

Original Research Article**Comparative Study of Oxytocin and Prostaglandin E2 Gel in Induction of Labour in High Risk Pregnant Women from Tamil Nadu**Dr. J. Lokeshwari¹, Dr. S. Vishwanathan², Dr. Abhishek Singh³¹Assistant Professor, Department Of Obstetrics and Gynaecology, Rajah Muthiah Medical College and Hospital, Annamalai University, Tamil Nadu, India²Professor and Head, Department Of Obstetrics and Gynaecology, Rajah Muthiah Medical College and Hospital, Annamalai University, Tamil Nadu, India³Assistant Professor, Department of Community Medicine, Shaheed Hasan Khan Mewati Govt. Medical College, Haryana, India***Corresponding Author:**

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Abstract: A few studies concluded that EASI with oxytocin is a better method of induction than prostaglandin E2 gel whereas a few others observed that EASI efficiency similar to that of prostaglandin compounds. We planned a comparative study of oxytocin and prostaglandin E2 gel in induction of labour in high risk pregnant women from Tamil Nadu from a tertiary care health centre. This study was a prospective study carried out for high risk pregnant women admitted for a medically indicated induction of labor at Rajah Muthiah Medical College and Hospital, Annamalai University. A total of 100 cases were randomly distributed in two groups- 50 cases on cerviprime gel (study group) and 50 cases on oxytocin (control group). Changes in the Bishop scores, labor progress, various labor end points and outcomes of labor were assessed. In Cerviprime (Study group), improved Bishops Score was observed in 2 (4%) study subjects in whom initial Bishops Score was 0 whereas in Oxytocin (Control group), improved Bishops Score was observed in 1 (2%) study subject in whom initial Bishops Score was 0. Cesarean delivery was the outcome of intervention in 8 (16%) study subjects in Cerviprime (Study group) and 20 (40%) participants in Oxytocin (Control group). In both the groups i.e. Cerviprime (Study group) and Oxytocin (Control group), Hyper stimulation and Uterine Inertia were commonly noted Intra-partum complication whereas PPH was most common post-partum complication. Cerviprime can be used as a good tool for induction of labour and as a cervical ripening agent because of its safety to the mother and the foetus. Maternal outcome variables, i.e., induction-labour interval and induction-delivery interval are less in cerviprime as compared to Oxytocin.

Keywords: Study, Oxytocin, Prostaglandin E2 gel, Induction of labour, High risk pregnant women

INTRODUCTION

Induction of labour is the intentional initiation of cervical ripening and uterine contraction for the purpose of accomplishing delivery; prior to onset of spontaneous parturition [1]. Labor induction is one of the most common obstetric interventions, such that 30% of pregnant women undergo labor induction for either maternal or fetal reasons [2]. Induction of labour is indicated where the benefits to mother or to the foetus outweighs the benefit of continuing pregnancy [3].

Prostaglandins are effective agents for cervical ripening, but they can cause GI symptoms, fever, pain, high prevalence of tachysystole, uterine hyperstimulation and even uterine rupture [4]. Numerous clinical trials have been carried out to compare extra-amniotic normal saline infusion (EASI) with a variety of prostaglandin products, but the results are not consistent. In some other studies, the EASI method resulted in improvement

of Bishop score and a shortened labor time. The rate of cesarean delivery in these studies was between 4% and 46% [5].

Paucity and inconsistency of literature warrants this study. A few studies concluded that EASI with oxytocin is a better method of induction than prostaglandin E2 gel and pessary [6,7] whereas a few others observed that EASI efficiency similar to that of prostaglandin compounds [8–10]. Therefore we planned a comparative study of oxytocin and prostaglandin E2 gel in induction of labour in high risk pregnant women from Tamil Nadu from a tertiary care health centre.

MATERIALS AND METHODS

This study was a prospective study carried out for high risk pregnant women admitted for a medically indicated induction of labor at Rajah Muthiah Medical College and Hospital, Annamalai University,

Chidambaram, from December 2007 to 2008, after being approved by the Institutional Ethics Committee.

A total of 100 cases were randomly distributed in two groups- 50 cases on cerviprime gel (study group) and 50 cases on oxytocin (control group). These patients had varying indications like post-term pregnancy, intrauterine death, pregnancy induced hypertension both mild and severe, rhesus incompatibility and gestational diabetes, severe pre-eclampsia. Patients fulfilling the following criteria were included in the study- Primi gravidas, Cephalic presentation, No indications for elective cesarean section, Intact membranes, No fetal distress, No history of bronchial asthma or other medical/ surgical contraindications and Bishop score of 4 or less. Patients with the following criteria were excluded from the study- Contraindications to vaginal delivery, History of cesarean section, or major uterine surgery, Vaginal bleeding and Non cephalic presentation.

At the time of entry into the study a detailed history was taken. Complete general and obstetric examination was carried out. Care was taken to elicit the relevant medical, surgical and obstetric information. A vaginal examination was performed under aseptic

precaution and Bishop score was assessed. Routine laboratory investigations including blood grouping and Rh typing were done. Ultrasonogram was done for assessing liquor volume, maturity and fetal well being. The patients were selected for cervical ripening and induction of labour with prostaglandin E2 gel after fulfilling the inclusion criteria.

Changes in the Bishop scores, labor progress, various labor end points and outcomes of labor were assessed. All the proforma were manually checked and edited for completeness and consistency and were then coded for computer entry. After compilation of collected data, analysis was done using Statistical Package for Social Sciences (SPSS), version 21 (IBM, Chicago, USA). The results were expressed using appropriate statistical methods.

RESULTS

In Cerviprime (Study group), improved Bishops Score was observed in 2 (4%) study subjects in whom initial Bishops Score was 0 whereas in Oxytocin (Control group), improved Bishops Score was observed in 1 (2%) study subject in whom initial Bishops Score was 0. (Table 1)

Table 1: Characteristics of Bishops Score between the 2 groups

Bishops Score	Cerviprime (Study group)				Oxytocin (Control group)			
	Initial B. core		Improved B. score		Initial B. score		Improved B. score	
Score range	No. of patients	%	No. of patients	%	No. of patients	%	No. of patients	%
0-2	41	82	2	4	24	48	6	12
3-5	9	18	4	8	26	52	13	26
6-8	0	0	42	84	0	0	30	60
>8	0	0	2	4	0	0	1	2
Total	50	100	50	100	50	100	50	100

Cesarean delivery was the outcome of intervention in 8 (16%) study subjects in Cerviprime (Study group) and 20 (40%) participants in Oxytocin (Control group) (Figure 1).

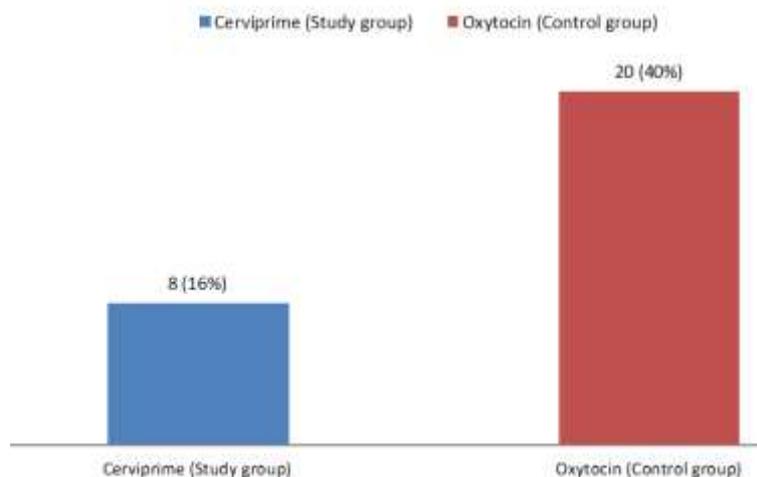


Fig-1: Delivery outcome as Cesarean delivery between the 2 groups

In both the groups i.e. Cerviprime (Study group) and Oxytocin (Control group), GIT, Hyper stimulation and Uterine Inertia were commonly noted

Intra-partum complication whereas PPH was most common post-partum complication (Table 2).

Table 2: Maternal complications between the 2 groups

Maternal Complication	Cerviprime (Study group)				Oxytocin (Control group)			
	Intrapartum	%	Postpartum	%	Intrapartum	%	Postpartum	%
GIT	1	2	0	0	1	2	0	0
Hyper stimulation	1	2	0	0	2	4	0	0
Uterine Inertia	1	2	0	0	1	2	0	0
PPH	0	0	1	4	0	0	4	8
Rupture uterus	0	0	0	0	0	0	0	0

DISCUSSION

Labour induction still remains a clinical challenge. Options for cervical ripening and induction are numerous and varied. Each induction method has advantages and disadvantages. The choice of a particular inducing agent depends not only on safety and efficacy but also on local practice pattern, cost, and availability and physicians preference.

We observed that in Cerviprime (Study group), improved Bishops Score was observed in 2 (4%) study subjects in whom initial Bishops Score was 0 whereas in Oxytocin (Control group), improved Bishops Score was observed in 1 (2%) study subject in whom initial Bishops Score was 0. In a study by Bortolus *et al* [11], 250 women with Bishop score less than 4 underwent induction by prostaglandin gel E2. Nulliparity was the most important factor to cause failed induction (19% in comparison to 3% in multiparous women). On the other hand, the women with unfavorable cervixes undergoing labor induction for medical indications, without taking into consideration the method of ripening the cervix, will have a higher rate of cesarean section [12]. Seyb and Berkea recently concluded that women undergoing elective induction had a higher rate of cesarean delivery (17.5%), whereas those in whom labor began spontaneously had a cesarean delivery rate of 7.8%, and distocia was the most common indication for cesarean [12].

Rayburn [13] analysed the cumulative experience of more than three thousand pregnancies in 59 prospective clinical trials in which prostaglandin gel was used for cervical ripening. He found that the local application of prostaglandin was superior to placebo in enhancing the cervical score, reducing induction failure, shortening the induction to delivery time, reducing oxytocin use and decreasing the cesarean section rate.

In some women undergoing EASI, cervical dilatation progresses quickly up to 3–5 cm, and then an arrest of labor develops. Another study observed that the EASI method was intended with greater success compared with Misoprostol in cervical ripening, the high rate of cesarean in the EASI group was due to failure to progress in the active phase of labor [14].

A meta-analysis on controlled trials comparing vaginal PGE2 with placebo found no significant influence of treatment with PGE2 on incidence of caesarean deliveries. Overall, the use of prostaglandin improves the cervical score in 80–90% of patients and significantly reduces the frequency of induction failure and caesarean section [15].

CONCLUSIONS

Prostaglandin E2 gel (cerviprime) can be used as a good tool for induction of labour and as a cervical ripening agent because of its safety to the mother and the foetus. Cervical ripening with cerviprime possesses the advantage of simplicity, low cost and reversibility. Maternal outcome variables, i.e., induction-labour interval and induction-delivery interval are less in cerviprime as compared to Oxytocin. Moreover there is no difference in caesarean section rate, neonatal mortality and morbidity when compared to Oxytocin.

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