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ORIGINAL RESEARCH

Comparison of Oral Misoprostol with Intravenous Oxytocin in the In the Management of the Third Stage of Labour

Dr Nancy Chakarvarty[1], Dr Shruti Munjal[2], Dr Nippun Chhakarvarty[3], Dr Ishika Nain[4], Dr Alka Chhabra[5], Dr Shyam[6]

[1]Associate Professor, [2]Assistant Professor Department of Gynecology, [3]Associate professor, Department of General surgery, [4]Assistant Professor ,[5]Professor,[6]Post Graduate Student, Department of Gynecology, Maharaj Agrasen Medical College, Agroha, Hisar

Corresponding author
Dr Nancy Chakarvarty
Associate Professor, Department of Gynecology
Maharaj Agrasen Medical College, Agroha, Hisar

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Abstract

Background : Active management of the third stage of labor has yielded remarkable reductions in rates of postpartum bleeding. The present study was conducted to determine if there is any difference in the efficacy of intravenous oxytocin over oral misoprostol in the management of the third stage of labour.

Material & methods: Parturients who were randomized into Group A(n=50) were administered 400 µg misoprostol sublingually, given immediately after delivery of the fetus. The parturients in Group B(n=50) were administered 10 IU of oxytocin intravenously also after the delivery of the neonate. The primary outcome and Secondary outcome measures were evaluated. The data obtained was recorded in a computer and analyzed using the Statistical Package for the Social Sciences version 11.0 (SPSS Inc, Chicago, IL, USA).

Results : The mean age, parity, and period of gestation in weeks had no statistically significant differences in both groups. In group B 10% parturients needed additional uterotonics and in group A 6%parturients needed additional uterotonics. Average blood loss was more in group A. Side effects like Nausea and shivering was more in group A.

Conclusion : The findings from this study demonstrated that oral misoprostol is as efficacious and safe as intravenous oxytocin in the management of the third stage of labour and that the side-effects of misoprostol are tolerable and self-limiting. We concluded that oral misoprostol could be used as an alternative oxytocin agent for the third stage of labour.

Keywords : third stage of labour, postpartum bleeding, intravenous oxytocin and oral misoprostol

Introduction

Maternal mortality is a global public health concern accounting for nearly 600.000 deaths a year worldwide with 99% of these deaths occurring in developing countries. At least a quarter of these deaths is due to postpartum haemorrhage(PPH). Mostly as a result of uterine atony (70 to 80%).[1]In the managing third stage of labour, massaging the uterus may also be actively

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practised.[2] It is possible to administer uterotonics to avoid PPH during third stage of labour. Uterotonic suggested is IM/IV oxytocin (10IU). Other alternatives include uterotonicinjectables such as ergometrine /ergometrine-methylergometrine, or a mixture of drugs like oxytocin, ergometrine and misoprostol can be used.[3]Though oxytocin may be the "gold standard" for AMTSL drawbacks relating to its lack of thermal stability and its administration through parenteral route make misoprostol recognized for its strong uterotonic properties low-cost thermal and light stability over.[3] Misoprostol, a PGE1 analogue marketed for peptic ulcer disease has proven to have uterotonic effects when administered orally, rectally and vaginally. It has a shelf life of several years and hence does not require specific conditions for storage as it is stable at extremes of temperature. It is the cheapest oxytocic available and the only one which can be given by a non-parenteral use.It does not raise blood pressure in doses up to 1000micrograms and can be an effective alternative to methyl ergometrine for third stage of labour .It has a low side effect profile with shivering, mild pyrexia and diarrhoea being the main associations. It is slightly less effective than injectable oxytocic's but it is a drug of enormous potential for use in the developing world with limited obstetric facilities but where majority of deaths occur. Studies have shown that oral misoprostol is as effective as oxytocin in active management of third stage of labour.[4] The present study was conducted to determine if there is any difference in the efficacy of intravenous oxytocin over oral misoprostol in the management of the third stage of labour.

Material & methods

The prospective observational (single cohort) study was carried out at Maharaja Agrasen Medical College, Agroha (Hisar) in patients undergoing normal delivery, elective or emergency cesarean who presented to out- patient or emergency and department of Obstetrics and Gynecology. A total of 100 females of age 20- 35years undergoing normal, elective or emergency Caesarean section were included in the study. Women with singleton Pregnancy, >38 weeks of gestation, Maternal age between 20-35 years were included in the study. Women with ante-partum haemorrhage, bleeding disorders, trial of vaginal birth after caesarean section, presence of significant uterine fibroid, severe preeclampsia and women who withheld their consent for the study were excluded from the study.Parturients who were randomised into Group A(n=50) were administered 400 µgmisoprostol sublingually without water, given immediately after delivery of the neonate. The parturients in Group B(n=50) were administered 10 IU of oxytocin intravenously, also after the delivery of the neonate. Demographic characteristics, including maternal age, parity, weight, height and gestational age, were recorded. The primary outcome measure was to determine if 400 microg oral misoprostol given immediately after delivery of the neonate is as effective as a bolus intravenous injection of 10 iu oxytocin intravenously stimulating uterine contractions and thereby reducing blood loss. Secondary outcome measures evaluated included the need for blood transfusion, Amount of blood transfused, Need for additional uterotonic agents and Occurrence of side-effects.

The data obtained was recorded in a computer and analysed using the Statistical Package for the Social Sciences version 11.0 (SPSS Inc, Chicago, IL, USA).

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Results

Parturients who were randomised into Group A(n=50) were administered 400 µg misoprostol sublingually given immediately after delivery of the foetus. The parturients in Group B(n=50) were administered 10 IU of oxytocin intravenously, also after the delivery of the neonate.

Table 1: Demographic data

Variable	Group A	Group B	p value
Age (years)	27.0 ± 3.2	27.4 ± 3.4	1.00
Gestational age (weeks)	39.3 ± 1.4	39.2± 1.3	0.29
Parity	0.8 ± 0.6	0.9 ± 0.6	0.73

The mean age, parity, and period of gestation in weeks had no statistically significant differences in both groups.

Table 2: Comparison of changes in the hemoglobin levels

Variable	Group A	Group B	p value
Change in haem levels			
Blood loss > 500 ml	Nil	Nil	0.77
Use of additional uterotonics	3(6%)	5(10%)	0.75
Average blood loss (ml)	154.76	156.78	0.83

In group B 10% parturients needed additional uterotonics and in group A 6%parturients needed additional uterotonics. Average blood loss was more in group A. Side effects like Nausea and shivering was more in group A.

Table 3: Side effects

Symptom	Group A	Group B	p value
Nausea	4(8%)	0(0%)	0.03*
Vomiting	0(0%)	0(0%)	
Shivering	4(8%)	2(4%)	0.12
Rise in temperature	0(0%)	0(0%)	

Discussion

Misoprostol is a drug of choice for the prevention of postpartum haemorrhage owing to its strong uterotonic properties which. when associated with pharmacodynamics. enable a swift onset of action within 2 minutes and a peak plasma concentration within 7 minutes.[5]

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Patel N et al expected outcome of the study shows a significant difference in the blood loss during third stage of labour and 24 hours in post-partum period when uterotonics like oxytocin or misoprostol are used in managing third stage of labour actively. The study show the effect of intravenous oxytocin and prerectal misoprostol in managing third stage of labour actively to prevent post-partum hemorrhage.[6]

Diallo M, et al found that the average volume of blood loss was 196.55 ml in the misoprostol group and 208.39 ml in the oxytocin group (p=0.63).The incidence of postpartum haemorrhage (>500 cc) was 6.49% in the misoprostol group and 9.33% in the oxytocin group (p=0.358). The average rate of haemo globin decline was 0.38 g/dl in the misoprostol group and 0.29 g/dl in the oxytocin group (p=0.99). The proportion of hyperthermia, shivering, and nausea in the misoprostol and oxytocin groups were respectively: 2.59% against 0.6% (p=0.123), 7.14% against 2% (p=0.001) and 2.59% against 0.6% (p=0.498).[3]

Rahbar N et al found that the mean ± SD decline in hematocrit level after 24 hours of delivery was 2.6% ± 2.3% in misoprostol group and it was 3.2% ± 2.5% in oxytocin group, and the difference was not significant (P = 0.27). The need for the additional uterotonic drug was significantly higher in the oxytocin group (16%) than in the misoprostol group (2.1%) one hour after delivery (P = 0.031). During one hour after delivery, the incidence of shivering was significantly lower in oxytocin group (P = 0.001), but on the contrary, the incidence of hypotension in the oxytocin received patients was higher (P = 0.003). The effectiveness of sublingual misoprostol is similar to intravenous oxytocin in reducing cesarean section hemorrhage. Moreover, because shivering as an untreatable adverse effect of misoprostol was very bothersome for the patients, we recommend that sublingual misoprostol not be used in high dosage.[7]

Conclusion

The findings from this study demonstrated that oral misoprostol is as efficacious and safe as intravenous oxytocin in the management of the third stage of labour and that the side-effects of misoprostol are tolerable and self-limiting.We concluded that oral misoprostol could be used as an alternative oxytocic agent for the third stage of labor.

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