PROPHYLACTIC USE OF MISOPROSTOL IN MANAGEMENT OF THIRD STAGE OF LABOUR AND PREVENTION OF ATONIC UTERUS

Nuzhat Amin

Address for correspondence:
Dr. Nuzhat Amin
Department of Obstetrics and Gynecology, Mardan Medical Complex, Mardan - Pakistan.
E-mail: k.shahbaz50@yahoo.com
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ABSTRACT

Objective: To assess the prophylactic use of misoprostol in management of third stage of labour and prevention of atonic uterus, and comparing it with conventional i/v syntocinon use in third stage of labour.

Methodology: This quasi experimental study was conducted at department of obstetrics and gynecology unit A, Mardan Medical Complex Hospital Mardan, from May 2011 to May 2012. Two hundreds labouring females were included in the study and divided into 2 groups, a control group (100 women who received 5 units syntocinon) and a study group (100 women who received 800ug rectal misoprostol) immediately after delivery of the baby. Duration of third stage of labour, blood loss after delivery were recorded and compared between the two groups. Side effects of both drugs were also noted.

Results: There was not any significant difference in blood loss and duration of third stage of labour in both groups. The frequency of atonic PPH (postpartum hemorrhage) in study and control groups was also similar.

Conclusion: Misoprostol can be used for the management of third stage of labour and it can reduce atonic PPH. It efficacy and safety is similar to that of syntocinone.

Key Words: prophylaxis, atonic postpartum hemorrhage, recta, misoprostol, syntocinon, underdeveloped countries.

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INTRODUCTION

Obstetric hemorrhage especially the postpartum hemorrhage is the largest single medical cause of maternal mortality accounting for about 25% of all maternal deaths[1]. Majority of these deaths occur in poor countries[2].

Postpartum hemorrhage is excessive bleeding (> 500ml in vaginal delivery and >1000ml in cesarean section) from the genital tract after birth. The condition can result from uterine atony, retained placenta, genital tract trauma and coagulation disorders. It is said to be primary if it occurs within 24h of delivery and secondary if it occurs 24h after delivery. It complicates 4-5% of deliveries[3].

To prevent and treat PPH, literature strongly support the use of active management of third stage of labour which includes controlled cord traction , use of syntocinon at delivery of anterior shoulder or crowning of fetal head . Studies shows that risk of PPH can be reduced to 60% by using active management of third stage of labour[3,4].

Uterine contraction and retraction is the first line followed by platelet plug formation as second and clot formation as third line mechanism to control bleeding from placental site after delivery. Different types of drugs (methergine, syntocinone, syntometrine) which are uterotonic drugs are used to cause contraction and retraction of uterus after delivery[5,6] .Ergot alkaloids have been used for decades for this purpose but they are associated with risk of hypertension and are therefore, contraindicated in patients with hypertension and heart diseases[7,8].

The drug of first choice in third stage of labour in modern practice is syntocinon due to its excellent efficacy as well as few side effects as compared to ergometrine. But syntocinon as well as syntometrine are available as injections only and their use need sterilized needles and trained staff[9,10].

Another problem associated with the use of inject-

able drugs is that they need refrigeration to remain effective. Facilities like trained staff and refrigeration might not be available in poor countries especially at primary health care level. Moreover some of the studies have shown syntocinon to have cardio toxic effect due to the presence of chemical chlorobutanol as preservative in syntocinon ampules[10].

Prostaglandins are other groups of drugs that have strong uterotonic property. They are not associated with the effect like hypertension. These qualities make prostaglandins a good alternative to syntocinone and methergine that can be routinely used in the management of third stage of labour[10].

Misoprostol is an E1 prostaglandin analogue that has been used for decades for management of gastric ulcers. It is also used in gynecology and obstetrics for various indications i.e. cervical priming, medical termination of pregnancy and induction of labour, although it is not approved by FDA. Recent research shows that misoprostol can also be used for prophylaxis and treatment of postpartum hemorrhage[11].

The use of misoprostol brought a revolution in obstetrics and gynecology practice. The observation that misoprostol has uterotonic properties was first time documented in literature by E1-Refacy et al in 1993[11]. Later on it was shown to have some side effects like nausea , vomiting and shivering. Misoprostol is a good drug for developing countries because it is a pill, easy to use (oral, sublingual, buccal, vaginal and rectal routs), is stable at ambient temperature and does not require special storage facilities, can be easily delivered at the community leveland is cheap and widely available[12].

In this context this study was conducted to evaluate the efficacy and safety of rectal misoprostol and compare it to that of syntocinon for the management of third stage of labour, with special emphasis on PPH prevention.

METHODOLOGY

This quasi experimental study was conducted at department of obstetrics and gynecology unit A, Mardan Medical Complex Hospital Mardan, from May 2011 to May 2012 on 200 patients. An informed written consent about misoprostol and its use was taken from all the women included in the study who signed the admission chart of the hospital. Women with full term pregnancy who came to labour room in spontaneous onset labour, resulting in spontaneous vaginal delivery without episiotomy were included in the study. All of them included in the study were having normal BMI (less than 30) and were in between 20-40 years age.

Cases with cesarean section deliveries, traumatic PPH, bleeding disorders, prolonged difficult labour, placenta previa and abruption, multiple gestation and previous history of PPH were excluded. Women having BMI more than 30 were excluded.

Cases were admitted through emergency and OPD and they were randomly selected. Thorough history was taken and examination was done on all patients.

Baseline investigations were performed on all patients e.g. urine R/E, blood complete picture, blood grouping, clotting profile and screening for hepatitis B and C.

The women in control group were given syntocinon 5iu i/v injection which is routinely used in hospital as part of active management of third stage of labour whereas the study group received 800ug(4 tablets) of misoprostol per rectum. Both drugs were given immediately after delivery of baby.

Blood loss after delivery was estimated by special drapes put under the parturient and removed after 1 hour of delivery and blood collected in graduated plastic bags was weighted. Also the drabs were weighted before and I hour after delivery.

The outcome measured were duration of 3rd stage of labour, Estimation of blood loss, Frequency of primary PPH, Side effect of misoprostol and syntocinon and acceptability of the drug by the women via the rectal route. Placentae were removed by Brands Andrews method. Women vital signs were noted and any excessive bleeding was managed according to WHO recommendations. Side effects of the drugs were noted and recorded. Women were asked about any difficulty in tolerating the misoprostol by rectal route.

Data were analyzed using SPSS version 13 for windows using T test. A p-value of < 0.05 was taken as statistically significant.

RESULTS

Total number of patients included in the study was 200. These two hundreds labouring females were divided into 2 groups, a control group (100 women who received 5 units syntocinon) and a study group (100 women who received 800ug rectal misoprostol) immediately after delivery of the baby. There was no difference in age and parity in study and control groups (Mean age 30.03+10 years in control and 30.35+10 years in study group). The duration of third stage of labour (control group 14 minutes, study group 16 minutes; p-value= 1.8) was not significantly different in study and control group (Table 1).

Table 1: Main results

Variable	Control Group	Study Group	P-Value	Mean ± SD
Duration of 3rd stage of Labour in minutes	14	16	0.19	15.0 ± 1.0
Blood loss after delivery in milli liters	250	300	0.18	275.0 ± 25.0

Table 2: Side effects of drugs

Side Effects	Study Group	Control Group	P-Value
Shivering	25	4	<0.05
Fever	15	3	<0.05
Vomiting	12	2	<0.05
Diarrhoea	5	1	<0.05

Placenta was retained in 6 cases, 2 in control group and 4 in study group.

They were removed manually under general anesthesia. Mean blood loss after delivery was not significantly different in the two groups.

The frequency of atonic postpartum hemorrhage was the same in the control (n=3) and study groups (n=4).

There were 3 cases of atonic PPH in control group and in study group there were 4 cases of atonic PPH.

Table 2 shows side effects of drugs in both groups. It can be seen that the most common side effects is shivering followed by fever while vomiting and diarrhea occurred as well.

DISCUSSION

Multiple controlled trails[17-21] investigating misoprostol for prophylaxis of PPH has been reported. A study conducted by Bixby program in population, Family planning and maternal health school of public health, university of California Berkley, USA in 2006, 600ug misoprostol was given in third stage of labour. Results of that study shows that women given 600ug misoprostol were less likely to bleed 500ml or more, (adjusted odd ratio 0.30,95% confidence interval, 0.16-0.56) compared to the conventional use of syntocinon in third stage of labour.

The duration of third stage is in case of misoprostol was less than 20 min in this study. In this study it was also less than 20 minutes (16 minutes).

Side effects like fever, shivering, vomiting and diarrhea were observed, which are similar to the side effects noted in this study.

In this study blood loss was 500ml which is also comparable to this study (300ml).

So this study like our study shows misoprostol to be effective for prophylactic use in third stage of labour. However the dose of misoprostol in study of USA was 600ug and it was 800ug in our study. Studies shows that if we reduce the dose the side effects will also decrease but it will also affect the efficacy of the drug[13].

A similar study was conducted at Holy family Hospital department of obstetrics and gynecology, memorial university of Newfoundland. In this study 800ug misoprostol was compared to 10 IU intramuscular syntocinon in third stage of labour. The blood loss was determined by change in hemoglobin concentration. The result of study shows no significant difference in hemoglobin concentration in both groups.

This study has used hemoglobin as an indicator of blood loss, but in our study, I measured the estimated blood loss by using pre weighted drabs along with hemoglobin.

The duration of third stage blood loss and side effects of misoprostol in this study are also similar to the results observed in our study. Therefor this international study like our study also shows misoprostol to be effective uterotonic.

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[14,15].

The incidence of PPH in our study is 3-4% which is

comparatively less than the reported incidence in general obstetric population. This may be due to the fact that study was carried out at tertiary care hospital with majority of patient studied were with low risk for PPH. We also used active management of 3rd stage with syntocinon used as uterotonics in the study and misoprostol in control group. So rectal misoprostol has an excellent potential for prophylaxis and active management of atonic PPH[16,17].

The duration of 3rd stage of labour should not exceed 30 minutes in both primi and multigravidas.

It remained with in normal limits with little difference between study and control group. This is an agreement with result of all previous studies on misoprostol in PPH[18].

We did not note a significant difference in frequency of blood transfusion given between the study and control group.

The adverse effects of misoprostol are dose related. One study reported that the incidence of shivering and fever decreased to 11% and 4% respectively with 400 mg of misoprostol given at cord clamping[19]. One small study showed that if we decrease the dose, the incidence of shivering will decrease but this will also affect the efficacy of the drug for controlling PPH[20].

LIMITATIONS

The sample included both high and low risk women. There is a need to conduct such studies on high risk case under controlled conditions.

CONCLUSIONS

Overall, this study shows that 800ug rectal misoprostol if used in women age group 20-40 years and BMI less than <30 immediately after delivery is safe and effective for the prophylaxis and management of postpartum hemorrhage. Our study result shows that it is as effective as syntocynon and benefits of misoprostol out weight its side effects.

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