



Role of Dinoprostone E₂ Gel Application On Feto-Maternal Outcome : A Descriptive Study, SMS Medical College & Hospital, Jaipur

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ABSTRACT

This descriptive study is to find out association between number of doses of Dinoprostone E₂ gel required and its various fetomaternal outcomes alongwith effect of Dinoprostone E₂ gel on cervical effacement. In this hospital based study, women admitted for induction of labour, were divided into 2 groups on the basis of requirement of number of PGE₂ application. After analysing labour parameters and fetomaternal outcome we concluded that Dinoprostone E₂ gel is efficient in achieving cervical ripening with good maternal and neonatal outcome so PGE₂ gel can be used as the first choice for elective induction of labour in term pregnancy.

KEYWORDS

Induction of labor, cervical effacement, prostaglandin E₂

INTRODUCTION

Induction of labour is an intervention to artificially initiate uterine contractions leading to progressive dilatation and effacement of cervix and birth of baby.¹ Recently, elective induction of labour at term have increased dramatically in the interest of mother or baby or both. Although Dinoprostone gel is considered as the preferred method for labour induction.²

Cervical ripening is an essential prerequisite for induction and is assessed with Bishops scoring system. A favorable cervix is with a modified Bishop score of more than 8 and unfavorable cervix with a Bishop score of < 4.2. The development of "Prostaglandins" has revolutionized the management of cases with unfavourable cervix. In order to improve cervical score and induce myometrial contractility, prostaglandins in various forms and preparations have been used.³ Dinoprostone, a prostaglandin E₂ analogue is an effective synthetic PGE₂ analogue which has become an important drug in obstetric practice because of its uterotonic and cervical priming actions. Risk benefit analysis is necessary before any induction of labour.⁴

Our study is being carried out to assess the efficacy of prostaglandin E₂ gel and to watch the maternal and fetal outcome of labour after single versus double applications of the same.

MATERIAL & METHODS

This hospital-based descriptive study was conducted in Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur. After taking informed consent, 200 women with singleton live pregnancy fulfilling inclusion criteria admitted for induction of labour were recruited for our study.

A detailed history was taken and thorough general, abdominal and pelvic examination was done. Digital cervical evaluation was performed at the initiation of induction of labour and score assigned as per Modified Bishop's scoring system.

MODIFIED BISHOP'S SCORING SYSTEM

Cervical Feature	Pelvic Score			
	0	1	2	3
Dilatation of cervix	< 1 cm	1-2 cm	2-4 cm	>4 cm
Length of cervix	4 cm	2-4 cm	1-2 cm	<1 cm
Station of presenting part (related to ischial spine)	-3 cm	-2 cm	-1 cm	+1 cm, +2 cm
Consistency of Cervix	Firm	Average	Soft	-
Position of Cervix	Posterior	Mid Anterior	-	-
Test Score	0-5 unfavourable, 6-12 favourable			

Women with a score of 6 or less were included in the study dividing them in respective groups i.e.

Group-A : Induction by single dose of Dinoprostole gel (0.5 ml) {PGE₂ gel}.

Group-B : Induction by 2nd dose 6 hrs after previous dose in women who did not have successful induction with single dose.

Following parameters were recorded during the study: -

- Time and onset of labour pain
- Need of amniotomy
- Requirement of oxytocin augmentation
- Prostaglandin instillation - delivery interval (in minute)
- Duration of labour (in minute)
- Mode of delivery
- 3rd stage complications
- Neonatal outcome

After second dose if woman not goes in labour it was excluded from the study. Labour parameters and maternal and fetal

outcome were studied and analysed in both groups.

RESULTS

In single application group 59% cases delivered vaginally while in cases of double application 75% delivered vaginally. In our study LSCS delivery in single v/s double application was 27% v/s 20% respectively. Instrument delivery in single v/s double application was 14% v/s 5%. This difference in both groups found to be statistically significant (p < .01) {Table-1}

Maternal complications were almost similar in both groups (single application 16% v/s double application 20%) which is statistically not significant {Table-2}.

92% of newborns in single application had APGAR score of ≥7 and 94% in double application had APGAR score of ≥7. In single application group newborns delivered with APGAR score <7 were 8% cases and in double application were 6%. The difference was statistically not significant {Table-3}.

DISCUSSION

Labour induction is one of the most common intervention in obstetric practice. A simple application of PGE₂ intracervical gel can ripen the cervix effectively and improve Bishop's score there by helping in successful vaginal delivery. However better outcome always depends on awareness of contraindication, proper application and understanding of possible complications and handling then effectively.

Preinduction cervical ripening with the dinoprostone slow-release vaginal insert is associated with a high rate of women undergoing vaginal delivery within 24 hours, with a shorter stay. Considering its good performance, the dinoprostone slow-release vaginal insert is the first choice for elective induction of labour in postdate pregnancy.

Fetal distress was less common following PGE₂ treatment. Epidural analgesia and postpartum haemorrhage were both reduced following PGE₂-induced labour.

Use of dinoprostone vaginal inserts in patients with term pregnancy of premature rupture of membranes reduced both the latent phase of labour and total delivery time without increasing the rate of caesarean section.

An isolated report of three cases of anaphylactoid reaction after intracervical dinoprostone gel was found during a literature search. As a potentially life-threatening condition, every obstetrician should be aware of this rare complication of dinoprostone gel.

So we concluded that Dinoprostone gel application is efficient in achieving cervical ripening and successful labour with reduction in latent phase of labour and total delivery time without increasing the rate of caesarean section and obstetric risk.

CONCLUSION

Our data suggest that Dinoprostone gel application is efficient in achieving cervical ripening and successful labour in nulliparous as well as multiparous along with reduction in latent phase of labour and total delivery time without increasing the rate of caesarean section and obstetrical risk.

Secondary application of PGE₂ gel significantly improves the chances of cervical ripening in cases who had unfavourable cervix. There is decrease in total duration of labour and increase in the chances of vaginal deliveries but strict vigilance is required for both maternal and foetal parameters specially in cases of second applications.

Considering the good performance of maternal and neonatal outcome the Dinoprostone gel can be used as the first choice for elective induction of labour in term pregnancy.

TABLES

**Table – 1
Distribution of Cases According to Mode of Delivery & Number of Application of PGE₂ Gel**

Mode of Delivery	Application of PGE ₂ Gel				Total	
	Single		Double		No.	%
	No.	%	No.	%		
Normal Delivery	59	59.00	75	75.00	134	67.00
LSCS	27	27.00	20	20.00	47	23.50
Instrumental Delivery	14	14.00	5	5.00	19	9.50
Total	100	100.00	100	100.00	200	100.00

$\chi^2 = 7.475d.f. = 2 \quad p < .05 \quad \text{Sig}$

**Table – 2
Distribution of Cases According to Maternal Complications & Number of Application of PGE₂ Gel**

Maternal Complications	Application of PGE ₂ Gel				Total	
	Single		Double		No.	%
	No.	%	No.	%		
Present	16	16.00	20	20.00	36	18.00
Absent	84	84.00	80	80.00	164	82.00
Total	100	100.00	100	100.00	200	100.00

$\chi^2 = 0.542d.f. = 1 \quad p > .05 \quad \text{NS}$

**Table – 3
Distribution of Cases According to APGAR Score at 5 Min & Number of Application of PGE₂ Gel**

APGAR Score at 5 Min	Application of PGE ₂ Gel				Total	
	Single		Double		No.	%
	No.	%	No.	%		
< 7	8	8.00	6	6.00	14	7.00
≥ 7	92	92.00	94	94.00	186	93.00
Total	100	100.00	100	100.00	200	100.00

$\chi^2 = 0.307d.f. = 1 \quad p > .05 \quad \text{NS}$

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