

ORIGINAL RESEARCH

A comparative study of Neonatal outcome following labour induction with Misoprostol vs Dinoprostone

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ABSTRACT

Background- Induction of labour being a routine obstetric practice warrants the need to conduct more and more studies for the advancement of the techniques which aid it. Prostaglandins are a common method of induction of labor. In our study, we compare cervical ripening with intravaginal prostaglandin E1 analogue and the comparatively newer intravaginal prostaglandin E2 pessary with regard to neonatal outcomes of induction. **Materials and methods-** 100 Patients admitted in OBG Department of ASCOMS Hospital jammu with an indication for induction of labour from October 2021 to October 2022 who fulfilled the inclusion and exclusion criteria were included in the study. 50 patients were induced with 25µg of intravaginal misoprostol. Rest 50 patients were administered 10 mg intravaginal dinoprostone pessary (insert). The efficacy was compared with respect to neonatal outcome. **Results-** Misoprostol is more cost-effective and stable at room temperature and has lesser Induction delivery interval than dinoprostone. However with dinoprostone the Nicu admission rate is lesser than with misoprostol. **Conclusion-** Dinoprostone pessary, is a safe, efficient and a reliable induction agent which may become the method and drug of choice, for induction of labour in the coming years.

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INTRODUCTION

Induction of labor has become a common obstetric practice referring to the process of non-spontaneous initiation of uterine contractions which results in progressive dilatation with effacement of cervix and descent of presenting part of fetus, culminating in safe vaginal delivery of the baby after 28 weeks of gestation, with a good outcome. **De Ribes, (1988)**. Over the years, the techniques for inducing labor have also changed from dietary delicacies and physical stimulation by cervical stretching and amniotomy to sophisticated pharmacological manipulation using oxytocin and prostaglandins. In **1968, Karim et al.**, were the first to report the use of prostaglandins for labor induction. Since then, the use of prostaglandins, in different varieties and forms of administration, has become a common method of labor induction. Of late, a number of recently published clinical trials abroad and in India have shown that intravaginal Dinoprostone (prostaglandin PGE₂) is an effective agent for induction of labour and cervical ripening at term, when compared to other methods of labour induction. In this study, our traditional methods of cervical ripening with intravaginal prostaglandin E1 analogue and the comparatively newer intravaginal

prostaglandin E2 pessary are compared with regard to neonatal outcomes of induction.

AIMS and OBJECTIVES

To compare the effect of induction of labour with Dinoprostone vaginal insert (pessary) and Misoprostol on the neonatal outcome.

MATERIAL AND METHODS

100 Patients admitted in Obstetrics and Gynaecology Department of Acharya Shri Chander College of Medical Sciences and Hospital with an indication for induction of labour from October 2021 to October 2022 who fulfilled the inclusion and exclusion criteria were included in the study. Written and informed consent for participation in the study was taken from them. 50 patients were induced with 25µg of intravaginal misoprostol and repeated for a maximum of 6 doses every 4 hours as needed. Rest 50 patients were administered 10 mg intravaginal dinoprostone pessary (insert). The maternal vital signs, fetal heart rate and progress of labour were strictly monitored in all patients. Oxytocin was started depending on the modified Bishop's score and in the absence of adequate uterine contractions after 6 hrs of the last dose in case of misoprostol and after 30 minutes in

case of dinoprostone pessary, or for augmentation of labour in case of an arrest of dilation. Membranes were ruptured when the cervix was completely effaced with a cervical dilatation of more than 3 cms or at onset of active stage of labour. The results observed were subjected to statistical analysis by Odd's ratio and Chi-square test.

INCLUSION CRITERIA

- Singleton fetus with cephalic presentation.
- Over 37 weeks of gestation.

- Reactive fetal heart pattern
- Unfavorable cervix Bishop score < 4
- No contraindication to vaginal delivery

EXCLUSION CRITERIA

- Previous L.S.C.S or any uterine surgery
- Mal presentation
- Grand Multiparity
- Abnormal fetal heart rate pattern
- Allergy to Prostaglandins

RESULTS

TABLE 1 - PARITY

PARITY	DINOPROSTONE		MISOPROSTOL	
	NO.OF PATIENTS	%AGE OF PATIENTS	NO. OF PATIENTS	%AGE OF PATIENTS
PRIMIGRAVIDA	31	62	25	50
MULTIGRAVIDA	19	38	25	50
TOTAL	50	100	50	100

P<0.05, Significant (S); Odds Ratio: 0.196

Primigravida were found to the largest group in the study, 62% and 50% in dinoprostone and misoprostol group respectively. Multigravida in dinoprostone and misoprostol group were 38% and 50% respectively.

TABLE 2 - GESTATIONAL AGE

GESTATIONAL AGE	DINOPROSTONE		MISOPROSTOL	
	NO. OF PATIENTS	PERCENTAGE	NO.OF PATIENTS	PERCENTAGE
≤ 40 Weeks	41	82.0	41	82.0
40 Weeks 1 day – 41 Weeks 6 days	9	18.0	9	18.0
TOTAL	50	100.0	50	100.0

P>0.05, Not Significant (NS)

When gestational age was compared, it was seen that there were equal number of patients in both the groups with similar gestational age who underwent induction. The highest number in both the groups being below 40 weeks which were 82% and 82% in Dinoprostone and Misoprostol groups respectively.

TABLE 3- NICU ADMISSION

NO. OF DAYS	DINOPROSTONE		MISOPROSTOL	
	NO. OF PATIENTS	PERCENTAGE	NO. OF PATIENTS	PERCENTAGE
< 6 Days	7	14	9	18
> 6 Days	3	6	6	12
TOTAL	10	20	15	30

Total NICU admissions were 10 in Dinoprostone group and 15 in Misoprostol group. In the Dinoprostone group, 7 neonates were admitted in the NICU for less than 6 days and 3 neonates were admitted for more than 6 days. In the Misoprostol group, 9 out of 15 neonates were admitted in NICU for less than 6 days and 6 neonates were admitted for more than 6 days.

TABLE 4- INDICATION FOR NICU ADMISSION

INDICATIONS	DINOPROSTONE		MISOPROSTOL	
	No. of Patients	Percentage	No. of Patients	Percentage
Meconium Aspiration Syndrome	1	2	4	8
Fetal distress	6	12	8	16
Jaundice	3	6	3	6
Total	10	20	15	30

It was seen that in both the groups the main indication for admission was fetal distress, incidence being 12% in Dinoprostone group and 16% in Misoprostol group. The incidence of meconium aspiration syndrome was more in the Misoprostol group i.e. 8% when compared to 2% in the Dinoprostone group. The incidence of neonatal jaundice was same in both the groups i.e. 6% each.

DISCUSSION

The incidence of thick meconium stained liquor was 2% and 8% in Dinoprostone and Misoprostol groups respectively. 2 out of 4 patients in the Misoprostol group were induced for postdatism and found to have thick meconium stained liquor. It was not known whether the thick meconium was due to the drug or due to the indication for induction which was postdatism. The incidence of meconium stained liquors in the present study is consistent with the studies of **Wing DA et al., (1995b)**- 8.1%. The incidence of NICU admission was 20% in Dinoprostone group and 30% in Misoprostol group. There was an increased incidence of meconium aspiration syndrome and birth asphyxia in the Misoprostol group. Neonatal outcome was compared by **Aqueela et al., (2010)** in both the groups (PGE1 and PGE2 groups), which showed increased incidence of NICU admissions in the Misoprostol group.

CONCLUSION

Dinoprostone and Misoprostol are safe and effective for cervical ripening and labour induction. Misoprostol is more cost-effective and stable at room temperature than dinoprostone which needs refrigeration. However with dinoprostone the Nicu admission rate is lesser than with misoprostol. In conclusion, we believe that Dinoprostone pessary, is a safe, efficient and a reliable induction agent which may become the method and drug of choice, for induction of labour in the coming years.

BIBLIOGRAPHY

1. Ayaz A, Shaukat S, Farooq MU, Mehmood K, Ahmad I, Ali Bahoo ML. Induction of labor: a comparative study of intravaginal misoprostol and dinoprostone. *Taiwan J Obstet Gynecol.* 2010 Jun;49(2):151-5.
2. C de Ribes. On Induced Childbirth, Dilation of the Genital Canal with the Aid of balloons Introduced into the Uterine Cavity During Pregnancy. (Paris, Steinheil, 1988).
3. Karim SMM, Trussele RR, Patel RC and Hillier K. Response of Pregnant Human Uterus to Prostaglandin F2Alpha Induction of Labor. *British Medical Journal.* 1968; IV: 621-623.
4. Liu A, Lv J, Hu Y, Lang J, Ma L, Chen W. Efficacy and safety of intravaginal misoprostol versus intracervical dinoprostone for labor induction at term: a systematic review and meta-analysis. *J Obstet Gynaecol Res.* 2014 Apr;40(4):897-906.
5. Rankin K, Chodankar R, Raymond K, Bhaskar S. Misoprostol vaginal insert versus dinoprostone vaginal insert: A comparison of labour and delivery outcomes. *Eur J Obstet Gynecol Reprod Biol.* 2019 Apr;235:93-96
6. van Gemund, N., Scherjon, S., Le Cessie, S., Schagen van Leeuwen, J.H., van Roosmalen, J. and Kanhai, H.H.H. (2004), A randomised trial comparing low dose vaginal misoprostol and dinoprostone for labour induction. *BJOG: Int J Obs Gynaecol*, 111: 42-49.
7. Wang L, Zheng J, Wang W, Fu J, Hou L. Efficacy and safety of misoprostol compared with the dinoprostone for labor induction at term: a meta-analysis. *J Matern Fetal Neonatal Med.* 2016;29(8):1297-307.
8. Wing DA and Rahall A. Misoprostol: An effective agent for cervical ripening and labour induction. *Am J Obstet Gynaecol.* 1995;172:1811-6.