ENDOCERVICAL PGE_2 GEL FOR CERVICAL RIPENING BEFORE INDUCTION OF LABOUR - PRELIMINARY REPORT

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SUMMARY

Induction of labour often fails because of unfavourable cervix. Intracervical prostaglandins are useful in changing the cervical status. Some patients may go into spontaneous labour with intracervical prostaglandin gel. Duration of labour, Caesarean section rate and induction failure rates were low in patients treated with intracervical prostaglandin gel. Precipitate labour and postpartum haemorrhage were the main complications and nausea, vomiting and diarrhoea were the minor side effects encountered. Neonatal outcome was not affected.

INTRODUCTION

Many maternal and fetal conditions exist in which there is a need to terminate pregnancy before the patients go into spontaneous labour. It is also possible to deliver a patient, when required, either by induction of labour or Caesarean section. High rates of induction failures and Caesarean section have been noted when labour was induced with oxytocin in patients with unfavourable cervix. One of the most important conditions that influences the success of induction is the ripeness of cervix. The introduction of prostaglandins in obstetric practice has significantly reduced the difficulties faced in inducing patients with unripe or unfavourable cervix. Endocervical instillation of PGE_2 gel ripens the cervix in a matter of hours and thus the need to wait for this event has been obviated. Prostaglandins can also be used after cervical ripening to induce labour.

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MATERIALS AND METHODS

This study was done on 100 pregnant women in whom labour was induced for various maternal and foetal conditions. All the women had completed 37 weeks of gestation and had normal singleton foetus with vertex presentation and intact membranes.

The patients were divided into two groups. Group I (46 patients) had endocervical PGE_2 gel (0.5 mg) instillation for cervical ripening prior to induction of labour with oxytocin. Group II (54 patients) did not receive prostaglandins. Bishop's score was used for cervical scoring. Scoring was done preferably by a single person, and if two or more persons had done the scoring, then the average Bishop's score was taken. In Group I all excepting 3 patients had single application of PGE_2 gel.

METHOD OF INSTILLATION

The commercially available PGE_2 gel which comes in a prefilled syringe with a canula was used in this study. After the vagina is cleaned with an antiseptic solution, a speculum is introduced in the vagina and the cervix is visualised. The catheter tip is introduced into the cervical canal till the level of the internal os. The canula is then slightly withdrawn to avoid extra-amniotic spread of the gel. The plunger of the syringe is slowly pushed while gradually withdrawing the canula. The woman was asked to remain supine for 30 minutes. The patients were induced with oxytocin the following day if they did not go into labour after the instillation.

Oxytocin infusion pump was used for induction of labour in both the groups. An arithmetic increase in the increments of oxytocin was done at 15 minutes interval till a maximum of 70 ml/hour (45 miu/min) was reached.

The change in Bishop's score, induction-delivery interval, nature of labour, postpartum complications, side effects to prostaglandins and neonatal outcome were noted and the data analysed.

Patients with history of bronchial asthma, previous uterine surgery, and antepartum haemorrhage were excluded from the study.

RESULTS

Most of the patients in both groups were in their early twenties. Table I shows the distribution of age in both the groups. There were 30 primigravidas in Group I and 34 in Group II.

Pregnancy induced hypertension and past dates were the commonest indications for induction of labour in both the groups. However, there were few other indications like diabetes mellitus, and intrauterine growth retardation. Table II shows the indications for induction in

Table I

Age distribution of patients

Age in years	Group I (46)	Group II (54)
≤ 19	9	11
20 - 25	16	18
26 - 30	13	15
31 - 35	7	9
≥ 36	1	1
Total	46	54

both the groups.

Bishop's score of less than or equal to four (≤ 4) was considered as unfavourable cervix and ≥ 5 was considered favourable cervix. Table III shows Bishop's score before the application of gel in both the groups and at the time of induction or at onset of spontaneous labour in Group I. In Group I, 91.1% of patients had unfavourable cervix before gel instillation and 88.8% in Group II had unfavourable cervix.

A change in Bishop's score of ≥ 3 was considered as successful ripening. Forty one patients in Group I (89%) had successful ripening after instillation of PGE_2 gel.

Seventeen patients in Group I had gone into spontaneous labour as compared to 6 in Group II. Three patients in Group I required repeat application of PGE_2 gel. Thirteen patients in Group II were induced with oxytocin more than once for failed induction, whereas all the patients in Group I except the 3 who required a second application of prostaglandin gel delivered with a single induction with oxytocin. Table IV shows the outcome of labour in both groups. Induction-delivery interval of those patients who delivered vaginally is shown in Table V. Seventy-seven percent of study group delivered within 8 hours of induction as against 26% of control group.

Four patients (8.7%) in Group I and

Table II

Indication for induction of labour

Indication for induction	Group I (46)	Group II (54)
PIH	19	23
IUGR	4	4
Past dates	13	15
Diabetes mellitus	1	—
Rh negative	7	9
Recurrent foetal loss	2	3
Total	46	54

Table III

Bishop's score in the patients

Bishop's Score	Before application		At the time of induction or onset of spontaneous labour
	Group I (n = 46)	Group II (n = 54)	Group I (n = 46)
≤ 3	27	31	3
4	15	17	6
5	3	4	18
6	1	2	14
7	—	—	5
Total	46	54	46

21 patients (37.7%) in Group II had lower segment Caesarean section. Foetal distress (4) was the indication for LSCS in Group I whereas in-coordinate uterine action were the main indications for LSCS (13 patients) and foetal distress were 8 patients in Group II.

Application-delivery interval was less than 5 hours in 11 out of the 17 patients who had gone into spontaneous labour in Group I after application of PGE_2 gel.

Four patients in Group I and 2 in Group II had atonic postpartum haemorrhage. However, 3 patients in Group I had precipitate labour as compared to none in Group II. One out of the 3 patients had traumatic PPH due to cervical tear.

There was no significant change in the APGAR scoring in both the groups. There was one early neonatal death in Group I due to severe birth asphyxia and meconium aspiration whereas there was no neonatal death in Group II.

Vomiting and nausea were the commonest side effects seen in four out of 46 patients in Group I. Two patients had diarrhoea following delivery after endocervical PGE_2 gel application. There were no major complications like rupture uterus, or uterine hyperstimulation or hypersensitivity to prostaglandin E_2.

Table IV

Labour outcome in the groups

Outcome	Group I	Group II
Spontaneous labour	17	6
Successful induction	22	14
Repeat instillation or induction	3	13
LSCS	4	21
Total	46	54

Table V

Induction delivery interval

Induction-delivery interval	Group I (n = 22)	Group II (n = 14)
< 5 hours	3	—
Upto 6 hours	9	3
Upto 8 hours	5	2
Upto 10 hours	3	4
Upto 12 hours	2	3
> 12 hours	—	2
Total	22	14

DISCUSSION

There have been various studies during the past decade that have dealt with the local application of PGE_2 gel for cervical ripening and induction of labour. A soft, centrally placed, partly effaced and 2 cm dilated cervix is called a ripe cervix. Tightly woven bundles of collagen fibres in the human cervix are thought to split, separate and dissolve into a more abundant ground substance during the process of ripening which is also seen after PGE application (Rayburn, 1989).

Though many routes of administration are available, endocervical route is preferable because of its efficacy, ease of administration and low side effects (Johnson et al, 1992). Only 6 out of our 46 patients (13%) had minor side effects following PGE_2 gel application.

Uterine hyperstimulation or incoordinate uterine action was virtually absent

in our study. Rayburn (1989) had quoted 0.6% of patients who had uterine hyperstimulation following 0.5 mg dose.

Norchi et al (1992) have observed a high rate (50%) of failed induction with oxytocin alone. Fifteen percent of the prostaglandin group and 63% of our only oxytocin group ended with failed induction.

Rayburn et al (1989) observed that 83% of the patients who were treated with 0.5 mg of PGE_2 gel had successful induction. In our study 84.7% of patients in Group I had successful induction with PGE_2 gel.

Caesarean section rate of 8.6% in Group I and 37.5% in Group II was seen in this study as compared to 16% of the treated patients and 21% of untreated patients as seen by Rayburn (1989).

All four patients in Group I with favourable cervix had gone into spontaneous labour (100%) as compared to 50% (3 patients) in Group II. this is comparable with the 95% of the treated patients with favourable cervix who went into spontaneous labour in Rayburn's work (1989).

The average induction-delivery interval in Group I was 7.4 hours and in Group II 10.4 hours. This is comparable with the results of Rayburn (1989) who found that induction delivery interval in treated patients was 9 hours as compared to 11.3 hours in untreated patients.

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