

INDUCTION OF LABOUR WITH PROSTAGLANDINS E2

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ABSTRACT

Objectives: To evaluate the role of prostaglandins E2 vaginal pessary for induction of labour in term pregnancy.

Material and Methods: This study was carried out at Khyber Teaching Hospital, Peshawar from January 2002 to December 2002. Hundred patients' primigravida and multigravida at term with different Bishop Scores were induced with prostaglandins E2 vaginal pessary, followed by oxytocin infusion if needed. Once in labour a policy of active management was followed. The duration of induction, induction delivery interval, duration of labour, maternal outcome were noted.

Results: Total 100 patients were divided into 3 groups according to the bishop scores, 50, 40 and 10 patients in group A, B and C respectively, mostly patients (86%) were delivered vaginally. Eight percent and 6% patients had cesarean section and instrumental delivery respectively. The induction delivery interval, duration of labour was more in group A and B as compared to group C. Only 5% patients developed complications like precipitate labour, hyperstimulation. Three percent cases have failed induction.

Conclusion: For a good induction of labour, Prostaglandins E2 should be applied for cervical ripening before start of contraction.

Key Words: Prostaglandins, unfavourable cervix, Bishop score, induction of labour.

INTRODUCTION

With the rapid progress in medical sciences, obstetrical management is also getting modified. With high realization of importance in timely planned intervention, management of labour now entails a large numbers of planned deliveries by induction of labour.¹

Whenever further continuation of pregnancy is considered hazardous, termination of pregnancy is sought for. The aim of induction being to achieve a safe vaginal delivery for the fetus without causing harms to mother. The induction of labour is a central component of good obstetric practice, the necessity for a safe and effective treatment for cervical ripening and to reduce the length of stay in hospital, and more importantly, the incidence of cesarean section.² The success of induction of labour depends largely on the parity and the pre-induction state of cervix. It is pre labour softening, effacement and eventual dilatation, which culminates in spontaneous labour.^{3,4} Induction of labour with a sustained release prostaglandin E2 vaginal pessary is to be safe and effective for induction of labour.⁵

Prostaglandins E2 is effective for pre induction cervical ripening in women with postdated pregnancy,

as postdated pregnancy is a widely recognized factor in failure to induced labour. Its presence is associated with high frequency of operative delivery, adverse fetal outcome and maternal morbidity.⁶

MATERIAL AND METHODS

The study was carried out to see the effectiveness, safety and success rate of prostaglandins E2 vaginal pessary. Descriptive observational study was conducted at Khyber Teaching Hospital Gynae B unit, Peshawar from January 2002 to December 2002.

About 100 patients were included in study, with ages between 18-40 and parity between 0 to 8 period of gestation was 37-42 weeks. Inclusion criteria was all the term pregnancies, multigravida and primigravida with viable fetus, Cephalic presentation, Singleton pregnancy and Bishop score 0-7.

Patients with fetal abnormalities, malpresentation, intrauterine death, gross cephalopelvic disproportion, history of surgery on uterus were excluded from the study. Hundred patients were subjected to prostaglandins E2 vaginal pessary. The gestational age was assessed with certainty whenever possible by last menstrual period and ultrasound examination in early weeks of pregnancy. Bishop scoring was carried out before induction; patients were divided into 3 groups according to the bishop scores.

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Patients for induction had 3-mg prostaglandins E2 pessary placed in posterior vaginal fornix. Half-hourly fetal heart rate monitoring, with a watch for uterine contraction was kept. After 5-6 hours reassessment of Bishop Score was done. If labour had not started prostaglandins E2 was repeated 3 times, otherwise infusion oxytocin was started. Induction delivery interval, duration of the three stages of labour, mode of delivery, any ante partum complication were noted.

RESULTS

Total 100 patients were randomly selected belonging to different age groups, parity, social class, period of gestation and Bishop Score. We have divided the patients in three groups according to the Bishop score. In-group A i.e. Bishop Score is <4, in group B Bishop score is 4-5, in group C it is >5.

Outcome of induction, delivery time and duration of labour is shown in Table 1. The complications of induction are shown in Table 2. Bishop Score and gestational age is tabulated in Table 3, whereas indications for induction are summarised in Table 4.

DISCUSSION

Induction of labour, is invasive procedure and should not be taken lightly.^{1,7,8} The biochemical and morphological changes in cervix needed for successful outcome, most have been achieved prior to start of labour pains. Fetal and maternal responses have to be judged on individual basis. Fetal distress mostly occurs in cases with a poor placental reserve and would occur even in normal labour.⁹

The favourability of cervix is of critical importance and should be assessed prior to induction by means of the Bishop score, or one of its modification. If the cervix is unfavorable, the need for induction of labour should be reconsidered. If induction is necessary ripening with prostaglandins is useful.¹⁰

Prostaglandins are extensively used now a day especially for cervical ripening with success rate of more than 83%.¹¹ Induction of labour by

prostaglandins was associated with a decreased risk of chorioamnionitis.^{12,13}

No difference was detected for rate of cesarean section, although induction by prostaglandins was associated with a more frequent maternal diarrhea and use of anesthesia and /or analgesia.^{12,13}

In one series 94 studies were done 52 were included with total no of 9402 women. The vaginal prostaglandins E2 compared with placebo or no treatment, reduced the likelihood of vaginal delivery not being achieved within 24 hours (18% versus 99%), the cesarean section rates were not different between groups although risk of uterine hyper stimulation with fetal heart rate changes were increased (4.6% versus 0.51%). The primary review was to examine the efficacy of vaginal prostaglandins E2 and F2a. This is reflected by an increase in successful vaginal delivery rates in 24 hours, no increase in operative delivery rates and significant improvement in cervical favourability within 24- 48 hours.¹⁴ Main mode of delivery were normal vaginal delivery 84%, 85% and 100% in group A, B and C respectively. Only 8% and 5% had cesarean section in group A and B in our study.

Randomized and quasi-randomized trials were done by Cochrane pregnancy and child birth group trial, on early stimulation of uterine contractions with prostaglandins (with or without oxytocin) versus with oxytocin alone (not combined with prostaglandins) in women with spontaneous rupture of membrane at term 8 trials were done. Based on three trials, prostaglandins compared with oxytocin infusion were associated with increased chorioamnionitis and neonatal infections. The success of induction of labour depends on the cervix.¹⁵

Classical methods of induction of labour were by means of oxytocin infusion and amniotomy. Oxytocin infusion can only act on the already primed uterus and cervix and it is clinically unjustified to use in cases with unfavorable cervix as side effect of prolonged labour, fetal asphyxia and higher rate of obstetric surgery is reported by Taylor and Boland et al.¹⁶ In our study C section was 8% in unfavourable cervix.

Table 1: Outcomes of induction with prostaglandins vaginal pessary

Mode of delivery	Group A (n=50)	Group B (n=40)	Group C (n=10)
Normal vaginal delivery	42 (84%)	34 (85%)	10 (100%)
Forceps delivery	4 (8%)	2 (10%)	0
Cesarean section	4 (8%)	4 (5%)	0
Induction delivery interval(hrs-min)	17 hrs-38 min	13 hrs-20 min	8 hrs-30 min
Duration of labour (hrs-min)	8 hrs-30 min	6 hrs-00	4 hrs-00

TABLE 2: Complications of Prostaglandin E2 vaginal pessary

Maternal Complications	Percentage
Pyrexia	4 (4%)
Vomiting	1 (1%)
Diarrhea	0
Failed induction	3(3%)
Precipitate labour	2(2%)
HyperStimulation	3(3%)

Table 3: Bishop score and gestational age

N=100	No. & %age
Bishop score	
<4(groupA)	50 (50%)
4-5(groupB)	40 (40%)
>5(groupC)	10 (10%)
gestational age	
<38weeks	20 (20%)
38-42weeks	60 (60%)
>42weeks	20 (20%)

Table 4: Indications of Induction of Labour

S. No.	Indication	No. & %age
1.	Post date 10 days or more	26%
2.	Post date less than 10 days with risk factor	28%
3.	Severe pre eclampsia	17%
4.	Eclampsia	4 %
5.	Prelabour rupture of membrane	15%
6.	Placental abruption	2%
7.	Intrauterine growth restriction	2%
8.	Diabetes	4%
9.	Stabilizing induction	2%

If the cervix is favorable there is little convincing evidence to support any particular method of induction of labour. However, trials comparing prostaglandins with oxytocin have shown better patient satisfaction, decreased analgesia usage, as well as small reduction maternal blood loss and neonatal jaundice with prostaglandins.^{17,18}

When the cervix is favourable (high Bishop Score) the labour is short in duration and delivery is uncomplicated. However, when the cervix is very unripe, amniotomy is difficult and should be regarded as an inappropriate intervention in these circumstances.¹⁹ It is comparable to our results where duration of labour was 8 hours 30 minutes. In women with Bishop Score of 1, the shortest interval was 18 hours and none of the women achieved a vaginal delivery. Not only was the labour unsatisfactory and cesarean section rate high in women with a very unripe cervix, but the incidence of other maternal and fetal complications also increased.²⁰ It is comparable to our study.

Prostaglandin E2 is best studied for cervical ripening and labour induction. It is more potent and less likely to provoke side effects, and achieves its best results when given locally within the genital tract. It is indicated where the cervix is unripe with a low Bishop score, especially in primigravida.^{21,22}

At low Bishop Scores the cervix is not prepared for dilatation and effacement. Prostaglandin E2 not only brings about the contractions in myometrium but also produces the maturational changes in the cervix. Therefore the results are better for prostaglandin E2 group.²³ Indication for cesarean section were fetal distress and maternal pyrexia and failed induction.

CONCLUSION

At low Bishop scores prostaglandins are more effective as they prepare the cervix for the process of labour along with producing uterine contractions.

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