

## CERVICAL PRIMING FOR INDUCTION OF LABOR

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### ABSTRACT

Cervical ripening is a prerequisite for successful induction of labor. Intracervical instillation of PGE<sub>2</sub> gel was carried out in 27 cases with an unripe cervix. There was a significant improvement in the mean Bishop Score by 4 points over an average period of 7.4 hours. Spontaneous labor commenced in 22.2% of the cases. None of the cases required a Caesarean Section to deliver the baby. These results are compared with alternative methods of cervical ripening.

### INTRODUCTION

Induction of labor is necessary for a variety of obstetric and medical indications. Softening and effacement of the cervix is a part of cascade of events occurring in labor. The 'unripe' cervix impedes attempts at induction and predisposes patients to increased fetal and maternal morbidity. Various surgical and medical methods have been tried to bring about ripening of the cervix and thus induce labor. These include oxytocin infusions, amniotomy, foley catheters, laminaria tents, hormones like estrogens, relaxin and prostaglandins.

This paper is a study of 27 cases wherein intracervical application of PGE<sub>2</sub> gel was car-

ried out in order to ripen the cervix and induce labor. The results are compared with the success rate of alternative methods.

### MATERIAL AND METHODS

0.5 mg of PGE<sub>2</sub> in 2 ml of viscous gel base was used. It was obtained in the form of preloaded syringes with a special cannula to facilitate intracervical application. The cannula was gently inserted in the cervical canal and the gel was slowly injected. The patients remained recumbent for 15 minutes. They were closely observed all through the period of induction of labor. The indications for induction included IUFD, pre-eclampsia and post-datism. There was one case of anencephaly and other of severe IUGR, whilst four cases were induced for the sake of convenience of the patient or the doctor. The gestational age varied from 20 to 42 weeks. All patients had an

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TABLE I

No.	Indications	No. of Cases	No. of Cases requiring augmentation	Reinstillation required	Induction Interval			Outcome
					0-12 hrs.	13-24 hrs.	>24 hrs.	
1.	IUFD	12	10	1	9	2	1	SB(IUFD cases)
2.	Pre-eclampsia	6	5	1	4	1	1	4 FTND 1 Vacuum Extraction 1 SB*
3.	Postdatism	3	2	-	2	1	-	FTND
4.	Anecephaly	1	1	1	-	-	1	SB
5.	Severe IUGR	1	1	-	1	-	-	SB (800 gms)
6.	Convenience of patient/doctor	4	2	-	3	1	-	FTND
Total		27	21	3	19	5	3	

\*BP 220/110 mm Hg. 30 weeks gestation.

unripe cervix with a Bishop score of 3 or less. The time required to ripen the cervix or dilate it to 1.5 cm was noted. Intrapartum electronic fetal monitoring was done in all cases with live fetuses except the anencephalic fetus.

### RESULTS

There was a significant improvement of the Bishop score in all but 3 cases. The average time required for an improvement in the mean Bishop score from 3 to 7 was 7.4 hours. In 6 cases, the gel application itself was sufficient to induce active labor. Of these, 4 had normal deliveries with good Apgar scores. The other 2 which were known cases of IUFD also delivered vaginally. Labor was accelerated in the rest of the cases with oxytocin infusion. Intramuscular PGF<sub>2a</sub> 15 methyl analogue was used only for the IUFD cases. These cases were under very close observation and the dose was titrated very carefully depending on the uterine tone and contraction.

Excluding the 12 cases of IUFD, the outcome in 15 cases was as follows. There

were 3 stillbirths of which one was an anencephalic fetus and another a case of severe IUGR with the fetus weighing only 800 gms, the third was a severe pre-eclamptic with a BP of 220/110 mm Hg at 30 weeks gestation. The remaining 12 cases delivered normal babies with good Apgar Scores of 8/10 or 9/10. One of these was a vacuum extraction in a case of preeclampsia. These 12 cases had reactive NST patterns before induction and no fetal distress on intrapartum electronic fetal monitoring.

Three cases failed to respond. There were no significant changes in the cervix even after 24 hours of observation. In one of them the cause was probably improper instillation, as the patient had also complained of leaking of the gel. Reinstillation was done in these 3 cases following which labour was induced successfully. All cases except those requiring reinstillation, delivered within 24 hours.

No gastrointestinal side-effects were observed. Two cases developed uterine hy-

pertonia. Injection Novalgin was given to one of them in order to reduce the severity of uterine contraction. The patient subsequently delivered a normal baby with an Apgar Score of 8/10 within 4 hours.

### DISCUSSION

Ripening of the cervix involves dislocation and scattering of the collagen bundles which constitute a major portion of the cervix. Prostaglandin E2 is known to increase the elasticity of the fibrous stroma of the cervix.

Varying doses of Prostaglandins have been used for cervical ripening by various routes; formulations include tablets, infusions, suppositories and gels. Oral tablets have an unpredictable absorption rate with untoward systemic side-effects like vomiting and diarrhoea. Intravenous infusions can cause local irritation. Vaginal application requires large doses which would increase the frequency of side-effects. The intra cervical gel is preferable as the low dosage required ensures minimal side effects without compromising on the efficacy. As the above results indicate PGE2 gel is undoubtedly an efficacious agent for cervical ripening. However,

other alternatives have to be considered in view of the nonavailability of this agent in our country.

An Oxytocin 'ripening' infusion is commonly used but with a rather limited success rate of less than 50%. Also prolonged induction delivery interval, immobilization of patients, fetal distress due to uterine hypertonia and increased operative interference add to the disadvantages.

Amniotomy with an unripe cervix can be a difficult procedure. It can lead to chorioamnionitis, dry labor and operative delivery in case it fails. Embrey & Mollison (1967) have reported a 28.6% success rate with amniotomy alone.

Using a Foley catheter and inflating the balloon just beyond the internal os has shown good results. An 84% success rate has been reported by Embrey and Mollison (1967). In a recent study the technique proved successful in 90% of the cases (Parulekar, 1990). Associated complications reported such as rupture of membranes, bleeding per vaginum and infection are rare.

TABLE II

#### Comparison of methods of cervical priming

Method of Cervical priming	Foley Catheter	Vaginal Gel	Prostaglandins		(PGE2)		Oxytocin Infusion
			Oral Tabs. Instilla-	Extra-Amniotic	Intracervical Gel (Present series)		
Author	Ezimokhai	Machenzie	Valentine	Calder et al	Shah & Krishna	Wilson	
Dose	-	5 mg	1 mg x 10	400 mg	0.5 mg	-	
Mean increase in cervical score	4.1	2.6	5.7	5.3	4	1.1	
Spontaneous Labour (%)	8.7%	48.5%	14.3%	19.8%	22.2%	0%	
Caesarean Section Rate %	13%	10.6%	21.4%	15.7%	0%	33.3%	

Table II shows the effect of various cervical ripening agents on the Bishop Score, incidence of spontaneous labor and the caesarean section rate. Local application of Prostaglandins seems to be the best method in terms of effects on cervical ripening and induction of labor. The results of Foley catheter (Ezimokhai and Nwabinehi 1990) are also comparable whilst oxytocin infusion appears to be the least effective method (Wilson, 1978).

Thus intracervical application of PGE2 gel is a simple, safe, effective and acceptable method of cervical ripening. Careful monitoring for uterine hypertonia is necessary. This method can gain popularity only if the gel is made available in our country or made in hospital pharmacies from PGE2 ampoules commercially available abroad. Till such time other alternatives will have to be resorted to. Amongst these, the use of Foley catheter

seems promising.

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