ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2015; 1(13): 861-864
www.allresearchjournal.com
Received: 18-10-2015
Accepted: 19-11-2015

Seema Satve
Krishna Institute of Nursing Sciences, Karad Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra, India

Vandana Satave
Krishna Institute of Nursing Sciences, Karad Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra, India

Corresponding Author:
Seema Satve
Krishna Institute of Nursing Sciences, Karad Krishna Institute of Medical Sciences Deemed To Be University, Karad, Maharashtra, India

Effectiveness of prostaglandin E2 gel in induction of labor among primigravida women

Seema Satve and Vandana Satave

Abstract
Background of the study: Labor induction was very safe when it was done with safe induction practices. This was suitable for the patient. Prostaglandin E2 gel was good for induction and safe to use and helps for good foetal outcome.
Objective: Study done with the objectives of the efficacy Prostaglandin E2 gel for induction of labor among women and observe normal delivery outcome.
Material and methods: Experimental study done to observed the Efficacy of prostaglandin E2 gel in induction of labor among primigravida women with fetal and maternal delivery outcome. Experimental group received intervention like application of Prostaglandin E2gel. In control group except NST and Application of prostaglandin E2 gel. Total 70 samples selected for the study was primigravida mothers admitted in maternity ward in both group. Mother selected as a samples with purposive sampling technique. Samples selected as per inclusion criteria primipara mothers admitted in maternity ward.
Ethical permission taken from the ethical committee. Purpose of study explains to the subjects and written consent taken. Tool prepared which was in Marathi validated by experts. Tool prepared which was based on objectives of the study and it was based on structured observational schedule on efficacy of prostaglandin E2 gel and maternal and fetal outcome. Bishop Score was used to observe dilation of cervix effacement, station, consistency, and position. (Range of score was 0-13, Favourable Unfavourable score 0-5 score 6-13 Partograph used to assess graphical record of cervical dilatation and descent of head against duration of Labor in hours. Apgar score was used to assess outcome of health condition of baby.
Results: Scio-demographic variables Primi gravida mothers in experimental groups Majority of women 33(94.3%) were housewife. In Control group 34(97%) were house wife Primi gravida women shows high proportion those in to experimental group (Fisher exact test P<0.001). There was significantly high proportion of women belonging to experimental group were having poor bishop score.
The mean duration of first stage of labor was 5.345 ± 2.056 hrs in experimental group and in Control group 5.975 ± 1.769 it was statically not significant P=0.3055. The mean duration of 2nd stage of labor was 27.500 ± 6.177 min in experimental group and in control group 29.065 ± 14.338 min it was statically not significant P= 0.6565. Induction of delivery time was 9hrs 22 min in primi experimental group. Primi gravida experimental group failure rate of induction were 7(20%) and 25(71.42%) in control group.
In maternal outcome experimental group 10 (28.6%) women and 19 (54.3%) women from control group experienced Nausea respectively P=0.0514 which was not significant. 3(8.6%) women from experimental group and 15(42.9%) women from control group experienced vomiting. p=0.0021 hence fisher exact test was significant.
Conclusion: Finding of the study revealed that Efficacy of prostaglandin E2 gel was good for reduction in Labor time without any complication to baby immediate after delivery.

Keywords: Primipara women, multipara women, prostaglandin E2 gel

Introduction
Induction of Labor is common practice in obstetric. Normal delivery with induction of prostaglandin E2 gel was good but this should with bishop score. If bishop score was below 6 then only we can do induction with this regimen because it suitable for cervical ripening. It was helpful to reduced induction time as well as no any fatal as well as maternal completions will takes place [1, 3].
Application of prostaglandin E2 gel was applied in two different ways intracervical as a well as intravaginal for induction of lobor Intracervical procedure was quiet difficult to carried

out but it was benefit to patient in the time of induction. Intravaginal method was easy to administer. But patient perception also takes into the consideration while administering this gel [2].

Some are contraindication keep in mind while administrating the PEG2gel for induction of Labor like major uterine surgery, any history with traumatic delivery, CPD women, any uterine malformation, early ruptured of membrane women with traumatic delivery. Any mal presentation with baby [4].

For successful induction of Labor mother should have strong uterine contraction sufficient cervical dilation, and proper induction which will help her to reduce duration time of delivery. Prostaglandins PGE2 are safe and effective for induction of Labor. This will help for reduction in maternal morbidity and mortality along with good foetal outcome Prostaglandins are widely used for induction of labor [5, 6].

Some women are needed to have aid for useful progression of uterine contraction so Prostaglandins E2 gel was helpful to production of uterine contraction. It was commercially available in India.it was very safe effective and it was easy to administered. And it very effective in ripening of cervix as compared to IV oxytocin. Fetal Apgar score also good. Rather than giving oral PGE2 tablet for induction of labor. PGE2gel was effective in fast delivery without any complication [7, 8, 9].

This was new and advanced technology came in gynaecological practices. There was so many routes are available oral, intravenous, sublingual, rectal, intra-amniotic, extra-amniotic, intracervical, endocervical, and vaginal administration. But vaginal method was good to practice for administration og prostaglandin E2 gel for safe delivary with good baby outcome.

Method

Experimental study done the evaluating the effectiveness (efficacy) of prostaglandin E2 gel in the induction of labor among primigravida women. Evaluative approach was used. With purposive sampling technique was used, 70 primipara mothers selected as a samples with convenient sampling technique was used. Sample selected according to inclusion criteria. Structured interview, Tool prepared on efficacy of prostaglandin E2 gel and maternal and fetal outcome. Graphical presentation done with the help of labor Partograph.

Ethical permission taken Inform consent taken before sample collection purpose of study explain to the samples. Experimental group received treatment as –NST and application of prostaglandin PGE2 gel. Whereas control group no like this intervention. Sample selected as per inclusion criteria Bishop Score was used to cervical dilatation, effacement, station, consistency, and position with a possible range from 0 to 13. (Range of score was 0-13, Favourable Unfavourable score 0-5 score 6-13

Partograph used to assess graphical record of cervical dilatation and descent of head against duration of Labor in hours. Apgar score was used to assess outcome of health condition of baby

Results

Women distributed according to inclusion criteria.in experimental group and control group.

	Experimental group	Experimental group
Primi gravida	35	20

Table 1: Mean age distribution of primi gravida women in experimental and control group

GROUP (AGE)	MEAN	SD	t value	P value
Experimental Group (35)	27.77	2.5791	0.877	0.384
Control Group (35)	22.22	2.6018		

In above table experimental and control group women age was matched and there was no significant difference according to age in Primi gravida women in experimental and control group**.**

Table 2: Distribution of demographic variables of Primi gravida women in experimental and control group

Demographic Variable	Experimental Group 35		Control Group 35	
	Frequency	Percentage	Frequency	Percentage
Occupation				
Self –employed	2	5.7	1	2.9
House wife	33	94.3	34	97.1
Religion				
Hindu	33	94.3	32	91.4
Muslim	2	5.7	3	8.6
Education				
Primary	3	8.6	2	5.7
Secondary	20	57.1	26	74.3
Graduate	8	22.9	5	`14.3
Post graduate	2	5.7	1	2.9
No formal education	2	5.7	1	2.9

In above table shows majority of women 33(94.3%) were housewife and in Hindu religion in experimental group where as in control group maximum women 34(97%) were house wife and 32(91.4%) are in Hindu religion.

Table 3: Frequency and Percentage Distribution of Primi gravida women According to labor Information

Indication Of Induction	Experimental Group 35		Control Group 35	
	Frequency	Percentage	Frequency	Percentage
Postdatism	13	37.1		
IUGR	3	8.6		
P.I.H.	13	37.1	1	2.9
Postdatism+ Pih	1	2.9		
Oligohydraminios	5	14.3	1	2.9
Distress			4	11.4
Pod+ Distress			2	5.7
Abruption			1	2.9
Normal labor			10	28.6
DTA			2	5.7
Leaking			2	5.7
Acceleration			5	14.3
No Progress			6	17.1
Pod+ Leaking			1	1 2.9

In above table shows primi gravida women selected according to inclusion criteria for experimental group and remaining samples were included in Control group for Induction of labor.

Table 4: Distribution of primi gravida women according to Bishop score in Experimental group and control group

Bishop Score	Experimental Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
GOOD- 6-13	1	1%	18	26%
POOR- 0-5	34	49%	17	24%

Above table shows there was significantly high proportion of women belonging to experimental group were having poor bishop score. (Fisher exact test P<0.001).

Table 5: Comparison between first and second stage of labor according to mean duration in primi gravida experimental and control group

Stages	Experimental Group		Control Group		t-value	p-value
	Mean	SD	Mean	SD		
1st stage	6.046	2.445	7.417	3.267	1.988	0.0508
2nd stage	33.314	16.271	21.714	21.246	2.564	0.0125

Above table shows first stage duration was not significant in experimental and control group. While second stage was statically quiet significant in experimental and control group

Table 6: Mean duration from induction to delivery time in primi gravida women in experimental group

Group	Minimum	Maximum	Mean	Median S	SD
Experimental	Hrs.min	Hrs.min			
33	1.45	32.45	9.2287	8.000	6.003

Table 7: Distribution of primi gravida women according to maternal outcome

Variables	Experimental Group 35		Control Group 35		P Value Fisher exact test
	Frequency	Percentage	Frequency	Percentage	
Nausea					
Present	10	28.6	19	54.3	0.0514
Absent	25	71.4	16	45.7	
Vomiting					
Present	03	8.6	15	42.9	0.0021*
Absent	32	91.4	20	57.1	
Perineal Tear					
1°	-	-	1	2.9	1.0000
No	-	-	34	97.1	
Supraurethral tear					
Present	-	-	1	2.9	1.0000
Absent	35	100	34	97.1	

Above findings revels that in experimental group 10 (28.6%) women and 19 (54.3%) women from control group experienced Nausea respectively P=0.0514 which was not significant. 3(8.6%) women from experimental group and 15(42.9%) women from control group experienced vomiting. p=0.0021 hence fisher exact test was significant. Perineal and Supraurethral tear was not found in women from experimental group and in control group, 1(2.9%) case was found with supraurethral tear. P = 1.0000 which was statistically not significant. Broncho spasum, diarrhea, PPH, hyper stimulation, extension of episiotomy

Table 8: Distribution of primi gravida women according to fetal outcome

Variables	Experimental Group 35		Control Group 35		P Value Fisher exact test
	Frequency	Percentage	Frequency	Percentage	
Apgar Score @1 Min					1.0000
Good	34	97.1	35	35	
Poor	1	2.9	0	0	
Apgar Score @5 Min					1.0000
Good	34	2.9	35	100	
Poor	1	2.9	0		
Respiratory Distress	0		3	8.6	0.2391
Present	35	100	32	91.4	
Absent					
Meconium Aspiration					0.6139
Present	1	2.9	3	8.6	
Absent	34	2.9	32	91.4	

Above tables findings reveals that very good outcome was observed in 34 (97.1%) women from experimental group as they were at risk. 1(2.9%) baby from experimental group and 3(8.6%) babies from control group were having poor fetal outcome. Within 2 hrs they were settled. None of the babies required NICU care from both groups. No birth injury was observed in babies from both groups. 'P' values were statistically not significant from both the groups. Good Fetal outcome was observed in both Experimental and Control group

Discussion: In present study in experimental group mean age was 22.77 (P=0.384), similarly in control group mean age was 22.22(P=0.384). The mean duration of first stage of labor was 6hr 04min in experimental group and in control group it was 7 hr. 41 min. and 2nd stage of labor was 33.31 min. in experimental group and in control group it was 21.71 min. delivery time was 9 hr. 22 min. in Primi experimental group. Primi experimental group failure rate of induction was 7(20%) and 25(71.42%) in control group. It shows that failure rate was less in experimental group as compared to control group in Primi experimental group 10 women and 19 women from control group experienced Nausea respectively P=0.0514 which was not significant. In Primi experimental group 3(8.6%) women and 15(42.9%) women from control group experienced vomiting. Very good outcome was observed in women from 34(97.1%) 1(2.9%) baby was having poor fetal outcome in experimental group similarly 3(8.6%) baby having poor fetal outcome in control group. There were no birth injury observed in both groups. 'P' values were statistically not significant in both the groups. Application of Prostaglandin E2 gel in Primi have no adverse effect on fetal out come as compare to control group.

Contradictory study found by Veena P, Sushma D, Sonal S in 2019. Study done for safe induction of vaginal

Prostaglandins E2 gel on 50 multipara women. Finding noted as cesrian section was high in experimental group (19.5%) where as in control group (12.5%). Adverse neonatal outcome was found in both group. baby admissions in (SCBU) 19 in experimental group and in control group 12 admissions. No any maternal complication observed so PGE2 was safe and easy to administer for induction of labor [11].

Contrdictory study done in 2013 by Amanda Henry, Arushi Madan, Rachel Reid *et al.* comparism done in two groups outpatient Foley catheter versus prostaglandin E2 gel.it was an randomized control trial.101 samples chosen for study. Result shows short duration of hospital stay with outpatient department patent as compared to inpatient. Less discomfort good sleep in OPC group. Whereas more time require oxytocin IOL.OPC was feasible for induction of labor. Both group were not shown any significances [12].

Similar study found in 2014 by Jane Thomas, Anna F, Josephine K. *et al.* it was an randomised control trial study done to observe the effect of Vaginal prostaglandin (PGE2 and PGF2a) at term result shows it was safe and increase chances of delivary within 24 hours and reduction of L.S.C.S.in 10%.with good maternal and fatal outcome [13].

Comparative study done in 2017 by Ramya D, Jaju. Comparison done with intra cervical dinoprostone gel versus vaginal misoprostol to observe the effect of induction of labor study done on women admitted with gestational age was above 40 weeks and in-between 37-40weeks.toatl 150 womens selected for the study and findings shows both misoprostol and PGE2are effective and safe and also it helps for cervical ripening which reduces the time for induction [14].

Similar randomized comparative study done by Tahir A. Mahmood, Alison Raynera, Norman *et al.* It was an parallel group study done on 260 participant to observe the efficacy of PGE2 gel versus fore water amniotomy.findings shows PEG2 method was safe effective for induction of labor also it was less painful helps for natural birth [15].

Conclusion

Knowledge of application of Prostaglandin E2 gel and its action. The nurse therefore should have detail knowledge of this drug pharm kinetics and its mechanism of action, side effects. So that they can effectively practice Prostaglandin E2 gel for induction of labor and reduce caesarean rate and maternal mortality rate.

Recommendations

1. A quasi experimental study can be done to evaluate the effectiveness of other oxytocics.
2. Nurses should conduct more studies with Prostaglandin E2 gel to improve their knowledge about drugs.
3. A planned teaching programme on application of Prostaglandin E2 gel and its management among nurses working in labor room can be conducted

Acknowledgement

Our sincere thanks go to all the study participants who have provided us their valuable time and willingness to participate in the study.

Conflicts of interest: There are no conflicts of interest.
Financial Support and sponsorship: Nil

References

1. Abdul-Kareem Al, Salah RA Hany A *et al*. Induction of Labor with Prostaglandin E2 in Women with Previous Cesarean Section and Unfavorable Cervix. Int J Health Sci (Qassim). 2007; 1(2):211-216.
2. Joscha R, Roberta R, Juping Y. *et al.* Prostaglandin E2 Labour Induction with Intravaginal (Minprostin) versus Intracervical (Prepidil) Administration at Term: Randomized Study of Maternal and Neonatal Outcome and Patient's Perception Using the Osgood Semantic Differential Scales. Bio Med Research International Article ID 682919, 2014.
3. Williams MA, Luthy DA, Zingheim RW. Preinduction Prostaglandin E2 Gel Prior to Induction of Labor in Women With a Previous Cesarean Section. Gynecol Obstet Invest. 1995; 40(2):89-93.
4. Patricia Crowley. Contra-Indications Toprostaglandin E2 Vaginal Gel:Abstract Evidence Based? J SOGe. 1996; 18:1143-52.
5. Parul SJ, Mayur R Gandhi, Nilesh T. Efficacy of misoprostol over dinoprostone gel and Foley's catheter as a cervical ripening agent. International Journal of Medical Science and Public Health. 2015; 4(7).888-892.
6. Amandeep K Anand, Shahida Mir. A Randomized Comparison Between Intravaginal Misoprostol and Intracervical Dinoprostone for Cervical Ripening and Labour Induction in Participants with Unfavourable Cervices. www.ik.sciences.org. 2012; 14(3):115-119.
7. Dr. Shweta B, Dr. Meenakshi S, Dr. Anil S. A comparative study of 25mcg of oral and vaginal misoprostol in induction of labour at term gestation in primigravida. International Journal of Clinical Obstetrics and Gynaecology. 2020; 4(2):396-401.
8. Swarnlata Sinha, Vidya Bharati. A Comparative Study of Safety and Efficacy of Intracervical PGE2 with Iv Oxytocin in Induction of Labor. EC Gynaecology. 2017; 4(6):232-240.
9. Abdallah Kamal Mouza Al-Hail, Muna Al-Saadi, *et al.* Comparison between dinoprostone (PGE2) vaginal gel and PGE2 vaginal tablet for the induction of labour, in term primigravida pregnant women at Women's Hospital-Qatar, a retrospective study. 7th World Congress on Clinical Pharmacy and Pharmacy Practice, 2017.
10. Aihai Liu1, Jieqiang Lv1, Yue Hu. Efficacy and safety of intravaginal misoprostol versus intracervical dinoprostone for labor induction at term: A systematic review and meta-analysis. J. Obstet. Gynaecol. Res. 2014; 40(4):897-906.
11. Veena P, Sushma D, Sonal S. Safety of Induction of Labor with Vaginal Prostaglandins (E2) in Grandmultipara. Oman Med J. 2009; 24(3):184-187.
12. Amanda Henry, Arushi Madan, Rachel Reid. Outpatient Foley catheter versus inpatient prostaglandin E2 gel for induction of labour: a randomised trial. BMC Pregnancy Childbirth, 2013, 25.
13. Jane Thomas, Anna F, Josephine K. *et al.* Vaginal prostaglandin (PGE2 and PGF2a) for induction of labour at term. Cochrane Database Syst Rev, 2014, 6.
14. Ramya D, Jaju. Comparative Study of Intra-Vaginal Misoprostol with Intra-Cervical Dinoprostone Gel for Induction of Labour.Obstetrics & Gynecology International Journal. 2017; 6(5):00223.
15. Tahir A. Mahmood, Alison Raynera, Norman C *et al.* A randomized prospective trial comparing single dose prostaglandin E2 vaginal gel with forewater amniotomy for induction of labour. European Journal of Obstetrics & Gynecology and Reproductive Biology. 1995; 58:111-117.