



INDUCTION OF LABOUR IN WOMEN WITH AN UNFAVOURABLE CERVIX: COMPARING OUTCOMES IN DOUBLE AND SINGLE PGE2 GEL.

Gynaecology

Menghani Rekha	Junior Specialist (Obstetrics and Gynecology) Zenana Hospital attached to SMS Medical College
Sharma Asha	Senior Specialist (Obstetrics & Gynecology) Zenana Hospital attached to SMS Medical College. - Corresponding Author
Shekhawat Usha	Sr. Professor, Obstetrics and Gynecology, Mahatma Gandhi Medical College and Research centre, Jaipur

ABSTRACT

OBJECTIVE : To compare the outcome of induction of labour using a single versus two doses of prostaglandin E, vaginal gel.

Design : In this hospital based study , we selected 200 with viable singleton pregnancies , cephalic presentation at term without previous history of caesarean section & Bishop score <6

100 women had single PGE2 vaginal gel induction . A Hundred needed a repeat PGE2 vaginal gel induction after 6 hours of first application. (the second being given after six hours ,if labour had not started or the cervix was still unripe) Amniotomy and oxytocin titration were performed when necessary for both protocols.

SETTING : A tertiary care medical college hospital annually delivering > 12000 women.

Results: Single versus double prostaglandin doses resulted in the need for oxytocin augmentation (80% vs 61%). Overall rate of mode of delivery compared, normal delivery 59% and 75% in the single vs double application groups respectively, cesarean rates were 27 % and 20% in single vs double application groups respectively and was less in double group. The mean length of labour was greater in double application group than the single Dinoprostone gel (3.03 hrs vs 3.78 hrs) in primigravida

CONCLUSIONS: Induction of labour with prostaglandin E2 vaginal gel in women reduces the cesarean rates and` does not adversely affect maternal and immediate neonatal outcome.

KEYWORDS:

Induction of labour; Prostaglandin vaginal gel;

INTRODUCTION

Induction of labour is defined as the process of artificially stimulating the uterus to start labour¹ Cervical ripening is an essential prerequisite for induction and is assessed with Bishops scoring system. The local (intracervical) application of PGE 2 results in softening of the cervix 1. by altering the extracellular ground substance of the cervix, 2 It increases the activity of the smooth muscle of the cervix and uterus, 3. It leads to gap junction formation that is necessary for the coordinated uterine contractions of labour² Our study was conducted to identify possible benefits or disadvantages of a single versus double PGE2 vaginal treatment after six hours in women having induction of labour for various reasons at term. Dinoprostone (PGE2) is a synthetic preparation of naturally occurring prostaglandin E2. PGE 2 gel is available in 2.5 ml syringe for an intracervical application of 0.5mg of Dinoprostone

MATERIAL & METHODS

A prospective study carried out in a tertiary care Hospital in obstetrics & Gynecology department, Jaipur. The study sample includes 200 women. All women with Bishop score <6 were included in the study for induction of labour with a singleton ,viable , cephalic presentation & no previous cesarean .Women counselled & detailed history taken (age, obstetric history, menstrual history, socioeconomic status, booked/unbooked), routine investigations done.

Per abdominal and Per Vaginal examination done, Bishop score assessed. Two groups taken, Group A :under all asepsis prefilled Dinoprostone 0.5 mg instilled intracervically under direct visualization of the cervix using a speculum. The women asked to remain recumbent for at least 30 minutes. During the first 30 minutes: vital parameters of the mother, Fetal heart Rate monitored and uterine activity recorded. Thereafter, FHR was monitored half hourly and Non stress Test done if any deviation from normal found. After 6 hours PV repeated, to assess the Bishops score and Progress of labour or given Repeat Dinoprostone Gel instilled and included in Group B.

Details relating to the need for amniotomy before labour, oxytocin augmentation (No augmentation was done when uterine contractions reached a frequency of 3 in 10 minutes), colour of the amniotic fluid at rupture of the membranes and at delivery, mode of delivery, interval between administration of first dose of prostaglandin to delivery, duration of labour and the condition of the baby at delivery noted.

Neonatal outcome was measured according to the Apgar score.

RESULTS :-

The baseline data of the study population (maternal age, gravidity ,gestational age) were comparable in the two groups. Majority of cases in PGE2 gel instillation single & double group were in 22-25 yrs age group The mean gestational age was identical i.e. 37 to 42 weeks. The most common indication for induction of labour (**Table no.1**), was postdatism in single vs double PGE2 gel group (55% versus 48%). Of the primigravida who required single application versus double PGE2 gel mean duration for onset of labour were 4.53+1.34 vs 9.31+1.85 hours respectively. The Mean duration of labour (**Table no.2**), was less in the single versus double PGE2 application group (3.03 vs 3.78 hrs) which is statistically significant ($P < .01$). **Table no.3** shows oxytocin augmentation was required in single versus double PGE2 group (80% vs 60%) oxytocin augmentation not required in single vs double application was 20% vs 39% cases. This difference was statistically significant. ($p < .01$). In our study Vaginal delivery rate was 59 (59%) in the single PGE2 group and 75 (75%) in the double PGE2 group which was statistically significant ($P < .01$). Thus less rate of cesarean section seen in the double PGE2 (**Table. No 4**).

Table no. 5 shows that maternal complications which included G.I. complication, hyperstimulation, PPH, vaginal tear etc were almost equal among both the group. Cervical tear was seen in 1 case in group 1, while no case reported from 2nd group. Hyperstimulation was significantly found to be more in the double application group. **Table no. 6** shows Apgar score <7 was seen in 8% vs 11% in the single vs double PGE2 application & the difference was not statistically significant. Neonatal intensive care unit (NICU) admissions were 11% vs 7% in the single vs double PGE2 group & this difference was not statistically significant

DISCUSSION :-

A randomized prospective study done to compare the efficacy of single versus double PGE2 gel application for induction of labour in cases of unfavourable cervix. Out of the total 200 cases, 91.5% were 19-29 years of age. Iz Mackenzie³ reported maximum number of cases in their study of one v/s two doses of PGE2 gel for induction of labour were the age groups 20-29 yrs

Out of cases requiring single application ,55%,31% & 14% were

G1,G2 &G3+ gravid respectively. Of the cases requiring double application ,80%,14%&6% were among G1,G2 &G3+ gravid respectively. **Table no.1.** shows majority of patients were induced due to post dated pregnancy. Other indications were PROM,PIH, oligoamnios, pregnancy with jaundice & mild IUGR. Wrake et al⁴ studied 68.1% patients required augmentation of labour with oxytocin drip. This was similar to our study i.e. 60% required oxytocin in single PGE2 group. Marconi et al⁵ studied that after induction single vs double application of PGE2 ,oxytocin augmentation was needed in 28% vs 72%. There was significant difference between the duration of labour in the single versus double application of PGE2 gel group (74% vs.52%) within 4hours of induction of labour($P < 0.5$)(Table no.3) Wrake et al⁴ reported Induction delivery time was 16.25 hours and 18.5 hours in Group I and Group II respectively(single versus double application group)

Various studies have shown considerable variation as far as induction delivery time is concerned ranging from 9 hours (Noah et al)⁶ to 17.9 hours (Thiery et al)⁷Of total cases PGE2 single vs double gel application ,percentage of normal delivery, cesarean section, instrumental delivery was 59%,27%,14% vs 75%,20%,5% cases respectively Difference in normal delivery was found to be statistically significant($p<.05$)Facchinetti F et al 2012⁸ reported that Dinoprostone insert reduces cesarean rate in nulliparous women to 24% compared to other ways of stimulation.The rate of maternal and neonatal complications was comparable in both the groups.

CONCLUSION

Dinoprostone gel application is efficient in achieving cervical ripening successfully in nulliparous as well as multiparous along with the reduction in latent phase of labour and total delivery time Second PGE2 application significantly improves chances of cervical ripening in cases with unfavorable cervix. There is a decrease in total duration of labour and increase in chances of vaginal delivery but strict vigilance is required for both maternal and fetal parameters specially in second applications Considering good maternal and neonatal outcome, the dinoprostone gel can be used as the first choice for elective induction of term pregnancy

REFERENCE

1. Complication in pregnancy and childbirth: a guide for midwives and doctors. Geneva, World Health Organization, 2000 (available at: http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/9241545879/en/index.html).
2. Stempel JE, Prins RP, Dean S, et al: Pre-induction cervical ripening: A randomized prospective comparison of the efficacy and safety of intravaginal and intracervical prostaglandin E2 gel. *Am J Obstet Gynecol* 1997; 176: 1305-1309.
3. Z. Mackenzie , M. P. Embrey The influence of pre-induction vaginal prostaglandin E2 gel upon subsequent labour *BJOG* September 1978 Volume 85, Issue 9 Pages 657–661
4. HS Warke, RM Saraogi, SM Sanjwalla Prostaglandin E2 gel In ripening of cervix in induction of labour *J Postgrad Med* 1999;45:105
5. Marconi AM, Bozzetti P, Morabito A, Pardi G. Comparing two dinoprostone agents for cervical ripening and induction of labor: a randomized trial. *Eur J Obstet Gynecol Reprod Biol.* 2007;138:135-40.
6. Noah ML, Decoster JM, Fraser W. Preinduction cervical softening with endocervical PGE2 gel. A multicentric trial. *Acta Obstet Gynecol Scand* 1987; 66:3-7
7. Thiery M, Decoster JM, Parewijck W. Endocervical prostaglandin E2 gel for preinduction cervical softening. *Clin Obstet Gynecol* 1984; 27:429-439.
8. Facchinetti F, Fontanesi F, Del Giovane C Pre-induction of labour: comparing dinoprostone vaginal insert to repeated prostaglandin administration: a systematic review and meta-analysis. *J Matern Fetal Neonatal Med.* 2012 Oct;25(10):1965-9. doi: 10.3109/14767058.2012.668584. Epub 2012 Apr 2.