) in the management of 3rd stage of labour. In present study majority patients were between age group 23-26 years which is similar to study by Vrunda Joshi et al (23 years) and Frederic et al (29.8 Years) (Table 1).¹² Majority patients were multigravidas in group 1 (56%) whereas in group 2 majority are primigravida i.e. 60% which is correlating with the findings of Joshi V et al.¹²

The raise in systolic blood pressure was not statistically significant between two groups before and after delivery. Therefore, intramuscular methergine is exclusively associated with increase in systolic blood pressure. In a study by Frederic et al, it was found that one hour after birth of baby there was no difference in mean systolic blood pressure or the mean diastolic blood pressure in methyl ergometrine or misoprostol group respectively. In view of changes in diastolic blood pressure following delivery, in methergine group there is considerable rise in diastolic blood pressure with $p < 0.05$ which is significant as compared to misoprostol group. Rise in BP was more in methyl ergometrine group as compared to misoprostol group, rise in systolic blood pressure was seen in 16% of cases and rise in diastolic blood pressure in 38% of cases. In misoprostol group there was increase in systolic blood pressure in only 2.5% and increase in diastolic blood pressure in only 2% of cases.

In the study by Frederic et al, the mean blood loss was same in both misoprostol and methyl ergometrine group. In the study by Joshi V et al when methyl ergometrine was compared to misoprostol, there was 200.87ml mean blood loss in methyl ergometrine group while lesser amount of blood loss i.e. 195ml mean blood loss was seen in misoprostol group.¹² The result of our study

shows that third stage blood loss and hemoglobin deficit were not significantly different in control and study group. This is in accordance with the results of other studies.^{12,13} Study by Mansouri HA et al compared rectal vs oral misoprostol 600ug in active management of 3rd stage labour, found that mean blood loss was higher in oral misoprostol than rectal administered.¹⁴

In the present study incidence of side effects like nausea (3%) and vomiting (2.5%) were less in misoprostol group as compared to methyl ergometrine group. In methyl ergometrine group incidence of nausea was 10.5% and vomiting 9%. Shivering was more in methyl ergometrine group i.e. 3% as compared to 1.5% in misoprostol group. Pyrexia was found in misoprostol group which was 1% and 0.5% in methergine group. In a similar study by Frederic et al., pyrexia was observed in 34% cases in misoprostol group compared to 3% in methyl ergometrine group. Shivering occurred in 42% cases of misoprostol group compared to 8.5% in methyl ergometrine group. There was no difference in two group in the occurrence of nausea, vomiting, diarrhoea, hot flushes, headache or vertigo. In a similar study by Vrunda Joshi V et al, shivering, diarrhoea and fever were common side effects in misoprostol group. Nausea, vomiting, increase in BP were common in methyl ergometrine group.¹² Study by Mansouri HA, Alsahly N, found that shivering and pyrexia were occurred more in oral misoprostol group and concluded that rectal misoprostol is effective in the management of 3rd stage labour.¹⁴

CONCLUSION

Per rectal misoprostol is safe with lesser side effects and can be used even in hypertensive patients for preventing PPH but is relatively less effective in preventing blood loss, resulting in higher fall of Hb level with greater number of cases requiring blood transfusion and required additional oxytocics with a higher frequency. Incidence of retained placenta was less as compared to methyl ergometrine group. Hence a cafeteria approach is required in usage of these drugs in general in reducing post-partum haemorrhage and thereby maternal morbidity and mortality.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Singangutti R. Intramuscular methergine versus perrectal misoprostol for prevention of atonic post-partum haemorrhage. *Int J Reprod Contracept Obstet Gynecol* 2018;7:1490-3.