MISOPROSTOL VERSUS OXYTOCIN FOR INDUCTION OF LABOUR AT TERM AND POST TERM PREGNANCY OF PRIMIGRAVIDA

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ABSTRACT

INTRODUCTION

To compare effectiveness and safety of sublingually administered misoprostol and intravenously infused 10 units of oxytocin for labor induction at term and post term pregnant women in Gandaki Medical College Teaching Hospital (GMCTH).

MATERIAL AND METHODS

This is a prospective study conducted in Department of Obstetrics and Gynaecology in Gandaki Medical College and performed on 120 patients of primigravida with cephalic presentation at term and post-term pregnancy. Patients were given 50µg sublingual misoprostol 6 hourly (two doses) and 5 units of oxytocin in 500ml RL started from 10 drops up to 60 drops till effective contraction occur with maximum of 10 units oxytocin. Maternal and fetal outcomes were observed. Collected data were analyzed using SPSS and MS Excel.

RESULTS

There were no significant differences between the groups concerning time duration between inductions to delivery time, indications of caesarean section, different modes of delivery and for the Apgar score at one and five minutes.

CONCLUSION

Both oxytocin and misoprostol are effective and safe for induction of labour.

KEYWORDS Induction of labour, maternal outcome, misoprostol, neonatal outcome, oxytocin

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INTRODUCTION

Induction of labour is defined as initiation of labour by artificial means prior to the onset of spontaneous labour.[1] It is widely practised to prevent adverse events such as caesarean section, prolonged labour, postpartum haemorrhage and traumatic birth to both mother and infants, if pregnancy is continued beyond term.[2]

Labour may be induced by pharmacological methods or mechanical methods. Among pharmacological methods, oxytocin and misoprostol are the most commonly used for induction of labour. The worldwide increase in use of these methods during recent years necessitates a careful research on indications, resulted risks, benefits, time duration between-inductions to delivery and also maternal complications of labour induction especially related to oxytocin and misoprostol (a synthetic prostaglandinE_1).

Therefore, this study was conducted to evaluate the effectiveness and the safety of sublingually administered misoprostol in comparison to that of intravenously infused 10 units of oxytocin for labour induction at term and post term pregnant women.

MATERIAL AND METHODS

This is a prospective study conducted in Department of Obstetrics and Gynaecology in Gandaki Medical College (GMC), Pokhara, Nepal over 2 years from 9th January, 2017 to 8th January, and 2018.The present study was cleared by the Ethical Committee of GMC. Informed verbal consent was taken from the patient. This study was performed on 120 patients of primigravida with cephalic presentation at term and post-term pregnancy. The population for this study are those women of age group 20-30 years in whom induction of labour was decided after admission in GMCTH, Pokhara for delivery.

The inclusion criteria in this study were alive singleton primigravida at gestational age 37 weeks or more with cephalic presentation with no contraindication of vaginal delivery. The exclusion criteria were multiple pregnancy, antepartum hemorrhage, pre-labour rupture of membrane, cardiac disease, diabetic pregnant mother and abnormal cephalic presentation.

Patients were randomly divided into two groups; 60 patients in each group. Group I**:** Patients who will receive 50µg sublingual misoprostol 6 hourly of two doses. Group II**:** Patients who will receive 5 units of oxytocin in 500ml RL started from 10 drops up to 60 drops till effective contractions occur with maximum of 10 units oxytocin. Study variables were as follows: indication of induction of labour (IOL), induction to delivery interval, mode of delivery, indication of lower segment caesarean section, neonatal outcome and maternal complication.

Before starting of induction by any methods, patients were asked to empty her bladder and bishop's scoring was done to check cervix status. 50µg misoprostol was given sublingually and repeated after 6 hours, if needed (maximum two doses only). 5 units in 500ml of RL infusion of oxytocin was started on whom induction had been decided. If effective contraction was not established and there was no foetal distress and abnormal uterine contraction, then, 10 units oxytocin in 500ml RL was started from 30 drops upto 60 drops, again, the rate was increased every 30 minute by 10 drops up to 60 drops. If effective uterine contractions occured at any rate, that rate was maintained upto delivery of baby. Active third stage management was done and oxytocin drip was continued one hour after delivery. Foetal heart sound (FHS) was monitored every 30 minutes during induction period of labour. Collected data were compiled and analysed using SPSS software in 21.0 version and MS-excel. The treatment groups were compared to evaluate maternal and fetal/neonatal outcomes.

RESULTS

For misoprostol group, post-dated pregnancy was found to be the major indication for IOL, that is, 26 (43.3%) followed by term pregnancy, 20 (33.3%). For oxytocin group, term pregnancy was found to be the major indication for IOL, that is, 23 (38.3%) followed by post-date pregnancy 21 (35%) (Table 1).

Table 1. Indication of induction

	Misoprostol		Oxytocin		p-value
	No.	%	No.	%	
Post- date pregnancy	26	43.3	21	35	0.350
Gestational hypertension	4	6.7	3	5	1
Intrauterine growth restriction	1	1.7	1	1.7	1
Rh-negative mother	1	1.7	1	1.7	1
Polyhydramnios	1	1.7	1	1.7	1
H/O- subfertility	2	3.3	3	5	1
Oligohydramnios	2	3.3	3	5	1
[illegible] pregnancy	20	33.3	23	38.3	0.568
Other maternal indication	2	3.3	2	3.3	1
Foetal indication	1	1.7	2	3.3	1

According to hour intervals from induction to delivery, it was seen that more number of patients delivered in <10 hours in oxytocin group than in misoprostol group whereas other 22 women in misoprostol and 18 women in oxytocin- group were delivered within 20 to 36 hours of induction. 26 women in misoprostol group and 23 women of oxytocin group delivered within 10-20 hours .There was statistically non-significant difference ($p>0.05$) between two groups in all the time duration (Table 2).

Table 2. Detail of time duration between-inductions to delivery

Induction to delivery (hrs)	Misoprostol		Oxytocin		p-value
	No.	%	No.	%	
<10	12	20	19	31.7	0.144
10 to 20	26	43.3	23	38.3	0.577
20 to 36	22	36.7	18	30	0.439

After induction, out of 120 cases, the rate of normal delivery was maximum for both misoprostol group [43 (71.7%)] and oxytocin group [41(68.3%)]. The majority of the women provided with misoprostol 16 (26.7%) and oxytocin 17 (28.3%) underwent caesarean section whereas rate of vacuum delivery was minimum 1 (1.7%) for misoprostol and 2 (3.3%) for oxytocin group. There was statistically non-significant difference (>0.05) between two groups in all modes of deliveries (Table 3).

Table 3. Mode of delivery

	Misoprostol		Oxytocin		p-value
	No	%	No	%	
Normal delivery	43	71.7	41	68.3	0.690
Caesarean section	16	26.7	17	28.3	0.838
Vacuum delivery	1	1.7	2	3.3	1

Of the total 33 caesarean section cases, fetal distress was found to be the most common reason for caesarean in both groups [misoprostol 12(20%) and oxytocin 11(18.3%)] followed by failure of induction for misoprostol [2(3.3%)] and oxytocin [3(5%)].There was statistically non-significant difference (p>0.05) between two groups in all indications of caesarean section (Table 4).

Table 4. Indication of LSCS (Lower segment caesarean section)

	Misoprostol		Oxytocin		p-value
	No.	%	No.	%	
Fetal distress	12	20	11	18.3	0.817
Failed induction of labour	2	3.3	3	5	1
Non progress of labour	1	1.7	2	3.3	1
Other indication	1	1.7	1	1.7	1

When Apgar score <6 at 1 min was analyzed , 8 (13.3%) cases in the misoprostol and 10 (16.7%) in the oxytocin groups were found and for Apgar score >6, 52 (86.7%) cases in misoprostol and 50(83.3%) cases in oxytocin were found . Similarly, when Apgar score <7 was analyzed , 3 (5%) cases in misoprostol and 5 (8.3%) in the oxytocin group were found and for Apgar score >7, 57 (95%) cases in the misoprostol and 55 (91.7%) in the oxytocin were found. No statistical significant difference (p>0.05) was found between two groups for the Apgar score i.e. <6 and <7 at one minute and five minutes (Table 5).

Table 5. Fetal outcome and Apgar score (In all type of deliveries)

Apgar-score		Misoprostol		Oxytocin		p-value
Apgar-score in one min.		No.	%	No.	%	
	<6	8	13.3	10	16.7	0.609
	-	52	86.7	50	83.3	
Apgar-score in 5 min.	<7	3	5	5	8.3	0.714
	≥7	57	95	55	91.7	
Baby status	Baby admission in NICU	6	10	8	13.3	0.570
	Baby with mother	54	90	52	86.7	

Table 6 shows the occurrence and distribution of maternal complications. Maternal complications were seen in total 29 sample size.

Table 6. Maternal complication

	Misoprostol		Oxytocin		p-value
	No.	%	No.	%	
Nausea/vomiting	9	15	3	5	0.068
Diarrhoea	2	3.3	0		0.496
Headache	0		1	1.7	1
Fever	5	8.3	1	1.7	0.209
PPH	5	8.3	3	5	0.714
No complication	39	65	52	86.7	0.006

Nausea and vomiting were most common side effects and more prevalent in the misoprostol group. There were 9 (15%) cases in the misoprostol group versus 3 (5%) cases in the oxytocin group presenting statistically non-significant difference (p > 0.05).The incidence of diarrhea 2(3.3%), fever 5 (8.3%) and post-partumhemorrhage 5 (8.3%) was seen more in miso-prostol-treated group. There was no significant difference (>0.05) in complications of both the groups.

DISCUSSION

The aim of this study was to evaluate efficacy of sublingual misoprostol versus oxytocin drip for induction of labour in primigravida at term and post term in GMCTH. Health of mother and infant is affected, if pregnancy continues beyond term. IOL is indicated for various reasons regarding maternal and fetal conditions. The present study showed that post-term pregnancy was the most frequently encountered reason for induction of labour which is similar to the findings ofother studies.[3-8] Other indications found in our study were gestational hypertension, oligohydramnios, intrauterine growth restriction (IUGR), Rh-negative mother, poly-hydramnios, history of sub-fertility, maternal indications and other fetal indications. Majority of the cases delivered within 24 h after intravenous oxytocin induction .The study showed that, although, the time intervals from induction delivery interval (IDI) were reduced in the oxytocin group compared with the misoprostol group (<10 hrs) and the difference between both groups was not statistically significant (p>0.05).The induction delivery interval in misoprostol group

was similar to another study[7] whereas this differs from other studies where shorter induction delivery interval was seen in misoprostol than oxytocin.[9,10]

There was no significant difference between the two groups in the mode of delivery as 43 women (71.7%) delivered in the misoprostol group and 41 women (68.3%) delivered in the oxytocin group. The incidence of cesarean section in the misoprostol group was 26.7% (16 cases) compared with 28.3% (17 cases) in the oxytocin group with non-significant difference (p>0.05).These findings were in agreement with those of previous studies.[11,12]

The present study showed fetal distress to be most common reason for caesarean which is similar to previous study.[6] Our study showed no significant differences between the groups for Apgar index at one and fifth minute of life. The majority of studies have shown similar findings of the present study.[13,14] When perinatal result was evaluated by means of baby status i.e admission in NICU and baby with mother, no significant difference (p>0.05) was found.

IOL is also associated with some side effects. This study indicates that both misoprostol and oxytocin were associated with several complications. Nausea and vomiting were most common side effects of both the groups but more common in the misoprostol group. There were 9 (15%) cases in the misoprostol group versus 3 (5%) cases in the oxytocin group presenting statistically significant difference. The incidence of diarrhea, fever and post-partum hemorrhage was seen more in misoprostol-treated group. The side effects found in this study are similar to another study conducted in Nepal.[1] The incidence of cesarean deliveries is increasing in Nepal. One of the reason may be due to maternal and fetal complications because of use of misoprostol and oxytocin. Although the use of misoprostol and oxytocin during IOL is associated with some maternal and foetal adverse effects, this study showed that a 50mcg sublingual misoprostol and 10 units of oxytocin in 500 ml RL are safe and effective for inducing labour.

CONCLUSION

These observations have clearly established the fact that both sublingual misoprostol and oxytocin drip are effective for inducing labour. However, there is still a lot to learn about use of misoprostol and oxytocin in obstetrics.

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