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EVALUATION OF PGE_2 GEL FOR CERVICAL RIPENING AND INDUCTION OF LABOUR

VEENA, K. SAXENA AND K. C. SINGHAL*

Departments of Obstetrics & Gynaecology and Pharmacology,*
Jawaharlal Nehru Medical College,
Aligarh Muslim University,
Aligarh - 202 002

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Abstract: In a prospective study a single dose PGE_2 gel 0.5 mg was given in 97 Low Bishop Score subjects, 12 hrs prior to indicated oxytocin or PGE_2 tab induction for cervical ripening. Analysis of 97 subjects shows that it is very highly effective. 56 primi and 21 multi delivered spontaneously with gel administration only while 4 primi and 2 multi delivered vaginally following oxytocin and 3 more cases delivered vaginally following PGE_2 tab administration and fewer caesarian section (11) were performed. The endo cervical administration of PGE_2 was well tolerated and systemic PGE_2 effects were minimal.

Key words: PGE_2 gel ripening of cervix Bishop score induction of labour

INTRODUCTION

Induction is an attempt, before the onset of labour, to stimulate the uterus to contract as in normal labour so as to achieve vaginal delivery. The incidence of induction varies from 15-30% (1). In modern obstetrics, induction of labour is mainly attempted when continuation of pregnancy may harm the mother, foetus or both. Various measures applied for this purpose - oxytocin, prostaglandins, aminotomy, drainage of hind water, stripping of membranes, bougie or folley's cather and hypertonic solution intraminotic (dead foetus). Medical induction by oxytocin and prostaglandins is employed commonly since other measures are either too risky or not dependable. Favourable cervix is a pre-requisite for spontaneous and induced labour (2). Therefore, pre-induction cervical ripening is an integral part of entire induction process which can be effectively brought by EGE_2 gel (3) which in most cases is sufficient to induce labour (4). On the other hand oxytocin causes only minimal increase in Bishop score (5) and at times fails to produce the desired result. Endocervical PGE_2 gel application is a simple, non-invasive safe and effective technique which ripens the cervix and thereby improves the prognosis of labour. The present study was designed to assess the efficacy of PGE_2 gel in cervical ripening in patients with poor Bishop score.

METHODS

Pregnant women admitted for termination of pregnancy to Obstetrics Ward of J.N. Medical College, Aligarh were examined clinically and assessed on the basis of ripening of cervix and were classified according to Bishop score into two categories : (a) score 0-5 unfavourable, (b) score 6-13 favourable (Table I).

TABLE I : Bishop score.

Scores	*0*	*1*	*2*	*3*
Dilatation (cm)	0	1-2	3-4	5+
Effacement (%)	0-30	40-50	60-70	80+
Station (cm)	–3	–2	–1/0	+1/+2
Consistency	Firm	Medium	Soft	—
Position	Posterior	Mid	Anterior	—

Women numbering 97 with unfavourable Bishop score were selected for induction of labour. The

*Corresponding Author

indication for which induction was done are listed in Table II.

TABLE II : Indication for induction in women 20 weeks pregnancy with unfavourable Bishop score.

Indications	*Primi-gravida n=66*	*Multi-gravida n = 31*
Intrauterine foetal death (IUD)	32	10
Ante partem eclampsia (APE)	8	1
Post dated pregnancy	8	6
Congenital malformation of foetus	6	5
Pre-eclamptic toxaemia (PET)	6	5
Intrauterine growth retardation (IUGR)	2	3
Rh negative	4	1

All those subjects with unfavourable Bishop score were administered cerviprime gel (PGE_2 0.5 gm) by endocervical route and were asked to remain lying for 30 min. The pervaginum examination was done at the interval of 6 hrs till 24 hrs to see cervical status. Subjects in which labour started were assessed every 2 hrs interval and partogram was maintained. Women who showed no signs of progression of labour till 24 hrs or where the progress of labour was not satisfactory additional measures for induction/augmentation were undertaken. These included :

1. *Oxytocin (Syntocinon)*: 1-2 mu/min IV infusion initially with an increment of 1-2 mu after 15-30 min interval till adequate uterine activity was achieved.

2. *PGE_2 0.5 mg (Primiprost)*: Tablets administered orally every hour till 4 hrs. If no response was obtained, the dose was increased to 2 tablets every hour. Maximum number of tablets administered were ten.

Subjects who failed to respond to one of these additional measure or foetal distress was evident caesarian section was undertaken.

RESULTS

56 primipara and 21 multiparous subjects delivered spontaneously following the administration of PGE_2 gel. 20 patients were induced/augmented by oxytocin and PGE_2 tabs 10 each (Table III).

TABLE III : Distribution of cases according to drugs used for induction/augmentation for labour.

Drug used	*Primi*	*Multi*
PGE_2 gel	56	21
PGE_2 gel + Syntocinon IV drip	6	4
PGE_2 gel + PGE_2 oral tabs	4	6

Thirteen patients delivered spontaneously within 6 hrs of administration, maximum cases delivered within 7-18 hrs (Table IV).

TABLE IV : Clinical impression of treatment (spontaneous delivery).

Impression	*Primi (56)*	*Multi (21)*	*Total (77)*
Excellent (0-16 hr)	4	9	13
Very good (7-12 hr)	20	6	26
Good (13-18 hr)	16	2	18
Fair (19-24 hr)	14	2	16
Poor (24 hr)	2	2	4

Twenty subjects with poor response with gel were given oxytocin and PGE_2 tabs for various reasons (Table V). Out of these, 8 cases had vaginal delivery, 1 forceps and 11 had caesarian sections. Indication of caesarian section included non-progress of labour (5 cases), faetal distress (4 cases) and cephelopelvic disproportion (2 cases). There was no foetal or maternal mortality with the use of gel. The gel was well tolerated and there were no adverse reactions including gastrointestinal or pyrexia.

In the present study of 97 cases, 5 had failed induction with PGE_2 gel. Additional measure in the form of PGE_2 tablet was successful only in one case while the remaining 4 had to be subjected to caesarian section.

TABLE V : Reasons for additional measures adopted for augmentation of labour.

Indication		*No.*	*Parity*	*Mode of delivery*
Induction	*Augmentation*			
PGE_2 gel ± oxytocin				
Intrauterine foetal death	Prolonged labour	2	Primi	Vag 2 Vag
Anti partum eclampsia	To shorten duration of labour	4	Primi	FD 2 C/S NOPL
Postdatism	Prolong latent phase	2	Multi	1 Vag FD 1 C/S
Postdatism + PET	"	2	Multi	1 Vag FD 1 CS
PGE_2 gel + PGE_2 tabs				
PET	Prolong latent phase	4	Multi	2 C/S NOPL Forceps Vag
	Prolong latent phase	1	Primi	C/S NOPL
	Failed induction	2	Multi	1 C/S NOPL Vag
PET + Postdatism	Failed induction	3	Primi	1 CPD 1 C/S FD Vag

CS - Lower segment caesarean section
CPD - Cephalopelvic disproportion
Vag - Vaginal delivery
FD - Foetal distress
NOPL - Non-progress of labour

DISCUSSION

Intracervical applications of PGE_2 has been found to facilitate ripening of cervix as does the oral administration. However, the dose required is relatively less and the local GIT and other systemic reactions are not seen.

The application of PGE_2 intracervically has advantages which are not obtained by oxytocin. There is evidence that cervical softening following instillation of PGE_2 near term is associated with a splitting up and disapperance of collagen fibres (6). A slight increase in sulfated glycosaminoglycons and an increase in collagenase activity. Although the biochemical mechanism involved is not well understood, the application results in the conversion of a hard and immature cervix into a soft distensable tissue within few hours (7). However, such an application is devoid of stimulation of uterine contractions which is provided by oral administration. It may be seen that application of gel alone was suffieient to facilitate progression of labour leading to delivery in 77 of the 97 subjects. The remaining 20 who did not deliver with gel alone were both primi and multi gravida. The incidence in two groups did not differ. Similar results are observed by other workers (8, 9). Intracervical dose of 2.5 mg PGE_2 gel resulted in 75% delivery rate.

Simultaneously oxytocin administration intravenously was attempted in those failed to respond with gel alone. Reason being that although oxytocin has no specific softening effect on the cervical mucosa in absence of uterine constraction (10), yet it is a very powerful uterine stimulant. The action coupling provided by PGE_2 resulting in cervical softening and oxytocin facilitating the process of labour by uterine contractions.

In another group of 10 subjects instead of oxytocin, PGE2 tabs were administered orally in addition to intracervical applications of PGE_2 gel. Systemic administration of PGE2 which has effect identical to oxytocin on uterus resulted in successful progression of labour and delivery.

In cases of intrauterine foetal death, 40 cases delivered spontaneously with gel application only with an advantage of relatively short induction delivery intervals (8-9 hrs) as observed by other workers (11, 12).

Mean induction delivery time was 9 hr 30 min in primi and 7 hr 35 min in multigravida subjects comparable to 11 hr 50 min in primipara and 7 hr 50 min for multipara given by Cruz et al (13).

It may be concluded that PGE_2 gel softens the cervix by its local action is sufficient to facilitate delivery in cases not being delivered spontaneously. It is only in a small number of cases where twin application of gel with oral administration of PGE_2 or IV administration of oxytocin may be needed. The two agents have acumulative effect on the induction of labour.

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