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Research Article

Role of oral misoprostol 600 mcg in active management of third stage of labour: a comparative study with carboprost 125 mcg, intramuscular

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ABSTRACT

Background: Objectives: To compare misoprostol 600 mcg, oral with carboprost 125 mcg, i.m., in the active management of third stage of labour.
Methods: A total of 200 pregnant women of 38-42 weeks of gestation delivering vaginally in the Shivamogga institute of medical sciences, Shivamogga, Karnataka, India were selected for study. 100 women received misoprostol 600 mcg, orally and 100 women received carboprost 125 mcg, i.m. immediately after delivery of baby and cord clamping by the method of randomisation.
Results: In the misoprostol group, mean blood loss is 134.9 ml, mean duration of the third stage of labour is 4.07 min and mean fall in hemoglobin is 0.34 g/dl. In the carboprost group, mean blood loss is 123.7 ml, mean duration of the third stage of labour is 3.73 min and mean fall in hemoglobin is 0.28 g/dl. There was no significant difference between the two groups with regard to the above mentioned factors. There were 5 cases of PPH in the misoprostol group and 3 cases in the carboprost group. 21 cases in the misoprostol group and 14 cases in the carboprost group required additional oxytocics. Unpleasant side effects like diarrhoea and vomiting were more in carboprost group.
Conclusion: Oral misoprostol is as effective as carboprost in AMTSL and can be used safely in vaginal deliveries for prevention of PPH, especially in non-institutional deliveries and in places of low resource settings.

Keywords: Misoprostol, Carboprost, Active management of third stage of labour (AMTSL), Postpartum hemorrhage (PPH), Severe acute maternal morbidity (SAMM), Maternal mortality rate (MMR)

INTRODUCTION

Complications of 3rd stage of labour have bad curses and within those, postpartum haemorrhage (PPH) is the forerunner and the most common cause of immediate severe PPH is uterine atony. According to a recent UNICEF report, in India, "One woman dies every 5 minutes". In India, during pregnancy and childbirth, with the Maternal Mortality Rate (MMR) of 178/100000 live births,[1] India accounts for 20% of global maternal deaths. PPH is not only responsible for maternal mortality, but also causes morbidity known as Severe Acute Maternal Morbidity (SAMM) including anaemia, pituitary necrosis, shock, hysterectomy, loss of fertility etc. Active Management of Third Stage of Labour (AMTSL) is preventive measure and when practiced routinely can reduce haemorrhage up to 60%. It includes administration of uterotonic drugs just after the birth of baby, controlled cord traction and uterine massage.[2] Giving an uterotonic drug within 1 minute of birth is the component of AMTSL that has the greatest impact on the prevention of PPH.[3] The choice of which uterotonic drug to use

depends on the clinical judgement of the provider, availability of the drug options and assessment of the trade-offs between the anticipated benefits and side-effects. Misoprostol is an oxytocic drug that is easily available, has the safe route of administration, needs no storage condition, inexpensive, has a long shelf life and has a positive safe profile, making it a good option in resource poor settings for AMTSL. Carboprost, 15-methyl analogue of PGF2-alpha appears to be very effective in the management of severe PPH due to uterine atony not responsive to conventional therapies. Carboprost is proven beyond doubt that it is effective even in cases where oxytocin fails to act.[4] We choose to compare oral misoprostol 600 mcg with low dose carboprost as they are similar in cost which is an important issue in developing country like India.

METHODS

The present study was conducted at department of obstetrics and gynaecology, district McGann government teaching hospital, Shivamogga institute of medical sciences, Shivamogga, Karnataka, India (A large tertiary/referral health centre of mid Karnataka), between May 2013 to October 2014. 200 pregnant women between 38-42 weeks of gestation delivering vaginally were selected. Women with eclampsia, elective / emergency caesarean section, asthma, epilepsy, heart disorders, kidney disorders and coagulation disorders were excluded from the study. All selected women were randomly divided into 2 equal groups (100 each). 100 women were given 600 mcg of oral Misoprostol immediately after delivery of the baby and cord clamping. Similarly another 100 women were given i.m. carboprost, 125 mg. In both the groups, pulse rate and blood pressure were recorded before and after the 3rd stage of labour. The amount of blood loss (in ml) is estimated by separate receptacle kept close to the perineum in which blood was collected, after drainage of liquor and delivery of the baby, and was continued until the third stage of labour is completed, it was measured with a graduated measuring jar. The duration of third stage of labour was noted (in min). Haemoglobin estimation was done both at the time of admission and discharge by means of Sahli's haemoglobinometer. Side effects such as headache, abdominal pain, nausea, vomiting, diarrhoea, shivering, BP >140/90 and pyrexia were recorded. On appearance of signs of excessive blood loss, other uterotonics such as methylergometrine / oxytocin were given immediately in both the cases. The Excel and Statistical Package for Social Science (SPSS Inc,) software packages were used for data entry and analysis. The student 't' test was used to determine whether there was a statistical difference between two materials in the parameters measured**.** Proportions were compared using Chi-square test of significance. The difference among groups was considered to be significant at P <0.05.

RESULTS

This is a comparative study consisting of 200 pregnant women in labour randomized into two groups of 100 each. 100 subjects received oral misoprostol 600 mcg, while 100 subjects received i.m., carboprost, 125 mcg. Mean age, parity and socioeconomic status were comparable in both the groups (Table 1).

The mean blood loss in the misoprostol group was 134.9 ml and in carboprost group was 123.7 ml. The difference was not statistically significant (P value 0.08). The mean duration of the third stage of labour in the misoprostol group was 4.07 min and in carboprost group was 3.73 min. The difference was not statistically significant (P value 0.06). The mean amount of fall in haemoglobin level in the misoprostol group was 0.33 mg/dl and in carboprost group was 0.28 mg/dl (Table 2).

The difference was not statistically significant (P value 0.06). In misoprostol group, 5 women and in carboprost group, 3 women had PPH. 21 women in the misoprostol group and 14 in the carboprost group required additional oxytocic (Table 3).

Unpleasant side effects like diarrhoea and vomiting were more in carboprost group (Table 4).

Table 1: Sociodemographic pattern.

Factors	Misoprostol group (N=100)	Carboprost group (N=100)
Age (years)		
18-25	58	52
26-35	42	48
Parity		
Primigravida	60	52
Multigravida	40	48
Socioeconomic class		
High middle	0	0
Lower middle	58	64
Lower class	42	36

Table 2: Distribution of cases according to the outcome of the study.

Outcome	Misoprostol group (N=100)	Carboprost group (N=100)	P value
Mean amount of blood loss (ml)	134.9	123.7	0.08
Mean duration of third stage of labour (min)	4.07	3.73	0.06
Mean amount of fall in hemoglobin level (gm/dl)	0.34	0.28	0.06

Table 3: Distribution of cases according to the occurrence of PPH and need of additional oxytocic.

Outcome	Misoprostol group (N=100)	Carboprost group (N=100)	P value
Occurrence of PPH	5	3	0.08
Need of additional oxytocic	21	14	

Table 4: Distribution of cases according to side effects.

Side effects	Misoprostol group (N=100)	Carboprost group (N=100)
No adverse effects	69	86
Shivering	3	0
BP >140/90	1	0
Headache	3	0
Nausea	4	1
Vomiting	0	0
Diarrhoea	1	12
Abdominal pain	10	0
Pyrexia	9	1

DISCUSSION

The third stage of labour is a crucial period where negligence can turn a previously uneventful pregnancy into a disaster. The role of oxytocics is to stimulate myometrial contraction, the major factor reducing the third stage bleeding. The aim of the present study was to evaluate the role of misoprostol in active management of the third stage of labour and compare it with carboprost. In our study, a maximum number of patients in both the groups were in the age group of 18-25 years, 55% in both groups. In both the groups, 56% of patients were primigravida and 44% of patients were multigravida. The maximum number of patients in both groups belonged to the lower middle class. The difference in both the groups with regard to mean amount of blood loss, mean duration of the third stage of labour, and mean amount of fall in hemoglobin level was not statistically significant as P value was >0.05. The incidence of PPH and the need for additional oxytocic were slightly more in the misoprostol group (P value 0.08). The incidence of shivering and pyrexia was more in the misoprostol group,[5] incidence of vomiting and diarrhoea was more in the carboprost group. But not so disturbing so as to lead to disuse of these drugs.

CONCLUSION

A single oral dose of 600 mcg of misoprostol was given prophylactically immediately after delivery of baby and cord clamping is found to be simple, cheap, safe, highly effective and acceptable in active management of third stage of labour. Misoprostol has the advantage in terms of cost-effectiveness and less incidence of unpleasant side effects compared to intramuscular use of 125 mcg of carboprost. Hence, misoprostol can be used safely in all deliveries for the prevention of postpartum hemorrhage, especially in non-institutional deliveries and in places of low resource settings.[6,7]

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Ethical approval: The study was approved by the institutional ethics committee

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