**Original article:**

# Prospective Analysis of Misoprostol V/S Dinoprostone as Labor Induction Agents: An Institutional Based Study

**Rajni Kamble**

Associate Professor, Department of Obstetrics & Gynaecology,
Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra, India.
Corresponding Author: Dr. Rajni Kamble, Associate Professor, Department of Obstetrics & Gynaecology,
Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra, India.
Date of submission: 07 December 2012, Date of acceptance Date 28 January 2013

**Abstract**

**Background:** Labour is induced in twenty percent of births for various reasons. The drug of choice for induction of labour at term is Dinoprostone. Another drug proposed for induction of labour is Misoprostol. Hence; we planned the present study to evaluate the effectiveness of intravaginal misoprostol and intracervical dinoprostone for inducing labour.

**Materials & Methods:** The present study included assessment of 70 subjects who underwent elective induction of labour. All the subjects were broadly divided into two study groups; Group M- included subjects in which misoprostol was used intravaginally (100 µg) for induction of labour, and Group D- included subjects in which dinoprostone was used intracervically [(0.5 mg) and repeated after 12 hours, if required] for induction of labour. Apgar score was used for assessment of foetal outcome. All the data were compiled and analysed by SPSS software.

**Results:**Non- significant results were obtained while comparing the number of subjects in each group divided on the basis of time interval of labour induction. In Misoprostol group, 32 subjects underwent vaginal delivery while in Dinoprostone group, 25 subjects underwent vaginal delivery.

**Conclusion:** In comparison to Dinoprostone, Misoprostol appears to be of equal efficacy.

**Key words:** Dinoprostone, Labour, Misoprostol.

## INTRODUCTION

Over the past few decades, there has been an increase in the incidence of induction of labour. Medical or obstetrical complications of pregnancy indicate labour induction or, it may be requested or chosen for non-medical or social reasons.[1-4]Another important aspect of for induction of labour in a woman is choosing the method by which labour is induced. Choosing the method of induction of labour is influenced by several factors.[5,6] These factors include cervical and membrane status, parity, and patient and provider preference.[7]The drug of choice for induction of labour at term is Dinoprostone. Another drug proposed for induction of labour is Misoprostol.[7-9] Hence; we planned the present study to evaluate the effectiveness of intravaginal misoprostol and intracervical dinoprostone for inducing labour.

## MATERIALS & METHODS

The present study was conducted in the department of gynaecology, SVN Government Medical College, Yavatmal, Maharashtra (India) and included assessment of 70 subjects who underwent elective induction of labour. All the subjects were broadly divided into two study groups; Group M- included subjects in which misoprostol was used intravaginally (100 µg) for induction of labour, and Group D- included subjects in which dinoprostone was used intracervically [(0.5 mg) and repeated

after 12 hours, if required] for induction of labour. Ethical approval was taken from institutional ethical committee and written consent was obtained after explaining in detail the entire research protocol. Repetition of tablets was done after every four hours to a maximum dose of six or until achievement of labour was done. Detailed history of all the subjects was taken. Inclusion criteria for the present study included:

- Subjects more than 20 years of age,
- Nulliparity subjects,
- Subjects in which gestational age was equal to more than 285 days,
- Subjects with cephalic presentation,
- Subjects with intact membrane,
- Subjects without any known drug allergy or to prostaglandins,
- Subjects with history of prior uterine surgery

Careful observation of the maternal status, foetal status and progression of labour was done. Discontinuation of the therapy was done if patients showed signs and symptoms of severe diarrhoea, vomiting, signs of foetal or maternal distress, uterine hypercontractility, tachycardia, fever or rigors. Apgar score was used for assessment of foetal outcome. All the data were compiled and analysed by SPSS software. Chi- square test, student test and Mann-Whitney U test were used for the assessment for level of significance. P-Value of less than 0.05 was taken significant.

**RESULTS**

Mean age of the subjects in Misoprostol group and Dinoprostone group were 24.6 and 27.8 years respectively (Table 1, Graph 1). Mean gestational age in subjects of Misoprostol group and Dinoprostone group was found to be 39.41 and 38.11 weeks respectively. In 20 and 17 subjects of Misoprostol group and Dinoprostone group respectively, labour was induced in less than two hours after application of the drug. Non- significant results were obtained while comparing the number of subjects in each group divided on the basis of time interval of labour induction (P- value > 0.05) (Table 2, graph 2). In Misoprostol group, 32 subjects underwent vaginal delivery while in Dinoprostone group, 25 subjects underwent vaginal delivery (Table 3). Apgar score of zero to five was observed in 19 and 28 subjects in misoprostol and dinoprostone group respectively (Table 4).

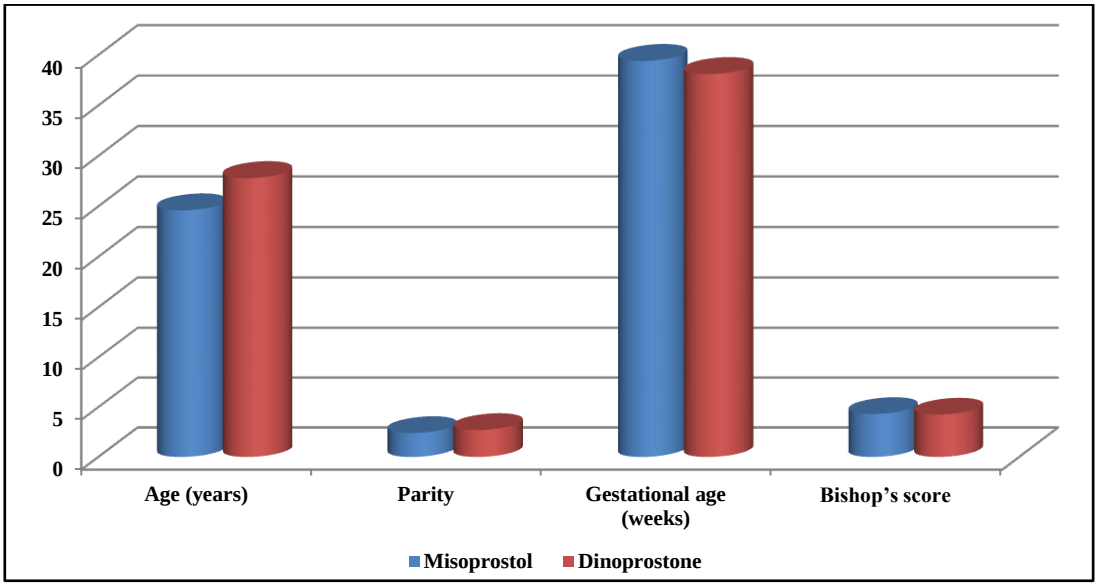
**Table 1: Description of subjects of both the groups**

| Parameter | Misoprostol | Dinoprostone |
|---|---|---|
| **Age (years)** | 24.6 | 27.8 |
| **Parity** | 2.4 | 2.7 |
| **Gestational age (weeks)** | 39.41 | 38.11 |
| **Bishop's score** | 4.31 | 4.25 |

**Table 2: Distribution of subjects according to initiation of labour interval**

| Time interval (hours) | Misoprostol (n= 35) | Dinoprostone(n= 35) | P- value |
|---|---|---|---|
| **0- 2 hr** | 20 | 17 | 0.094 |
| **2.01- 4 hr** | 11 | 14 | |
| **4.01- 6 hr** | 4 | 4 | |

**Graph 1: Description of subjects of both the groups**




**Graph 2: Distribution of subjects according to initiation of labour interval**

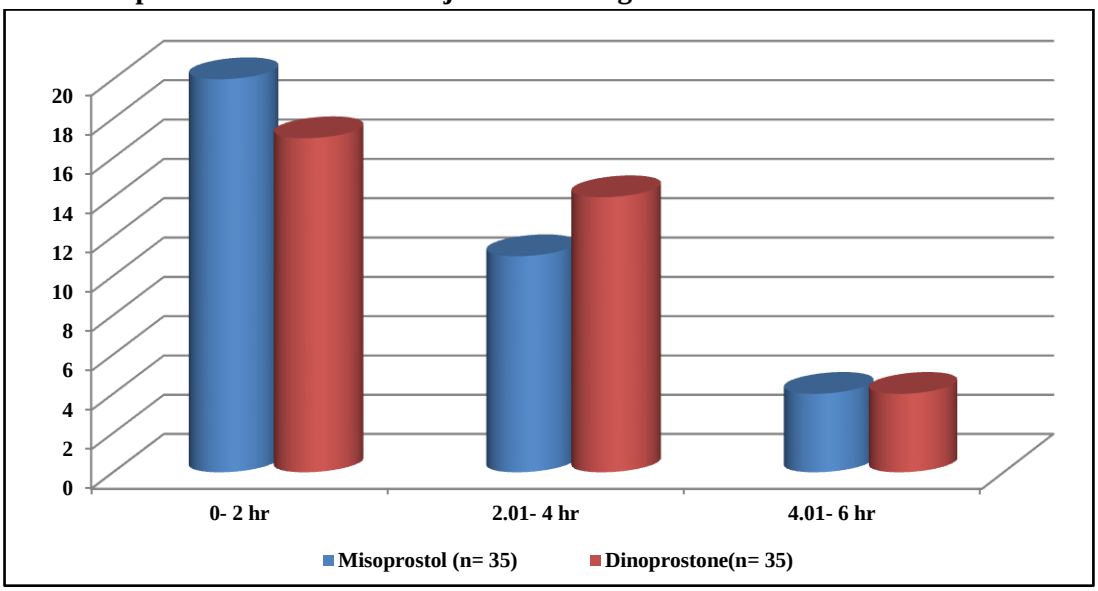



**Table 3: Mode of delivery in all the subjects**

| Parameter | Misoprostol (n= 35) | Dinoprostone(n= 35) | P- value |
|---|---|---|---|
| **Vaginal (number)** | 32 | 25 | **0.04*** |
| **Caesarean (number)** | 3 | 10 | **0.02*** |

*: Significant

**Table 4: Neonatal outcome (Apgar score at 1 minute)**

| Apgar score | Misoprostol Group (n=35) | Dinoprostone Group (n=35) |
|---|---|---|
| **0-5** | 19 | 28 |
| **6-8** | 13 | 15 |
| **9-10** | 3 | 2 |

**DISCUSSION**

As per WHO guidelines, induction should be done only when expected benefits outweigh potential harms.[10-12] Hence; we planned the present study to evaluate the effectiveness of intravaginal misoprostol and intracervical dinoprostone for inducing labour.

In the present study, we observed that similar time was observed on comparing the time elapsed between the application of drug and occurrence of satisfactory labour in the two study groups. Papanikolaou EG et al compared the efficacy of 50 mcg vaginal misoprostol and 3 mg dinoprstone, administered every nine hours for a maximum of three doses, for elective induction of labour in a specific cohort of nulliparous women with an unfavourable cervix and more than 40 weeks of gestation. The main outcome measures were time from induction to delivery and incidence of vaginal delivery within 12 and 24 hours. The induction-delivery interval was significantly lower in the misoprostol group than in the dinoprostone group. With misoprostol, more women delivered within 12 hours and 24 hours, spontaneous rupture of the membranes occurred more frequently, there was less need for oxytocin augmentation and fewer additional doses were required. Although not statistically significant, a lower Caesarean section (CS) rate was observed with misoprostol but with the disadvantage of higher abnormal fetal heart rate (FHR) tracings. From the misoprostol group more neonates were admitted to the intensive neonatal unit, than from the dinoprostone group. One woman had an unexplained stillbirth following the administration of one dose of dinoprostone. Vaginal misoprostol, compared with dinoprostone in the regimens used, is more effective in elective inductions of labor beyond 40 weeks of gestation. Nevertheless, this is at the expense of more abnormal FHR tracings and more admissions to the neonatal unit, indicating that the faster approach is not necessarily the better approach to childbirth.[13]Ozkan S et al compared efficacy and safety of vaginal misoprostol (PGE(1) analog) with dinoprostone (PGE(2) analogue) vaginal insert for labor induction in term pregnancies. A total of 112 women with singleton pregnancies of > or =37 weeks of gestation, and low Bishop scores underwent labor induction. The subjects were randomized to receive either 50 mug misoprostol intravaginally every 4 h to a maximum of five doses or a 10 mg dinoprostone vaginal insert for a maximum of 12 h. Time interval from induction to vaginal delivery, vaginal delivery rates within 12 and 24 h, requirement of oxytocin augmentation, incidence of tachysystole and uterine hyperstimulation, mode of delivery, rate of cesarean section due to fetal distress and neonatal outcome were outcome measures. Time interval from induction to vaginal delivery was found to be significantly shorter in misoprostol group when compared to dinoprostone subjects. Vaginal delivery rates within 12 h were found to be significantly higher with misoprostol induction, whereas vaginal delivery rates in 24 h did not differ significantly between groups. More subjects required oxytocin augmentation in dinoprostone group and cardiotocography tracings revealed early decelerations occurring more frequently with misoprostol induction (10.7 vs. 0%, P = 0.03). Tachysystole and uterine hyperstimulation, mode of delivery, rate of cesarean sections due to fetal distress and adverse neonatal outcome were not demonstrated to be significantly different between groups. Using vaginal misoprostol is an effective way of labor induction in term pregnant women with unfavorable cervices, since it is associated with a shorter duration of labor induction and higher rates of vaginal delivery within 12 h. Misoprostol and dinoprostone are equally safe,

since misoprostol did not result in a rise in maternal and neonatal morbidity, namely, tachysystole, uterine hyperstimulation, cesarean section rates and admission to neonatal intensive care units as reported previously in literature.[14]

**CONCLUSION**

From the results, the authors conclude that in comparison to Dinoprostone, Misoprostol appears to be of equal efficacy. However, future studies are recommended.

**References**


1. ACOG Committee on Practice Bulletins — Obstetrics. ACOG Practice Bulletin no 107: induction of labor. Obstet Gynecol 2009; 114:386–97.
2. Induction of labour [clinical guideline 70]. London (UK): National Institute for Health and Clinical Excellence; 2008.
3. Caughey AB, Sundaram V, Kaimal AJ, et al. Systematic review: elective induction of labor versus expectant management of pregnancy. Ann Intern Med 2009;151:252–63, W53–63.
4. Gülmezoglu AM, Crowther CA, Middleton P, et al. Induction of labour for improving birth outcomes for women at or beyond term. Cochrane Database Syst Rev 2012;(6):CD004945.
5. Wennerholm UB, Hagberg H, Brorsson B, et al. Induction of labor versus expectant management for post-date pregnancy: Is there sufficient evidence for a change in clinical practice? Acta Obstet Gynecol Scand 2009;88:6–17.
6. Willacy H. Labour — active management and induction. Patient.co.uk; 2009. Available: www.patient.co.uk/doctor/Labour-Active-Management-and-Induction.htm
7. Caesarean section [clinical guideline 132]. London (UK): National Institute for Health and Clinical Excellence; 2004
8. Edwards DR, Porter SA, Stein GS. A pilot study of postnatal depression following cesarean delivery using two retrospective self-rating instruments. J Psychosom Res 1994;38:111–7.
9. Gottlieb SE, Barrett DE. Effects of unanticipated cesarean section on mothers, infants, and their interaction in the first month of life. J Dev Behav Pediatr 1986;7:180–5.
10. Lydon-Rochelle MT, Cárdenas V, Nelson JC, Holt VL, Gardella C, et al. (2007) Induction of labor in the absence of standard medical indications: incidence and correlates. Med Care 45: 505–512.
11. Guerra G, Cecatti J, Souza J (2011) Elective induction versus spontaneous labour in Latin America. Bull World Health Organ 89: 657–665.
12. Selmer-Olsen T, Lydersen S, Mrkved S. Does acupuncture used in nulliparous women reduce time from prelabour rupture of membranes at term to active phase of labour? A randomised controlled trial. Acta Obstetriciaet Gynecologica Scandinavica. 2007;86(12):1447–1452.
13. Papanikolaou EG, Plachouras N, Drougia A, et al. Comparison of Misoprostol and Dinoprostone for elective induction of labour in nulliparous women at full term: A randomized prospective study. Reproductive biology and endocrinology : RB&E. 2004;2:70.
14. Ozkan S1, Calişkan E, Doğer E, Yücesoy I, Ozeren S, Vural B. Comparative efficacy and safety of vaginal misoprostol versus dinoprostone vaginal insert in labor induction at term: a randomized trial. Arch Gynecol Obstet. 2009 Jul; 280(1):19-24.