ORIGINAL ARTICLE

Compare the Efficacy of Dinoproston versus Misoprostol for Induction of Labor

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ABSTRACT

Objective: To compare the efficacy of vaginal dinoproston versus misoprostol for induction of labor in women presented with premature rupture of membrane.
Study Design: Randomized controlled trial
Place & duration: Study was done at Department of Gyn & Obs HBS Medical College and Hospital, Islamabad for one year duration from 1st September, 2019 to 31st August, 2020.
Methods: Total 160 pregnant women presented with PROM having gestational age >37 weeks were included. Patients ages were ranging from 18 to 40 years. After written consent detailed demographics including age, BMI, parity were recorded. All the patients were equally divided into two groups. Each group consists of 80 patients. Group M received 25ug misoprostol vaginally while group D received 3mg of dinoprostone gel in the posterior vaginal fornix. Time duration from induction to delivery and mode of deliver were examined, fetal outcomes such as Apgar score at 5 minutes, NICU admission and birth asphyxia were also examined and compare between both groups. Data was analyzed by SPSS 24.0.
Results: No significant difference was observed regarding age, gestational age, parity, and BMI between both groups with p-value >0.05. A significant difference was found regarding time to active labor between both groups M and D 5.72±2.16 hours Vs 7.29±3.48 hours) p-value <0.05. In group M induction to delivery interval was significantly shorter as compared to group D (9.28±2.67 hours Vs 12.46±4.55 hours) p-value <0.05, no significant difference was observed regarding mode of delivery, maconium stained liquor, postpartum hemorrhage, Apgar score at 5 minutes and NICU admission with p-value >0.05.
Conclusion: Vaginal misoprostol is safe and effective for induction of labor in women with premature rupture of membrane at term.
Keywords: Labor induction, Misoprostol, Dinoprostone, Vaginal Delivery, C-section, Apgar score, NICU admission.

INTRODUCTION

One of the most confusing and divisive obstetric dilemmas is the premature rupture of membranes (PROM). It is known as spontaneous breakup with amniotic fluid release membranes with a latent duration before labour begins. Preterm PROM is known as rupture before 37 completed gestation weeks. It is called the word PROM as it happens after 37 weeks. The latent duration is the interval of time between the rupture of the membranes and the beginning of labour. The average occurrence of PROM is 10% and ranges from 2-18% (1). Of those 10%, 60-80% of cases are PROM words (2). Around 80% of women would go into spontaneous labour within 24 hours on a term basis. There will be a latent time of >24 hours and 10-25 percent. If >24 hours is the latent time. The prospects of infection are growing. Management of such patients is also the induction of labour (3).

If a woman and her care provider determine that labour induction is required, a form of induction must be selected next. Several variables, including cervical and membrane status, parity, and patient and provider preference, can affect the choice of method for induction of labour [4-5].

Due to their dual action of cervical ripening and uterine contraction inducing reaction, prostaglandins have emerged as the most common and frequently used pharmacologic agents for IOL [6]. Prostaglandin E2 (cerviprime gel), a registered inducing agent, is costly in many countries and needs to be refrigerated because of its temperature-change sensitivity. It is instilled intracervically or put high in the posterior vaginal fornix and if possible, may have to be re-instilled after 6 hours [7]. Misoprostol (15-deoxy-16-hydroxy-16-methyl prostoglandin E1), which is used in different doses, is another alternative. It is safe, relatively cheaper and can be shipped through several routes at room temperature (oral, vaginal, sublingual, buccal and rectal) [8].

We conducted present study to compare the efficacy of vaginal misoprostol versus dinoprostone gel for induction of labor in women with premature rupture of membrane.

MATERIAL AND METHODS

This randomized controlled trial was conducted at Department of Gyn &Obs HBS Medical College and Hospital, Islamabad for one year duration from 1st September, 2019 to 31st August, 2020. Total 160 pregnant women presented with PROM having gestational age >37

weeks were included. Patients ages were ranging from 18 to 40 years. After written consent detailed demographics including age, BMI, parity and gestational age were recorded. Patients with multiple pregnancy, IUGR patients, patients with cardiac disease, abnormal cephalic presentation and patients with antepartum hemorrhage were excluded.

After complete clinical examination, all the patients were equally divided into two groups. Each group consists of 80 patients. Group M received 25ug misoprostol vaginally 6 hourly, maximum 4 doses while group D received 3mg of dinoprostone gel in the posterior vaginal fornix. Time duration from induction to delivery and mode of deliver were examined. Maternal complications such as postpartum hemorrhage, meconium stained liquor, and need for oxytocin was recorded. Fetal outcomes such as Apgar score at 5 minutes, NICU admission and birth asphyxia were also examined and compare between both groups.

All the statistical data was analyzed by computer statistical software SPSS 24.0. Chi square test was done to compare the findings between both groups. P-value <0.05 was considered as significant.

RESULTS

Mean age of patients in group M was 28.36±3.72 years and in group d it was 28.57±3.46 years, no significant difference was observed with p-value >0.05. Mean gestational age in group M was 38.34±1.26 weeks and in group M it was 38.42±1.63 weeks. Mean BMI in group M and D was 25.33+2.48 and 25.04±2.36 kg/m^2. In group M and D, 54 (67.5%) patients and 52 (65%) were primiparous while 26 (32.5%) and 28 (35%) were multiparous. In group M mean Bishops score was 3.14±0.44 and in group D it was 3.17±0.22. No significant difference was observed regarding age, BMI, parity, gestational age and Bishop's score between both groups with p-value >0.05. (Table 1)

Table No 1: Baseline Details of all the patients

Variables	Group M (Misoprostol)	Group D (Dinoprostone)
Mean age (years)	28.36±3.72	28.57±3.46
Gestational Age	38.34±1.26	38.42±1.63
BMI (kg/m)	25.33+2.48	25.04±2.36
Bishops score	3.14±0.44	3.17±0.22
Parity		
Primiparous	54 (67.5%)	52 (65%)
Multiparous	26 (32.5%)	28 (35%)

P-value >0.05

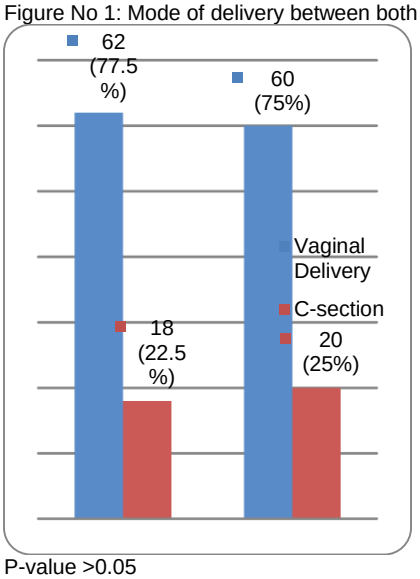
Table 2: Time to active labor and induction to delivery interval in both groups

Variables	Group M (Misoprostol)	Group D (Dinoprostone)	P-value
Time to active labor	5.72±2.16	7.29±3.48	0.001
Induction to delivery interval	9.28±2.67	12.46±4.55	0.001

A significant difference was found regarding time to active labor between both groups M and D (5.72±2.16 hours Vs 7.29±3.48 hours) p-value <0.05. In group M induction to delivery interval was significantly shorter as compared to group D (9.28±2.67 hours Vs 12.46±4.55 hours) p-value <0.05. (Table 2)

In group M 62 (77.5%) patients had spontaneous vaginal delivery and 18 (22.5%) had c-sections while in group D 60 (75.5%) patients had vaginal delivery and 20 (25%) had c-sections. Statistically no significant difference was observed between both groups (p-value >0.05). (Figure 1)

Figure No 1: Mode of delivery between both groups



P-value >0.05

Regarding maternal complications between both groups we found that 6 (7.5%) and 5 (6.25%) patients in group M and D had meconium stained liquor, 3 (3.75%) and 4 (5%) patients had postpartum hemorrhage. Regarding fetal outcome we found that 4 (5%) and 6 (7.5%) patients in group M and D had Apgar score <7 at 5 minutes, 2 (2.5%) and 3 (3.75%) neonates had NICU admission. None of patients had birth asphyxia and no neonatal mortality found among both groups. No significant difference was observed regarding maternal and fetal outcomes between both groups with p-value >0.05. (table 3)

Table 3: Comparison of maternal and Fetal outcomes between both groups

Variables	Group M (Misoprostol)	Group D (Dinoprostone)	P-value
Maternal Outcome			>0.05
MSL	6 (7.5%)	5 (6.25%)	
PPH	3 (3.75%)	4 (5%)	
Neonatal Outcomes			>0.05
Apgar <7 at 5 minute	4 (5%)	6 (7.5%)	
NICU Admission	2 (2.5%)	3 (3.75%)	
Birth Asphyxia	0	0	
Neonatal Death	0	0	

DISCUSSION

Many studies have linked either intravaginal application of misoprostol or PGE2 gel to labour induction in patients with PROM in the immediate and at term and have found it to be effective [9-10]. The initial findings of this research were published in previous studies, which tested the hypothesis that the use of vaginal misoprostol results in a substantial reduction of induction to delivery interval compared to PGE2 gel. [11]. We conducted

present study to compare the effectiveness of vaginal misoprostol versus dinoprostone for labor induction in patients with PROM. In this regard 160 patients were enrolled. Majority of patients were ages between 25 to 35 years and overall mean age of patients was 27.28±4.76 years. In comparison between misoprostol group and dinosprostome group, gestational age in group M was 38.34±1.26 weeks and in group M it was 38.42±1.63 weeks. Mean BMI in group M and D was 25.33+2.48 and 25.04±2.36 kg/m^2. In group M and D, 54 (67.5%) patients and 52 (65%) were primiparous while 26 (32.5%) and 28 (35%) were multiparous. In group M mean Bishops score was 3.14±0.44 and in group D it was 3.17±0.22. These results were comparable to some previous studies in which majority 55% of patients were ages 20 to 30 years and average gestational age was 38 weeks [12-13].

In present study we found significant difference regarding time to active labor between both groups Misoprostol and Dinoprostone (5.72±2.16 hours Vs 7.29±3.48 hours) p-value <0.05. In group M (misoprostol) induction to delivery interval was significantly shorter as compared to group D (dinoprostone) (9.28±2.67 hours Vs 12.46±4.55 hours) p-value <0.05. A study conducted by Vimla J et al [14] reported that patients who received misoprostol vaginally had significantly shorter time to active labor as compared to PGE2 gel (3.23±1.34hr Vs 3.93±1.74), a significant shorter interval from induction to delivery was noted in misoprostol group as compared to dinoprostone group ((5.41±1.2 hrs) v/s (6.37±1.66 hrs)p<0.001.

A study conducted by Chaudhuri S et al [15] regarding efficacy of misoprostol and dinoprostone for labor induction in PROM patients and they demonstrated no significant difference between both groups regarding time to active delivery and induction to delivery interval with p-value >0.05.

Mukherjee et al [16] reported that mean induction to vaginal delivery interval was 22.12±2.768 hours in dinoprostone gel group and 21.92±3.228 hours in misoprostol group with p=0.000.

Jha N et al [17] demonstrated a significant shorter time was noted in induction to delivery interval in sublingual misoprostol group 8.3 ± 3.6 hours as compared to intracervical dinoprostone 12.2 ± 6.6 hours with p-value <0.05.

In present study we found that in misoprostol group 62 (77.5%) patients had spontaneous vaginal delivery and 18 (22.5%) had c-sections while in group dinoprostone 60 (75.5%) patients had vaginal delivery and 20 (25%) had c-sections. Statistically no significant difference was observed between both groups (p-value >0.05). A study conducted by Manjunath A P et al [18] reported that 67.9% patients in misoprostol group and 66.5% in dinoprostone group had spontaneous vaginal delivery. Another study showed similarity to our findings in which 75.6% patients had vaginal delivery in misoprostol group and 74.4% had vaginal delivery in dinoprostone group [19].

In our study regarding maternal complications between both groups we found that 6 (7.5%) and 5 (6.25%) patients in group M and D had meconium stained liquor, 3 (3.75%) and 4 (5%) patients had postpartum hemorrhage. Regarding fetal outcome we found that 4 (5%) and 6 (7.5%) patients in group M and D had Apgar score <7 at 5 minutes, 2 (2.5%) and 3 (3.75%) neonates had NICU admission. None of patients had birth asphyxia and no neonatal mortality found among both groups. No significant difference was observed regarding maternal and fetal outcomes between both groups with p-value >0.05. These results showed similarity to many of other studies in which no significant difference was observed regarding maternal and fetal outcomes between both groups [16, 20].

CONCLUSION

We concluded that vaginal misoprostol is safe and effective in term of time interval from induction to delivery as compared to dinoprostone for induction of labor in women with premature rupture of membrane at term. However, no significant difference was observed regarding maternal and neonatal outcomes and mode of delivery between both medications.

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