ROLE OF ORAL MISOPROSTOL 25 MG (MICROGRAM) IN PREMATURE RUPTURE OF MEMBRANE IN PATIENT AT TERM

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ABSTRACT

BACKGROUND

Premature rupture of membranes is a potential hazard in obstetrics. It causes significant maternal and neonatal morbidity.[1,2] It complicates 5-10% of all pregnancies at term.[3] and therefore warrants intervention; 25 microgram misoprostol is a promising agent for induction of labour in PROM.

METHODS

A prospective study was carried out in 100 cases with premature rupture of membranes at term satisfying the inclusion and exclusion criteria. They were divided into study and control group. Study group was given 25 microgram misoprostol orally, which was repeated every 4 hourly till maximum of 6 doses till onset of active labour. Control group was managed by traditional method (Oxytocin infusion for augmentation of labour). The mode of delivery and the induction delivery time was noted. The maternal and neonatal morbidity was also noted.

RESULT

Average induction delivery interval in misoprostol group was 10.01±3.08 hrs. and 14.15±5.30 hrs. in control groups (P=0.0006). Average PROM delivery interval in misoprostol group was 13.58±3.49 hrs. and 18.19±5.62 hrs. in control group (P=0.000); 64% of patients delivered vaginally as compared to 70% in control group and caesarean rate was 28% as compared to 24% in control group.

CONCLUSION

Tab Misoprostol in a dose of 25 micrograms in cases of premature rupture of membrane at term reduces the induction delivery interval and thus reduces maternal and perinatal morbidity associated with PROM.

KEYWORDS

PROM, Misoprostol, Induction Delivery Interval.

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INTRODUCTION

Premature rupture of membrane is a common clinical event affecting 5-10% of pregnancies, which can turn a normal pregnancy into a high risk situation for both the mother and fetus. Under normal circumstances, the foetal membranes rupture during the active phase of labour. Premature rupture of membranes is defined as rupture of membranes before onset of labour.

Premature rupture of membranes is usually associated with prolonged labour. It leads to increased maternal and perinatal morbidity. Early delivery leads to problem of prematurity and on the other hand prolongation of pregnancy involves the risk of chorioamnionitis, funisitis, dry labour, placental abruption in the mother and sepsis, respiratory distress syndrome, intraventricular haemorrhage in the newborn.[4,5]

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Existing views differ widely regarding the timing and method of induction of labour in PROM at term. Hence, the management of premature membranes presents a dilemma to the obstetrician. The advent of prostaglandin analogue, misoprostol has given the obstetrician another alternative to the traditional use of oxytocin for active management of PROM. Prostaglandins are used in obstetrics because of their uterotonic and cervical ripening effect.

In the management of premature rupture of membranes at term an active approach is desirable, because a prolonged PROM delivery interval is associated with increased incidence of chorioamnionitis. However, induction of labour in the presence of unfavourable cervix is associated with an increased chance of failed induction and an increased rate of caesarean delivery. Thus, it is important to ripen the cervix before induction in order to improve the chance of successful vaginal delivery.

Prostaglandin E2 applied intracervically.[6,7] for ripening is unstable at room temperature as well as may lead to ascending infection. As well as they are not superior to IV oxytocin. Oxytocin has been used as a traditional method for augmentation of labour. Oral misoprostol tablets are stable, affordable and can be given orally, hence minimising the risk of infection.

So in this study, we have compared the role of oral misoprostol 25 microgram in PROM patients as compared to IV oxytocin infusion for labour induction at term.

MATERIAL AND METHODS

It was a hospital based study. Total 100 subjects diagnosed as cases of PROM by evaporation test were selected as per inclusion and exclusion criteria described below after obtaining written informed consent.

Inclusion Criteria

- Singleton pregnancy with vertex presentation with no added obstetrics complications.
- Women sure of date of last menstrual period.
- History suggestive of Premature Rupture of Membrane (PROM).
- Absence of active uterine contractions.
- Demonstration of leaking per vaginum on speculum examination.

Exclusion Criteria

- Women with previous uterine surgeries.
- Multiple pregnancies.
- Women with non-vertex presentation.
- Features of chorioamnionitis.
- Severe gestational hypertension.
- Grand multiparity.
- Antepartum haemorrhage.

Complete maternal examination was done. Per vaginal examination was done to note cervical effacement and dilatation, presentations and position of the foetus and the presence or absence of membranes. Evaporation test was done as follows - A high cervical swab was taken on glass slide with sterile stick and heated. After evaporation if amniotic fluid is present, the residue turns white or grey (Test is taken as positive), else it turns brown. After proper assessment, patients of study group were given 25 micrograms oral misoprostol at 4 hourly interval up to a maximum of 6 doses. Control group patients were managed by the traditional method by oxytocin drip given for induction or acceleration of labour.

A Cardiotocography (CTG) was done before each dose of misoprostol and the control group was monitored as per regular hospital protocols. Women who went into active labour had vaginal examination at 4-6 hour interval. If after six doses the women did not go into active labour, the induction was considered as failed.

Both the groups were given antibiotics like ampicillin/amoxicillin and were monitored for foetal distress, tachysystole, hyperstimulation and progress of labour.

The mode of delivery was noted either vaginal delivery (Including instrumental delivery) or caesarean section. Induction delivery interval was noted. Foetal outcome in terms of date and time of delivery, sex and weight of baby, live or stillbirth, Apgar score at 1 minute and 5 minutes after delivery was recorded. Maternal outcome in terms of nausea vomiting, loose motions, fever, PPH, uterine tachysystole, blood transfusion and puerperal sepsis were considered.

OBSERVATION

Bishop Score	Study Group		Control Group	
	PRIMI	Multi	PRIMI	Multi
<3	18	2	11	3
3-6	13	15	22	13
>6	0	2	0	1
Total	**31**	**19**	**33**	**17**
Mean Score	3±1.51	3.22±0.92	3.75±1.67	3.35±0.99
	P value=0.1286 NS		P value=0.3662 NS	

Table 1: Distribution of Patients According to Bishop Score

From this table, it is evident that maximum patients had Bishop score of 3-6, i.e. 28 (56%) in study group as compared to 35 (70%) in control group indicating an unripe cervix and therefore ripening of cervix with induction of labour is required in PROM patients.

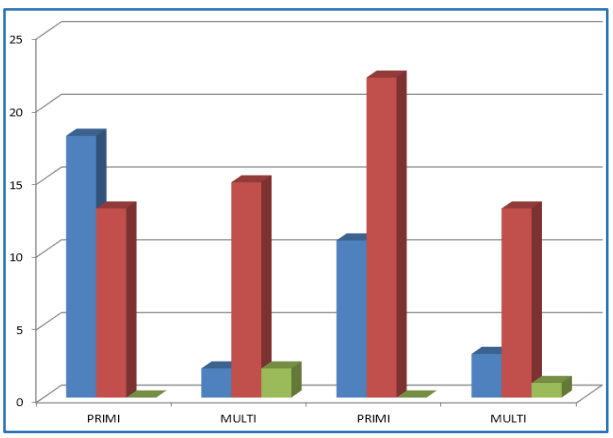

Fig. 1: Distribution of Patients According to Bishop Score

Duration of Prom in Hours	Study Group		Control Group	
	PRIMI	MULTI	PRIMI	MULTI
<3	13	5	8	7
3-6	15	14	19	10
>6	3	-	6	-
Total	**31**	**19**	**33**	**17**
Mean Duration	3.62±2.38	3.42±2.81	3.23±1.82	4.45±2.22

Table 2: Duration of PROM in Hours

P value=0.8354 NS P value=0.0574 NS

Mean duration of PROM in PRIMI patients of study group- 3.62±2.38. Mean duration of PROM in MULTI patients of study group - 3.47±2.81. Mean duration of PROM in PRIMI patients of control group - 3.23±1.82. Mean duration of PROM in MULTI patients if control group - 4.45±2.22.

Most patients had PROM for 3-6 hrs. in study as well as control group. Only 3 and 6 patients had PROM for >6 hrs. in study and control group respectively. Hence, duration of PROM is not significant in both the groups.

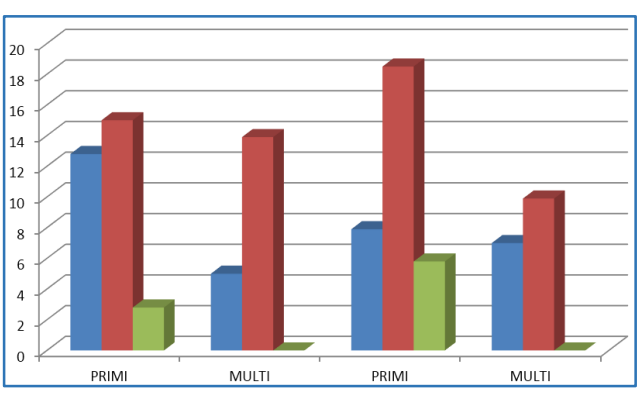

Fig. 2: Duration of PROM in Hours

Induction Delivery Interval (Hrs.)	Study Group		Control Group	
	PRIMI	Multi	PRIMI	Multi
<8	4	7	3	3
8-12	11	11	2	10
12-16	14	01	7	3
16-20	02	-	15	0
20-24	-	-	6	0
>24	-	-	0	01
Total	**31**	**19**	**33**	**17**
Avg. Induction Delivery Interval	11.25±2.96	7.98±2.04	15.80±4.72	10.83±4.87
	10.01±3.08		14.15±5.30	

Table 3: Induction-Delivery Interval in Both Groups

Mean induction delivery interval in study group is 10.01±3.08 hrs. and mean induction delivery interval in control group is 14.15±5.30 hrs.

Total 22 patients in study group has induction delivery interval between 8-12 hrs. in comparison to 12 patients of control group. Total 15 patients study group had induction delivery interval between 12–16 hrs. as compared to 10 patients in control group.

It is clear from this table that misoprostol decreases the induction delivery interval in study group.

Mode of Delivery	Study Group		Control Group	
	Number	Percent	Number	Percent
Vaginal	32	64	35	70
LSCS	14	28	12	24
Forceps	04	08	03	06
Total	**50**	**100**	**50**	**100**

Table 4: Showing Mode of Delivery in Each Group

Pearson's chi square=0.4312; df=2; p value=0.806, not significant.

This table shows the mode of delivery in both control and study group. It shows that vaginal delivery is main mode of delivery in both study and control group (64% and 70% respectively).

28% of patients in study group and 24% in control group had caesarean section as mode of delivery; 8% in study group and 6% in control group had instrumental delivery. From this it is clearly evident that there is not much of difference in mode of delivery in both the groups.

Apgar Score 1 Min.	Study Group		Control Group	
	Number	Percent	Number	Percent
<7	23	56	15	30
>7	27	54	35	70
Total	**50**	**100**	**50**	**100**

Table 5: Showing Apgar Score at 1 Min

Pearson's chi square=2.7165; df=1; p value=0.0999, NS.

56% of babies in study group had Apgar score pf <7 in study group and 30% of them had Apgar score <7 in control group; 54% of babies had Apgar score of >7 in study group and 70% of them had Apgar score >7. It is statistically not significant.

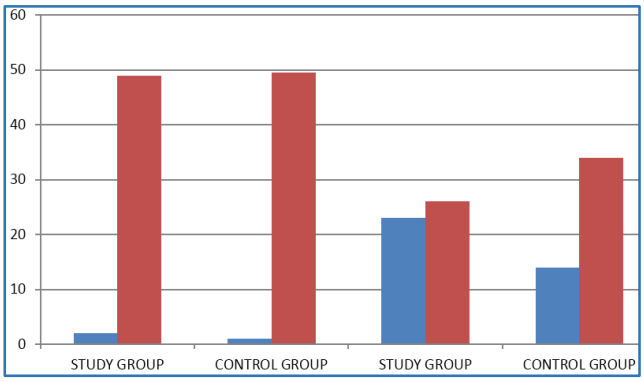

Fig. 3: Showing Apgar Score at 1 and 5 Mins

DISCUSSION

The induction to delivery interval was significantly shorter in study group 11.25±2.6 hours in primi as compared to 15.80±4.72 hrs. in primi in control group. In multi it was 7.98±2.04 hrs. in study group as compared to 10.83±4.87 hrs. in control group. Women in study group required on an average 3 doses of 25 microgram misoprostol tablets.

As indicated in our study (induction delivery interval-10.01±3.08 hrs. in study group and 14.15±5.30 hours in control group), oral misoprostol decreases the induction delivery interval. Similar studies carried out by Benett KA et al, Cheung PC et al, Datta MR et al, Shetty A et al have also indicated similar results in various doses.

In our study, PROM delivery interval was significantly less in study groups as compared to controls in both primi and multipara patients. These results are in agreement with other studies published in the literature that is Ozden et al, Shetty et al, Cheung et al, Datta MR et al, Frohn WE et al.

In our study, all the patients (100%) of oral misoprostol group delivered within 24 hours of induction as compared to 66% in pitocin group. Shetty et al reported that 72% of women induced with misoprostol delivered within 24 hours of PROM compared to only 26.9% in control group. Chang et al also reported that 50% of women delivered within 24 hours of PROM. Datta et al reported that 80% of women induced with misoprostol delivered within 24 hours of PROM.

In our study, patients of oral misoprostol and pitocin group had an LSCS rate of 28% and 24% respectively (p=0-806, not significant). In our study, caesarean rate was high in both study and control group as compared with other studies. Indication of LSCS was similar in both groups in our study, i.e. foetal distress, non-progress of labour, CPD and deep transverse arrest.

In our study there was no difference in maternal secondary outcomes including caesarean birth, infection, maternal satisfaction in labour, perineal trauma, manual removal of placenta or gastrointestinal effects. This is in accordance with the studies of Datta MR et al,[8] Cheung et al,[9] Mozurkewich et al,[10] Krishnamma et al,[11] Ozden et al,[12] Krupa et al[13] and Shetty et al.[14]

In our study group, 23 (46%) of the new-borns had an Apgar score of <7 at 1 minute as compared to 15 (30%) in control group. This is not statistically significant.

Slightly higher incidence of meconium staining was found in study group as compared to control group (30% vs

22%), which was not significant. This meconium staining may be attributed to misoprostol metabolites causing stimulation of foetal bowel activity or contraction abnormality. Since all women in the studies were induced for high risk factors like postdatism, oligohydramnios, PROM, etc. Misoprostol alone cannot be responsible for meconium staining liquor.

In the study 20% of babies went to PBU as compared to 14% in control group, which is not significant. This is probably because more babies delivered within 24 hours of PROM in the study group as compared to those managed by oxytocin method. The average stay was significantly high in control group as compared to study group (3.3±1.30 days in control group). The average stay in nursery was higher in the group managed conservatively (6.4 vs 3.5 days; SE (d)=0.5).

Neonatal outcome and admissions to neonatal intensive care unit were not different, but duration of stay in PBU was more in oxytocin group.

In conclusion misoprostol is a prostaglandin E1 analogue, which is rapidly absorbed after oral administration. It has uterotonic and cervical ripening properties in a dose of 25 micrograms in cases of PROM and at term it reduces the induction delivery interval in turn decreases the complications of both the mother and baby.

CONCLUSION

1. Oral misoprostol is more effective than IV oxytocin for induction of labour in PROM.
2. Misoprostol is having shorter induction delivery interval and shorter PROM delivery interval as compared to oxytocin.
3. Maternal morbidity was found to be less in misoprostol group than the control group as evidenced by decrease in incidence of chorioamnionitis and sepsis in mothers.
4. Neonatal morbidity was found to be decreased in misoprostol group than the control group as evidenced by decrease in average duration of stay in PBU for babies, meconium staining of liquor and total number of PBU admissions.

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