Original article

Indian Journal of Obstetrics and Gynecology
Volume 4 Number 2, May - August 2016
DOI: http://dx.doi.org/10.21088/ijog.2321.1636.4216.3

Role of Oral Misoprostol in Prevention of PPH: A Comparitive Study with 10 Units Intramuscular Oxytocin

Prashant Joshi*, Shikha Agrawal**

Abstract

Objectives: To compare oral misoprostol 600 microgram with 10 IU oxytocin intramuscularly in controlling PPH. *Materials and Method:* A total of 200 women of 37 weeks to 42 weeks of gestation delivering vaginally in the Adichunchanagiri Institute of medical Sciences, Mandya Karnataka. After randomization 200 women received oral misoprostol 600 microgram and 100 women received 10 IU intramuscularly oxytocin immediately after delivery of baby but before the delivery of placenta. *Results:* In the oxytocin group mean blood loss was 235 ml. Mean duration of third stage 4.58 minutes. In the misoprostol group mean duration of third stage of labour was 4.72min. Mean blood loss was 252 ml. No significant difference was observed in respect of above factors. 3 cases required additional uterotonic in misoprostolgroup, 2 patient required additional uterotonic in oxytocin group. Pyrexia was found in 1 patient in misoprostol group. Abdominal pain was seen in 4 patients in oxytocin group. Diarrhea was found in 2 patients of misoprostol group. *Conclusion:* Oral misoprostol is very effective in controlling PPH and it is comparable to oxytocin 10 IU intramuscularly. It can therefore be used in places, where facilities of storage and parenteral administration of oxytocin is limited.

*Professor, **Post Graduate Resident, Dept. of Obstetrics and Gynaecology, Adichunchanagiri Institute of Medical Sciences, B. G. Nagar, Nagamangala, Mandya District- 571448, Karnataka

Shikha Agrawal
Post Graduate Resident, Dept. of Obstetrics and Gynaecology, Adichunchanagiri Institute of Medical Sciences, B. G. Nagar, Nagamangala, Mandya District- 571448, Karnataka .
E-mail: drshikhaagrawal13@gmail.com

Keywords: Postpartum Haemorrhage (PPH); Misoprostol; Oxytocin.

Introduction

India is a low resource country with high maternal mortality rate. A majority of Indian population lives in rural areas,with limited facilities. Most of the normal deliveries are non-institutional deliveries conducted by birth attendants with very less technical knowledge [1].

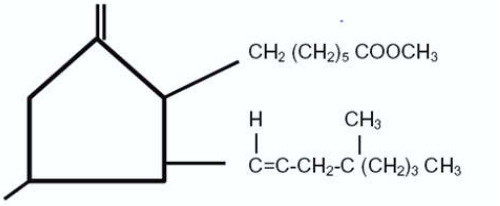
Postpartum hemorrhage (PPH) is the single major cause of maternal mortality and serious maternal morbidity in low-income countries. Attempts to reduce deaths from PPH have been complicated by the fact that many deaths occur in out of hospital settings and too quickly for the patient to be transferred to a health facility. Furthermore, prevention and treatment have depended primarily on injectable uterotonics, which are seldom available outside the health system [2].

In this setting misoprostol which is safe effective, easily administered drug has attracted considerable attention [3].

Misoprostol is a synthetic prostaglandin [PGE1] analogue with chemical structure of $C_{22}H_{38}O_5$ ((±)-methyl(13E)-11,16-dihydroxy-16-methyl-9-oxoprost-13-enoate) [4].

It possess three major advantages-

1. Stability at ambient temperature



2. Long shelf life
3. Low cost

Misoprostol can be administered by various routes- oral, rectal, vaginal and subcutaneous [5].

The oral route has the most rapid intake but the shortest duration of action. The buccal or subcutaneous route has rapid uptake, prolonged duration of action and greatest total bioavailabity [6].

Materials and Methods

We conducted a single-centered, randomized trial in department of Obstetrics and Gynecology in ShriAdichunchanagiri Hospital and Research Centre B.G Nagara Karnataka approved by Institutional Review Board.

A total of 200 pregnant women between the gestational age of 37 to 42 weeks delivering vaginally were randomly selected.

Inclusion Criteria

Women between 37-42 weeks of gestation delivering through vaginal route were included.

Exclusion Criteria

Pregnant women with

1. Eclampsia
2. Polyhydrominos
3. Multiple pregnancy
4. Anemia
5. Asthma
6. Epilepsy
7. Heart disorders
8. Coagulation disorders
9. Or women delivering via caesarean section

Women were randomized into two groups. Each group received either 600mcg oral misoprostol (n=100)or10 IU intramuscular oxytocin (n=100) following delivery of baby but before separation of placenta.

The amount of blood loss was measured with number of equal sized pads soaked. One full soaked pad =25 ml of blood loss.

The duration of third stage of labour was noted in minutes. Patients were monitored for 6 hours postpartum, to see for development of side effects like abdominal pain, nausea, vomiting, shivering, pyrexia.

In case of excessive blood loss, other uterotonics like methylergometrine or carboprost was given immediately. Hb% was measured before and 24 hours after delivery, to quantify the blood loss.

Results

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

Mean age parity and socioeconomic status were comparable in both the groups. The mean blood loss (table1) in the misoprostol group was 252+_105.8 ml and in the oxytocin group was 235+_76.9 ml. The difference was not statistically significant (p>0.05).Mean duration of the third stage of labour in misoprostol group 4.72+_1.178min and in the oxytocin group was 4.58+_0.758min(p>0.05).Mean amount of fall in hemoglobin level in the misoprostol group was 0.78g/dl and in the oxytocin group was 0.48g/dl(p>0.05). Shivering was seen in 10% patients in misoprostol group with pyrexia of more than 100 degree Fahrenheit in 1% patients (Table 2).

Table 1:

	Misoprostol group N=100	Oxytocin group N=100	P value
Amount of blood loss	252+_105.811	235+_76.93	0.19
Duration of 3rd stage of labour	4.72+_1.178	4.58+_0.758	0.24
Fall in Hb	0.78	0.42	>0.05

Table 2:

	Misoprostol (N=100)	Oxytocin(N=100)
Shivering	10	-
Pyrexia	1	-
Abdominal pain	-	4
Diarrhea	2	-
Need for additional uterotonic	3	2

Graph 1

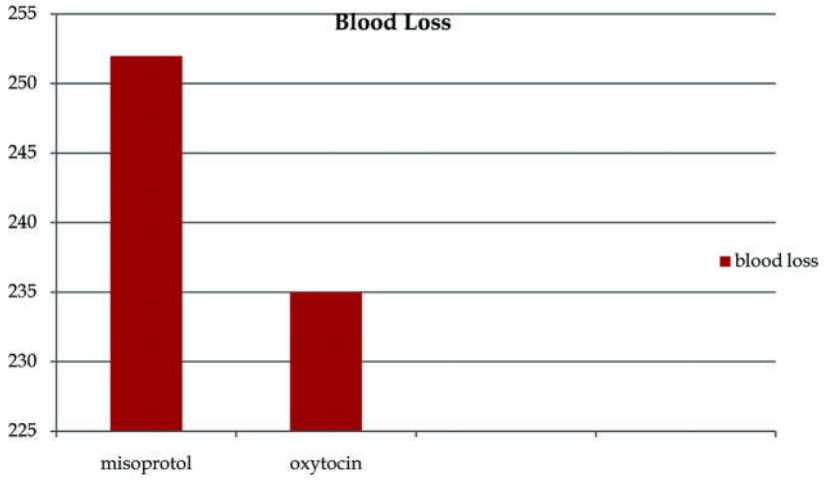


Fig. 2:

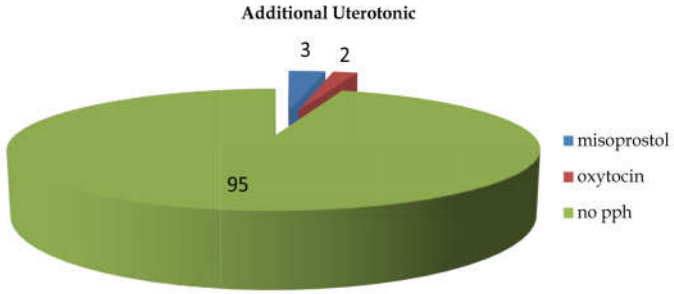


Fig. 3:

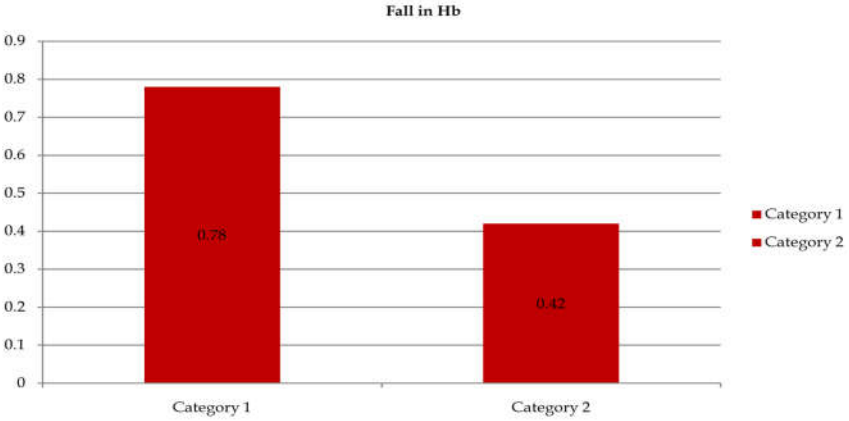
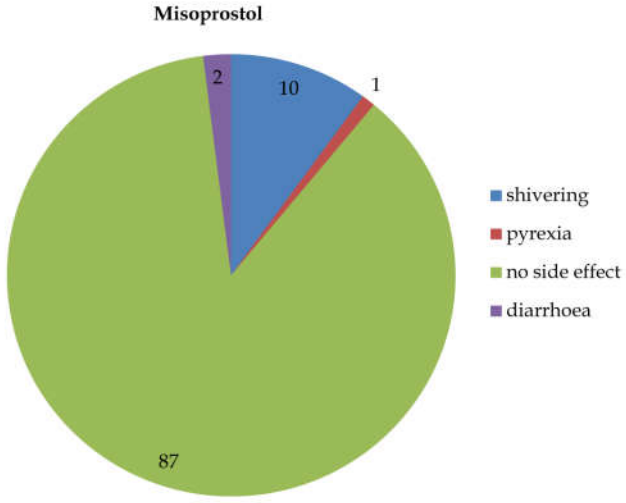


Fig. 4:



Discussion

The third stage of labour is a crucial period where negligence can turn a previously uneventful pregnancy into a disaster. The role of uterotonics is to stimulate myometrial contraction .The major factor reducing the third stage bleeding [7].

In this study we compared the safety and efficacy of misoprostol and oxytocin in the prevention of PPH. Our analysis showed that there was no statistically significant difference in the baseline characteristics of the two groups.

The primary focus of our study was amount of haemorrhage. There was no significant difference in amount of blood loss in two groups.In misoprostol group it was 252+_105.81 ml and in oxytocin group it was 235+_76.93 ml.Similar results were obtained by Minoo et al in Irani population. The mean amount of blood loss seen by them in misoprostol group 182+_ 101 ml and in oxytocin group was 157+_84.9 ml. These observations were consistent with our study [8].

The mean fall in Hb level observed in misoprostol group was 0.78g/dl and in oxytocin group was 0.42g/dl. Similar results were observed by Sahay et al in a study conducted in RIMS Ranchi. They found mean fall in haemoglobin level in misoprostol group to be 0.55 g/dl and in oxytocin group to be 0.48g/dl. These observations were consistent with our study [9].

Derman et al found shivering in 52.2% of patients with pyrexia in 4.2% of individuals in misoprostol group.We found shivering in 10% of patients in misoprostol group and pyrexia>100 degree Fahrenheit in only 1% of patients. These findings were inconsistent with our study [10].

Abdominal pain was seen in 4% patients in oxytocin group. In misoprostol group, there was no case of abdominal pain but 2% cases of diarrhea. However in study conducted by Ahmed Narr et al in Egyptian population, they found 6% cases of diarrhea in misoprostol group, but in there study they had given 600mcg of rectal misoprostol instead of oral misoprostol [11].

3 cases required additional uterotonics in misoprostol group and 2 in oxytocin group the difference was not statistically significant. The additional uterotonic was ergometrine, carboprost. These findings consistent with the study of Ahmed Narr et al where 6/257 patients required additional uterotonic in misoprostol group and 4/257 patients required additional uterotonic in oxytocin group.

The difference in both the groups with regard to mean blood loss, mean duration of third stage of labour and mean amount of fall in haemoglobin was not statistically significant as P value was >0.05.

The incidence of PPH and need for additional uterotonic was slightly more in misoprostol group. The incidence of shivering and pyrexia was more in misoprostol group but not to the extent to lead to disuse of drug.

Conclusion

Oral misoprostol though not a replacement of intramuscular oxytocin can be used safely in non-institutional deliveries and can thus reduce the incidence of PPH.

References

1. Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. Lancet. 2006; 367(9516): 1066–74.
2. Li Xf, OrtneyJa, Kotelchuck M, et al. The postpartum period: the key to maternal mortality. Int J GynaecolObstet. 1996; 54: 1-10.
3. OiShan,Tang,HorstSchweerSharon W.H. Lee,etal. Pharmacokinetics of repeated doses of misoprostolHum. Reprod. 2009; 24(8): 1862-6
4. Zieman M, Fong SK, Benowitz NL, et al. Absorption kinetics of misoprostol with oral or vaginal administration. ObstetGynecol. 1997; 90: 88–92
5. Hofmeyr JG, Gulmezoglu AM. Misoprostol for the prevention and treatment ofpostpartum haemorrhage. Best Pract Res ClinObstetGynaecol. 2008; 22(6): 1025–41.
6. Sutherland T, Meyer C, BishaiDMet al. Community-based distribution of misoprostol for treatment or prevention of postpartum hemorrhage: cost-effectiveness, mortality, and morbidity reduction analysis. Int J Gynaecol Obstet. 2009; 108: 289–94.
7. Danielle L. Lang, Fei-Li Zhao and Jane Robertson.Prevention of postpartum haemorrhage: cost consequences analysis of misoprostol in low-resource settings.. BMC Pregnancy and Childbirth. 2015; 15: 30
8. MinooRajaei, SamiehKarimi, Zohreh Shahboodaghi, et al.Safety and Efficacy of Misoprostol versus Oxytocin for the Prevention of Postpartum Hemorrhage. Journal of Pregnancy. 2014
9. MuktaMani,SahayPritiBala.Role of misoprostol 600 mcg oral in active management of third stage of labour:A comparative study with oxytocin 10 IU

im.JObstetGynaec of India. 2013; 63: 325-7

10. Derman, Kodkanybs, chakraborty h. Oral misoprostol in preventing postpartum haemorrhage in resource-poor communities: a randomized controlled trial. Lancet. 2006; 368(9543): 1248-1253.
11. MasoumehMirteimouria, FatemehTaraq, Batool Teimourib et al.Efficacy of Rectal Misoprostol for Prevention of Postpartum Hemorrhage; Iranian Journal of Pharmaceutical Research. 2013; 12(2): 469-74.