Induction Of Labour With PGE2 Analogue (PGE2 Gel), Success Rate And Fetomaternal Outcome

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ABSTRACT:

Background: Induction of labour is indicated when the benefits to either mother or fetus outweigh those of pregnancy continuation. The process of induction of labour should only be considered when vaginal delivery is felt to be the appropriate route of delivery. This study is to evaluate the efficacy of the PGE2 analogue as an inducing agent in labour and its relation to fetomaternal outcome**. Materials and Methods:** This study is a prospective study carried out in a 130 women undergoing induction of labour in labour room or ward in civil hospital, Ahemedabad from August 2014 to October 2014. The women having a live singleton cephalic presentation, gestational age >32 completed weeks were included in the study. 0.5mg of dinoprostone was used for intracervical application. The application was repeated at 6 hrs intervals if Bishop`s score remains unfavorable i.e. <4. **Results:** The indication was PROM in 56 patients (43%), postdate in 38 patients (29.38%) oligohydramnios in 16 patients (12.3%), pre eclampsia in 8 patients (6.1%), eclampsia in 6 patients (4.6%), IUGR in 6 patients (4.6%). The patients requiring repeat induction were 12 at Bishop`s score of <4 (9.2%). Induction failure in 4 patients (3.07%). The mean induction delivery interval was 6 hrs. Caesarean section in 10 patients (7.69%), the most indication for caesarean section was in fetal distress in 6 patients (4.6%), NICU admission were in 10 patients (7.6%). **Conclusion:** This study showed that intracervical gel application of PGE2 analogue is a safe, effective method for induction of labour with the good fetomaternal outcome.

Key-words: Bishop score, Induction of labour, Intracervical prostaglandin E2, Unfavorable cervix.

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INTRODUCTION

Labour induction implies stimulation of contractions before spontaneous onset of labour with or without ruptured membranes. It is indicated when the benefits to either mother or fetus outweigh those of pregnancy continuation.[1] The process of induction of labour should only be considered when vaginal delivery is felt to be the appropriate route of delivery. Induction of labour is a challenge to the clinician, mother and the fetus and must be selected and supervised carefully.[2] With the introduction of prostaglandins particularly for their use in cervical ripening, it has decreased major difficulties of labour induction.[3] The degree of cervical ripening or favourability is assessed by the Bishop's scoring system (Table-I). It provides the basis for cervical assessment for induction of labour.

Table-I: Bishop's scoring system for assessment of Inducibility.

Clinical features	0	1	2	3
Dilatation (cm)	<1	1-2	2-4	5+
Effacement (%)	0-30	40-50	60-70	≥80
Station	-3	-2	-1/0	+1/+2
Consistency	Firm	Medium	Soft	-
Position	Posterior	Mid position	Anterior	-

Total score=13; Favorable cervix=6-13; Unfavorable cervix=0-5.

Cervical ripening is an essential prerequisite for induction and is employed when the cervix is unfavorable before initiation of uterine activity. The principle method of induction of labour is with the help of prostaglandins, which are available in the form of intracervical gel which contains 0.5mg of dinoprostone & when applied locally brings about biochemical changes in the collagenous matrix of cervix that results in softening.[4]

MATERIALS AND METHODS

A prospective study of three months duration from August to October 2014 was carried out at Civil Hospital, Ahmedabad in which 130 patients were included.

Table-II. Inclusion & Exclusion criteria

Inclusion criteria	Exclusion criteria
Gestational age >32 completed weeks	Cephalopelvic disproportion
Singleton live fetus	Previous uterine scar
Vertex presentation	Grand multiparity
Reactive Non stress test	Intrauterine fetal death
	Antepartum hemorrhage
	Asthma
	Gross oligohydramnios

The patients who fulfilled the inclusion criteria were admitted & evaluated for maternal and fetal well being. Written informed consent was taken. Bishop score was noted down. Accurate gestational age was determined. In patients where the date of last menstrual period was not known the gestational age was estimated by ultrasound. The Bishop's score was recorded initially and after 6 hours. The cervix was graded as unfavorable when the Bishop's score was 5 or less after 6 hours. These patients either went into spontaneous labour or required repeat induction. If the Bishop's score remained less than 5 after 6 hours, reapplication was done. A minimum of two doses was used. When the score remained below 5 after 6 hours of the second application, it was taken as a failure. All the patients were monitored with partograph.

Data collection was done according to proforma and analyzed. The main outcome measures were:

i. Changes in Bishop's score
ii. Route of delivery
iii. Induction delivery interval

RESULTS

Results were analyzed on indications for induction, the success rate of induction, outcome of induction, and maternal and fetal outcome. The commonest indications for induction of labour were PROM (43%) followed by postdate (29.4%) and oligohydramnios (12.3%).

Table-II. Indications for induction of labour.

Indication	No (%)
PROM	56(43)
Postdate	38(29.38)
Oligohydramnios	16(12.3)
Pre Eclampsia	8(6.1)
Eclampsia	6(4.6)
IUGR	6(4.6)

Table-III Initial Bishop's score and its correlation with success and failure rate (n=130) Mode of delivery

Mode of delivery	Score>5	Score<5	Total
Vaginal	94 (72.30%)	26 (20%)	120 (92.3%)
Cesarean section	6 (4.6%)	4 (3.07%)	10 (7.7%)

The initial Bishop's score (Table-III) at the time of PGE2 gel instillation had a significant influence on the success of induction. The success rate was 20% when the score was low ≤5 and as high as 72.30% when the score was >5. The overall success rate in the study was 92%. The mean Bishops score was 3.04, which increased to 5.56 after 6 hours, it means a gradual but progressive change in Bishop's score occurred in successful cases. Reapplication was required in 12 cases. Amongst the subjects requiring reapplication, the rate of progress was slower. The failure rate was high in those requiring reapplication. Induction failure was seen in 4 (3.07%).

Caesarean section was done in 10 (7.69%) cases. Most common indications for caesarean section was fetal distress in 6 (4.6%) cases and induction failure in 4 (3.07%) cases.

Table-IV. Induction delivery interval in vaginally delivered cases (120)

Hours	No.	Percentage
<6 hrs	55	45.8%
6-12 hrs	50	41.6%
12-18 hrs	15	12.5%

The induction delivery interval was shortened and 55 cases delivered within 6 hrs. The mean induction interval was 6 hrs.

MATERNAL OUT COME

Postpartum haemorrhage was observed in 5 (3.8%) cases. Other maternal complications were not observed.

NEONATAL OUTCOME

Total NICU admissions were 10 and out of which 6 (4.6%) cases were due to meconium passage and 4 were due to low APGAR Score. Apgar score ≤6 was seen in 4 cases and all these 4 were admitted to NICU, but were sent back to the postnatal ward after observation for 48 hours. There was no case of neonatal mortality or septicemia. All the babies were discharged well.

Table-V Neonatal outcomes

APGAR SCORE ≤6	No. (%)
1 min	3(2.3%)
5 min	1(0.7%)

OTHER OUTCOMES	No. (%)
Meconium passage	6(4.6%)
NICU admissions	10(7.6%)
Average birth weight (grams)	2550±850

DISCUSSION

Modern obstetrics aims at improving the safety of the mother and the fetus during antenatal period as well as parturition. The aim of induction of labour is to perform safe vaginal delivery.[5] Ripening of cervix governs the ease and success of induction of labour. If ripening of cervix fails to occur, then delivery and labour may be prolonged and many a time it may be unsuccessful. In our study, the overall success rate in terms of vaginal delivery was 92%. The success of induction of labour was found to be directly proportional to the Bishop score at the time of initial instillation.

CONCLUSION

The study showed that intracervical application of prostaglandin E2 is an effective, safe and acceptable method for induction of labour in women with unfavorable cervix and indications for induction. Dinoprostone gel application resulted in an improved Bishop score, facilitates the process of induction, increased number of successful inductions and decreased caesarean section rate. All these effects were achieved without increasing maternal and neonatal morbidity. Hence PGE2 gel can be recommended as a useful and potent method of induction of labour with unfavorable cervix.

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References:

1. Cunningham F, Leveno K, Bloom S, Spong CY, Hoffman B, Dashe J. Williams Obstetric, 24th Ed., McGraw-Hill Education / Medical, 2014;523-527.
2. Islam RU, Bhattacharryya S, Goswami B. Intracervical PGE2 gel for cervical Ripening and induction of labour. J Obstet Gynecol Ind 2001;51(6):83-6.
3. Patil P, Patil A. Oral Misoprostol v/s intra-cervical dinoprostone for cervical ripening and labour induction. J Obstet Gynec India 2013; 1(2):63-70.

4. Posner G, Black A, Jones G, Jessica D. Oxorn–Foote, Human labour & Birth. 6th Ed, McGraw-Hill Education, 2014;174-182.
5. Warke HS, Saraogi RM, Sanjwalla SM. Prostaglandin E2 gel in ripening of cervix in induction of labour. J Postgrad Med 1999;45(1)05-09.
6. Turna JE, Burke MS, Poreeco RP, Weiss MA. Prostaglandin E2 in tylose gel for cervical ripening before induction of labour. J Reprod Med 1987;32(11):815-21.