

## CERVICAL RIPENING AND INDUCTION OF LABOUR BY INTRACERVICAL PGE<sub>2</sub> GEL APPLICATION

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### SUMMARY

The efficacy of intracervical application of PGE<sub>2</sub> gel was studied in 100 cases admitted for induction of labour with unfavourable cervix. Successful ripening was achieved in 82% cases, while labour was induced successfully in 73% of the cases. 81% of the patients delivered vaginally with the induction delivery interval of less than 12 hours. No significant fetal or maternal complications were seen in the study series.

### INTRODUCTION

The transcendent objective of obstetrics is that every pregnancy be wanted and that it culminates in a healthy baby (Williams, 1993). To achieve this objective, at times one cannot wait for spontaneous labour and will have to resort to induction of labour.

The term 'induction of labour' means deliberate termination of pregnancy beyond 28 weeks of gestation by any means or

methods, which aim at initiation of labour and delivery per via natural methods (Donald, 1979).

It is a well known clinical fact that state of cervix greatly influences the outcome of induced labour and chances of successful induction improves with the degree of cervical ripeness. Calder et al (1984) have shown that there is an increase in duration of labour, maternal pyrexia, caesarean section and birth asphyxia in patients, who were induced by oxytocin infusion and amniotomy with an unprepared cervix as compared to those, who first underwent cervical ripening.

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Various methods used to bring about ripening of cervix and thus induce labour include laminaria tents, Foley's catheter, oxytocin infusion, amniotomy and prostaglandins (St Onge and Connors 1995; Bhide and Daftary, 1993). While oral and parenteral routes of administration of prostaglandins are associated with an unacceptably higher rates of gastro-intestinal side effects ranging from 25-55% while local applications of PGE2 in the form of intra-cervical gel and associated with less side effects.

The present study was undertaken with the aim of finding out the efficacy of PGE2 gel for cervical ripening and induction of labour.

#### **MATERIAL AND METHODS**

The study was conducted in the Dept. of Gynaecology and Obstetrics, SMGS Hospital, Govt. Medical College, Jammu, and included 100 patients admitted for induction of labour. Inclusion criteria were all patients between 35 and 43 weeks gestation by dates, primigravida and multigravida. Bishop score < 5 and singleton pregnancy with vertex presentation. Patients with a previous uterine scar, history of preterm labour, ruptured membranes, antepartum bleeding, low lying placenta and any general contraindication to the use of PGE2 gel were excluded from the study.

After informed written consent was obtained, Bishop score was determined. With sterile technique, a speculum examination of the cervix was done under direct vision. PGE2 gel Dinoprostone 0.5 mg (Cerviprime) was inserted intracervically. The patient was asked to remain in supine position for one hour thereafter remained ambulatory, if so preferred. The patients

were monitored for maternal and fetal side effects, in any. If the patient did not go into spontaneous labour, she was reassessed for Bishop score after 12 hours. If the score was less than five, another dose of PGE2 gel was inserted intracervically. If after another 12 hours, the Bishop score did not improve to 5 or more, it was considered to be failure of cervical ripening.

If on the other hand after 6 hours of initial instillation of PGE2 gel, Bishop score increased to 5 or more, but the patient did not go into spontaneous labour augmentation with oxytocin drip and amniotomy was done. A failed induction was defined as no change in the cervical effacement or dilatation after six hours of adequate uterine contractions (3 contractions per 10 minutes, each lasting for 30-45 seconds). Patients with failed induction were managed with caesarean section.

#### **RESULTS**

Table I shows various indications for which the patients underwent cervical ripening and induction of labour with intra-cervical PGE2 gel application, the main indications being postdatism (42%) and PIH (38%). The average period of gestation was 38.5 weeks. Sixty patients were primigravidae and 40 were multigravidae.

Table II reveals the results with the use of intra-cervical PGE2 gel for cervical ripening in relation to parity.

Thirty four percent of the patients needed second application of PGE2 gel.

Labour was induced successfully in 73

**Table I**  
**INDICATIONS FOR CERVICAL REOPENING AND INDUCTION**

S. No	Indication	No. of cases	Percentage
1.	Postdated pregnancy	42	42
2.	PIH	38	38
3.	IUGR	11	11
4.	IUD	6	6
5.	Congenital anomalies	3	3
Total		100	100

**Table II**  
**RELATIONSHIP OF PARITY AND CERVICAL RIPENING**

	Initial Bishop score	(n)	Successful ripening	%	Failed ripening	%
Primi	0-2	12	7		5	
	3-5	48	39	76.67	9	23.33
Multi	0-2	11	8		3	
	3-5	29	24	90	4	10

**Table III**  
**EFFICACY OF INTRACERVICAL PGE2 GEL FOR INDUCTION OF LABOUR IN RELATION TO PARITY**

	(n)	Successful Induction	%	Failed Induction	%
Primi	60	41	68.33	19	32.67
Multi	40	32	80.00	8	20.00
Total	100	73		27	

cases (68.33%) in primigravidae and delivered vaginally (Table V) 32 cases (80%) in multigravidae 73 had spontaneous vaginal (Table III), while 27 out of 100 cases had delivery while oxytocin failed induction. augmentation was needed in 9. Out

Out of 100 cases, 81 patients of these 9, 6 had spontaneous

**Table IV**  
INSTILLATION DELIVERY INTERVAL IN  
SUCCESSFULLY INDUCED PATIENTS

	(n)	Successful Induction	%	Failed Induction	%
Primi	60	41	68.33	19	32.67
Multi	40	32	80.00	8	20.00
<b>Total</b>	<b>100</b>	<b>73</b>		<b>27</b>	

**Table V**  
MODE OF DELIVERY

Mode	No. of cases	Percentage
<b>Vaginal</b>		<b>81</b>
a) Spontaneous	73	
b) With Oxytocin augmentation	9	
i) Spontaneous	6	
ii) Forceps	2	
iii) Caesarean section	1	
<b>Caesarean section</b>	19	19
<b>Total</b>	<b>100</b>	<b>100</b>

**Table VI**  
**COMPLICATIONS**

Effect	No. of cases	Percentage
Nausea and vomiting	4	4
Hyperstimulation	-	-
Precipitate labour	-	-
PPH	-	-

delivery, in 2 cases forceps application was done and 1 patient underwent caesarean section for prolonged labour. Remaining 19 cases were managed by caesarean section.

No cases in the study series had hyperstimulation, precipitate labour or PPH, but, only nausea and vomiting were seen in 4% of the cases.

#### DISCUSSION

Induction of labour with the aim of achieving vaginal delivery has become an established and acceptable practice, when continuation of pregnancy becomes a threat to the life or well being of the mother or her newborn child (O'Driscoll et al., 1973).

The success of induction will mainly depend on parity and state of cervix which can be evaluated by Bishop score (Bishop, 1964). The ability of prostaglandins to ripen and soften the cervix can be used for induction of labour in patients with unripe cervix. Such ripening, is desirable to reduce the unacceptably high incidence of caesarean section for failed induction of labour especially in nullipara with poor cervical score (Ratnam et al., 1993).

The present study showed that a single application of intracervical PGE2 gel caused favourable changes in cervix by increasing Bishop score and shortened induction delivery interval with minimal side effects.

The postdatism and PIH (80%) constitute major group in the present study of 100 cases. Successful ripening was achieved in 82% cases (76.67% primi; 90% multi). Results obtained are comparable with those Ekman et al., (1982) viz 82% primi and 100% multi.

Labour was induced successfully in 73% cases (68.33% primi; 80% multi). Similar results were observed by Baveja et al (1988). Instillation-Delivery interval was shortened. Majority (90.4%) of patients delivered within 12 hours.

Among 100 cases, included in the present series, 81% delivered vaginally; 73% had spontaneous vaginal delivery and 9% needed augmentation with oxytocin. Baveja et al (1988) reported 81.7% vaginal deliveries after PGE2 gel application. In 94 cases (excluding 6 of IUD) neonatal outcome

was excellent. Apgar score at 1' was > 8 in 97.8% neonates. Baveja et al (1988) have also reported excellent neonatal outcome. No significant maternal or fetal complications were observed. To conclude, intracervical PGE2 gel application is safe and acceptable method for induction of labour in patients with unfavourable cervix.

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