Neonatal outcome with Oral versus Vaginal Misoprostol for Labour Induction

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Abstract

Background : Misoprostol is being used widely through different routes for induction of labour. Neonatal outcome may be different with using different routes.

Objective : To see the neonatal outcome for induction of labour by misoprostol in oral versus vaginal route.

Materials and Methods : This prospective and comparative study was carried out in the dept. of Obstetrics and Gynecology of Jalalabad Ragib- Rabeya Medical College and Hospital, Sylhetfrom July 2008 to June 2009.A total 200 pregnant women completed 28 weeks pregnancy upto 42 weeks were selected for the study.Out of which 100 pregnant women were includedin oral misoprostol group and 100 in vaginal misoprostol groupby simple randomization. Inclusion criteria were single live fetus with cephalic presentation, normal fetal heart rate, adequate pelvis and Bishop score <5. Exclusion criteria were previous uterine scar, estimated fetal weight >4 kg, parity more than 3 and history of hypersensitivity to misoprostol. Neonatal outcome in terms of Apgar Score, passage of meconium, perinatal depression and admission to Neonatal Intensive Care Unit (NICU) compared between two groups.

Results : Most of the neonate in vaginal group had low Apgar score. Two percent neonate had Apgar score 2 and 86% had 4-6 in 1 minute in vaginal group whereas in oral group it was 4-6 in 88%.Perinatal depression more in vaginal group 18(18%) than oral group 8(8%). More neonate need admission to Neonatal Intensive Care Unit (NICU) in vaginal group 4(4%) than oral group 2(2%). Only 1% neonate passed meconium in vaginal group.

Conclusion : This study concluded that neonatal outcome was better and safe with oral misoprostol than vaginal route.

Key Words : Misoprostol, Induction of labour, neonatal outcome.

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Introduction

Induction of labour (IOL) at term is a common obstetric intervention with many indication e.g. Postdated pregnancy, Pre-eclampsia, Premature rupture of membrane(PROM), Oligohydramnios, Intrauterine growth retardation(IUGR). With > 15% of all gravid women requiring aid in cervical ripening at the time of labour induction, there is widespread interest and demand for an effective and safe method for labour induction.[1-3]

Induction of labour means initiation of uterine contractions after the period of viability by any method (Medical, Surgical or Combined) for the purpose of vaginal delivery. Induction of labour should be considered when further prolongation of pregnancy might expose the mother or fetusor both to certain risk and when vaginal delivery is not contra indicated. The choice between caesarean section and induction of labour depends on maternal condition, fetal condition, period of gestation, cervical ripening and dimension of bony pelvis and the success of induction depends to a large extent on the consistency, compliance and configuration of the cervix.[4] In patients with unfavorable induction features, there is upto 42 percent incidence of caesarean section for failed induction.[5]

Various mechanical and pharmacological methods have been used to ripen the cervix before induction of labour to increase the success rate.[6,7] Misoprostol (Cytotec), a synthetic prostaglandin E_1 analogue, is an effective, safe and inexpensive agent for cervical ripening and labour induction.[8-10] It can be administered vaginally and orally. After induction, maternal and fetal complications may arise like abnormal uterine contraction, accidental haemorrhage, post

partumhaemorrhage and in case of fetus- prematurity, fetal distress, prolapse of the cord and neonatal jaundice. But judicious decision for induction, close monitoring and proper counseling can reduce the maternal and fetal complications. This study was undertaken to evaluate the neonatal outcome in induction of labour by misoprostol in oral and vaginal route.

Materials and Methods

A prospective randomized controlled trial on 200 antepartum women completed 28 weeks pregnancy upto 42 weeks were allocated in two groups by simple randomization. Inclusion criteria for the study were-single live fetus, cephalic presentation, normal fetal heart rate, adequate pelvis, Bishop's score <5 and exclusion criteria were-parity more than 3, estimated fetal weight >4 kg, previous uterine scar, history of hypersensitivity to misoprostol. One group was the oral misoprostol group (n=100), where the participants took oral misoprostol 50 µgm every 4 hourly for 24 hours and another group was the vaginal group (n = 100) to whom 50µgmof tab misoprostol was introduced in the posterior fornix every 6 hourly for 24 hours until 3 contractions per 10 minutes and Bishop's score >6 obtained. In all subjects monitoring done with continuous observation of uterine contraction and fetal heart rate. If labour was progressing, then subsequent misoprostol was withheld and labour was observed. In case of failed trial delivery was done by caesarean section.

Demographic characteristics as-age of mother, gravidity, parity, gestational age at which induction given, initial Bishop's score and indication of labour induction in two groups were compared. Mode of delivery in two groups are also recorded. Among neonatal outcome-Apgar Score, perinatal depression, admission to NICU and meconium stained liqur in two groups were compared. Then statistical analysis was done by SPSS-12. Quantitative variable was expressed in frequency and qualitative variable between two groups were analyzed by chi-square test.

Results

Among 200 cases, 100 were in oral misoprostol group and 100 were in vaginal misoprostol group. Mean age were 23.20±0.418 in oral group,22.34±0.316 in vaginal group. Average parity were 2±1which was same in both group. Gestational age of induction for labour was 39.93±1.42 in oral group and 40.19± S1.38 in vaginal group. Initial Bishop's Score was2.1±1.23 in oral group and 1.8±1.2 in vaginal group. Demographic characteristics were similar in both groups.(Table-I).

There were no differences in Indications for induction of labour. The most common indication was postdated pregnancy, 54% in oral group and 48% in vaginal group followed by pre-eclampsia/eclampsia, oligohydramnios, IUGR, Pregnancy induced hypertension (PIH) (Table-II). Vaginal delivery rate was higher in oral group (66%) than vaginal group (64%). Caesarean section required more in vaginal group (Table-III). Initial Apgar Score at 1 minute was low (3) in vaginal group 2(2%). Apgar Score 4-6 was 86% in vaginal group whereas in oral group it was 88%. Perinatal depression higher in vaginal group 18(18%) than oral group 8(8%). Admission to NICU required more in vaginal group 4(4%) than oral group2(%). Only 1% neonate passed meconium in vaginal group. (Table-IV).

Table-I : Demographic characteristics of patients in oral misoprostol and vaginal misoprostol groups

Characteristics	Oral Group (n=100)	Vaginal Group (n=100)	*p* value
Age (yrs)	23.26±0.418	22.34±0.316	0.218
Gravidity	2±1	2±1	0.076
Parity	0.83±0.30	0.72±0.41	0.081
Gestational age (wks)	39.93±1.42	40.19±1.38	0.355
Initial Bishop's score	2.1± 1.23	1.8±1.12	0.207

Table-II: Indication for induction of labour in the two groups

Indications	Oral group (n=100)	Vaginal group (n=100)	*p* value
Post dated pregnancy	54 (54%)	48 (48%)	
Preeclampsia / eclampsia	18 (18%)	20 (20%)	
Oligohydramnios	4 (4%)	2 (2%)	
Intrauterine growth retardation (IUGR)	8 (8%)	12 (12%)	0.403
Pregnancy induced hypertension (PIH)	6 (6%)	--	
Others (less fetal movement, lower abdominal pain)	10 (10%)	18 (18%)	

Table-III : the Mode of delivery after induction of labour between two groups

Mode of delivery	Oral group (n=100)	Vaginal group (n=100)	p value
Normal vaginal delivery	66 (66%)	64 (64%)	0.043
Instrumental delivery	4 (4%)	2 (2%)	.037
Caesarean section	30 (30%)	34 (34%)	0.018

Table -IV : Neonatal outcome in oral and vaginal group

Outcome	Oral group (n=100)	Vaginal group (n=100)	p value
APGAR score			
1 minute			
<3	---	2(2%	
4-6	88(88%)	86(86%)	0.034
>7	12(12%)	12(12%)	
5 minute			
<3	--	--	
4-6	14(14%)	22(22%)	0.0141
7	86(86%)	78(78%)	
Perinatal depression	8(8%)	18(18%)	0.039
passage of Meconium	--	1(1%)	0.02
Admission to NICU	2(2%)	4(4%)	0.001

Discussion

The need to ripen the cervix prior to induction of labour has become a reality in our lives as obstetricians. Induction of labour before cervix is favorable often results in prolonged labour or a failed induction with subsequent delivery by caesarean section, which are associated with increased maternal and fetal morbidity as well as mortality. Therefore, ripening of the unfavorable cervix should shorten labour and better maternal and perinatal outcome.

In this study mean gestational age is almost similar to two groups which is comparable with gestational age of women in the study groups of Toppozada39.93± 1.42 wk versus 40.19 ± 1.38 wk and 40.85 ± 1.7 wk versus 40.30 ± 1.87 wk respectively.[11]

The indication of labour induction did not vary between the two groups significantly and this is correlated with other studies. In this study most of the women were induced due to post dated pregnancy 54% in oral group and 48% in vaginal group. Eclampsia, pre-eclampsia and intrauterine growth retardation were the next common causes. In a similar type study by Hall et al it was seen that the main indication for induction of labour was postdated pregnancy 51% in oral group and 49% in vaginal group.[12]

Regarding mode of delivery there was similarity between this study and other study. Normal vaginal delivery occurred66% in oral versus 64% in vaginal group in this study whereas these were 73% versus 77% and 70% versus 70% in Toppozada etal and Hall et al studies respectively.[11-12]

There was a significantly higher number of infants in vaginal misoprostol group with 1 minute Apgar scores<7. Two infants in vaginal group and none in oral group with <3 Apgar at 1 minute. At 5 minute Apgar Score were 4-6 in 22% neonate in vaginal group whereas it was 14% in oral group. Perinatal depression were significantly higher in vaginal group 18% compared to 8% in oral group. These infants need positive pressure ventilation at delivery and were admitted into Paediatric ward (Not into NICU) for two days. These infant required no investigations other than serum bilirubin and had no further admission to hospital. Four percent neonate in vaginal group necessitate admission to NICU compared to 2% in oral group. Only one infant in the vaginal group required intubation for thick meconium.

Only a few randomized controlled trials have compared. More study is required to see the neonatal outcome in induction of labour by misoprostol in oral versus vaginal route.

Conclusion

In the light of our observation, oral misoprostal found more safe and efficacious than vaginal misoprostal and neonatal outcome better in oral misoprostol than vaginal route.

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