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ORIGINAL ARTICLE

Role of Misoprostol 600 mcg Oral in Active Management of Third Stage of Labor: A Comparative Study with Oxytocin 10 IU i.m

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Abstract
Objectives To compare oral misopostol 600 mcg with 10 IU units oxytocin i.m. in the active management of the third stage of labor.
Materials and Methods A total of 200 pregnant women of 34–42 weeks of gestation delivering vaginally in the Rajendra Institute of Medical Sciences, Ranchi, were selected for study. Hundred women received oral misoprostol 600 mg and 100 women received i.m. oxytocin 10 IU immediately after delivery of the baby and cord clamping by the method of randomization.
Results In the misoprostol group, mean blood loss is 145 ml, mean duration of the third stage of labor is 3.76 min, and mean fall in hemoglobin is 0.55 g/dl. In the oxytocin group, mean blood loss in 125.6 ml, mean duration of the third stage of labor in 3.50 min, and mean fall in hemoglobin is 0.48 g/dl. There was no significant difference between the two groups with regard to the above-mentioned factors. There were 8 cases of PPH in the misoprostol group and 6 cases in the oxytocin group. Twenty-two cases in the misoprostol group and 16 cases in the oxytocin group required additional oxytocics. Adverse effects like shivering and pyrexia were more in the misoprostol group.
Conclusion Oral misoprostol is as effective as oxytocin 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 · Oxytocin · Active management of third stage of labor (AMTSL) · Postpartum hemorrhage (PPH)

Introduction

Taj Mahal—one of the seven wonders of the world, one of the greatest monuments, dedicated to the memory of "Queen Mumtaz" who died after her last childbirth of postpartum hemorrhage in 1630—is a testimony to and grim reminder of the tragedy of maternal mortality that can befall any woman in childbirth. Complications of the third stage of labor are among such curses and within those, postpartum hemorrhage is the forerunner. In India, the maternal mortality rate is 212/1,00,000 live births and PPH is responsible for 25 % of deaths. PPH is not only responsible for maternal mortality, but also causes morbidity known as severe acute maternal morbidity (SAMM) including anemia, pituitary necrosis, shock, hysterectomy, loss of fertility, etc. AMTSL is a preventive measure and when practiced routinely, can reduce hemorrhage by up to 60 %.

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Table 1 Sociodemographic pattern

Factors	Misoprostol group $N = 100$	Oxytocin group $N = 100$
Age (years)		
18–24	52	52
25–36	48	48
Parity		
Primigravida	42	42
Multigravida	58	58
Socioeconomic class		
High middle	4	2
Lower middle	56	62
Lower class	40	36

It includes the Administration of oxytocin or another uterotonic drug just after birth of the baby, Controlled cord traction, and Uterine massage [1]. Misoprostol is a oxytocic drug easily available, has the safest route of administration, needs no storage condition, is inexpensive, and has a long shelf life and a positive safely profile, making it a good option in resource-poor settings for AMTSL.

Material and Methods

The present study was conducted in the Department of Obstetrics and Gynaecology, the Rajendra Institute of Medical Sciences, Ranchi, in the period of 18 months between May 2010 and October 2011. Two hundred pregnant women between 34 and 42 weeks of gestation delivering vaginally were selected. Women with eclampsia, elective/emergency cesarean section, asthma, epilepsy, heart disorder, kidney disorder, and coagulation disorders were excluded from the study. All selected women were randomly divided into two equal groups (100 each). In the Misoprostol group, women were given 600 μm of oral misoprostol immediately after delivery of the baby and cord clamping. Similarly, in the oxytocin group, women were give i.m. oxytocin 10 IU.

In both the groups, pulse rate and blood pressure were recorded both before and after the third stage of labor. The amount of blood loss (in ml) was estimated by calibrated plastic blood collection drape in which blood was collected after drainage of liquor and delivery of the baby and was continued until the third stage of labor was completed. The duration of the third stage of labor was noted (in min). Hemoglobin measurement was done both at the time of admission and at the time of discharge by means of Sahli's haemometer. Side effects such as abdominal pain, nausea, vomiting, diarrhea, shivering, and pyrexia were recorded. If any sign of excessive blood loss appeared, other uterotonics such as methylergometrine or carboprost were given immediately in both the cases.

Statistical analysis was carried out using the student *t* test. The difference among groups was considered to be significant at $P < 0.05$.

Observations

Among the 200 women enrolled in the study, 100 subjects received oral misoprostol, while 100 subjects received i.m. oxytocin.

Mean age, parity, and socioeconomic status were comparable in both the groups (Table 1) The outcome data are shown in (Table 2). The mean blood loss in the misoprostol group was 145 ml and in the oxytocin group was 125.6 ml. The difference was not statistically significant ($P > 0.05$). Mean duration of the third stage of labor in the misoprostol group was 3.76 min and in the oxytocin group was 3.50 min ($P > 0.05$). Mean amount of fall in hemoglobin level in the misoprostol group was 0.55 g/dl and in the oxytocin group was 0.48 g/dl ($P > 0.05$).

In the misoprostol group, 8 women and in the oxytocin group, 6 women had PPH. Twenty-two women in the misoprostol group and 16 in the oxytocin group required additional oxytocic (Table 3). Side effects like shivering and pyrexia were more in the misoprostol group (Table 4).

Table 3 Distribution of cases according to the occurence of PPH and need of additional oxytocic

Outcome	Misoprostol group $N = 100$	Oxytocin group $N = 100$
Occurence of PPH	8	6
Need of additional oxytocic	22	16

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

Outcome	Misoprostol group $N = 100$	Oxytocin group $N = 100$	*P* value
Mean amount of blood loss (in ml)	145	125.6	>0.05
Mean duration of third stage of labor (in min)	3.76	3.50	>0.05
Mean amount of fall in hemoglobin level (gm/dl)	0.55	0.48	>0.05

Table 4 Distribution of cases according to side effects

Side effects	Misoprostol group $N = 100$	Oxytocin group $N = 100$
Shivering	50	08
Pyrexia	06	02
Abdominal pain	26	22
Diarrhea	10	00
Nausea	08	08
Vomiting	04	02

Discussion

The third stage of labor 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 labor and compare it with oxytocin.

In our study, a maximum number of patients in both the groups were in the age group of 18–24 years, 52 % in both groups. In both the groups, 58 % of patients were multigravida and 42 % of patients were primigravida. 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 labor, and mean amount of fall in hemoglobin level was not statistically significant as P value was >0.05. Similar results were obtained in the study of Oboro and Tabowie. [2] The incidence of PPH and the need for additional oxytocic are slightly more in the oxytocic group. The incidence of shivering and pyrexia was more in the misoprostol group, but not so disturbing so as to lead to disuse of this drug. [3–5].

Conclusion

Oral misoprostol, though not a replacement of parenterally administered oxytocin, 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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